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Double stars for southern, light-polluted skies

Discovering Southern Double Stars

Double stars for southern, light-polluted skies (Version 2022-1)

Agnes Clarke

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For Wurzel

Contents

Using This Book

I wrote this book to help myself find the brighter and better double stars visible from urban locations in the southern hemisphere. The charts and contents of the book have been designed accordingly. I observe with smaller telescopes, the largest being a 150mm Schmidt-Cassegrain, and the smallest being my 50mm finderscope. The doubles in this book include those in the southern hemisphere and equatorial regions of the sky. I have produced a separate book, "Discovering Double Stars", for the north, covering the northern hemisphere and equatorial regions.

I locate targets using a 50mm finderscope and a red dot finder (RDF). The RDF helps me to point the telescope within a few degrees of the target by simply moving the projected red dot in the sight to the right place in the sky, and then the finderscope takes over as it shows about 5-7 degrees of sky with about 8-10 times magnification (it varies because my finderscope accepts different eyepieces).

This book has two types of diagrams to help with these two phases. Firstly, large diagrams show brighter stars visible from an urban location with the positions of the doubles indicated as 5 degree finderscope circles. This diagram helps with the rough pointing of the telescope via the red dot finder. Stars down to magnitude 5 are included in these overview charts, which is somewhat fainter than I can normally see from a light polluted location, unless it is a good clear night and it's past midnight!

The second type of diagram shows the faint stars visible in my finderscope, so that I can finally locate the double by matching the pattern to the book. I normally have the finderscope and telescope very precisely aligned, so that I can keep a high magnification eyepiece in the telescope and not have to keep switching between lower and higher magnification in the telescope to center the double in the telescope view. To increase the chance that the double will actually be in the telescope view, I prefer to use wide-angle eyepieces so that I still have a reasonably large field of view despite using hundredfold magnification.

All 256 doubles in this book have been selected for brightness, color, and uniqueness, and all are within a few degrees of a relatively bright star of at least magnitude 4.0.

I have also included the position angles of the doubles in the finderscope diagrams. The position angle indicates the angle from the primary star to the secondary star, and I show this angle as a short line radiating from the double star. In the case the double is actually a triple or quadruple or quintuple the other position angles are shown as progressively shorter radiating lines, in order of increasing separation of the components. So the two components with the closest separation have the longest line.

All the charts show the rough spectral class of the stars as a color: hot blue stars of spectral class O or B are shown as dark blue. White stars like Sirius or Procyon (spectral class A or F) are shown as black. Yellow stars similar to our G-class Sun are shown as dark yellow, while cooler K class stars are dark orange and smouldering M class stars are deep red.

Note that the separation and position angle of double stars can change from year to year. This is one of the many charms of double stars: they offer the chance to see dynamic processes in deep space. However it does mean the data in this book is only valid as of 2021.

It is conventional for maps to place North at the top of the page, but for this southern hemisphere book I have placed South at top. This enables the the majority of the maps to be used from southern latitudes without needing to hold the book upside down.

Astronomical Abbreviations

Constellations are often referred to in this work by three-letter abbreviations. When the constellation name is used in a star name, the constellation's genitive form is used. For example, Aquarius is abbreviated as Aqr, and one of its stars would be 5 Aquarii.

The following list gives the abbreviation and the full and genitive names.

And - Andromeda (Andromedae)

Ant - Antlia (Antliae)

Aps - Apus (Apodis)

Aqr - Aquarius (Aquarii)

Aql - Aquila (Aquilae)

Ara - Ara (Arae)

Ari - Aries (Arietis)

Aur - Auriga (Aurigae)

Boo - Bootes (Bootis)

Cae - Caelum (Caeli)

Cam - Camelopardalis (Camelopardalis)

Cnc - Cancer (Cancri)

CVn - Canes Venatici (Canum Venaticorum)

CMa - Canis Major (Canis Majoris)

CMi - Canis Minor (Canis Minoris)

Cap - Capricornus (Capricorni)

Car - Carina (Carinae)

Cas - Cassiopeia (Cassiopeiae)

Cen - Centaurus (Centauri)

Cep - Cepheus (Cephei)

Cet - Cetus (Ceti)

Cha - Chamaeleon (Chamaeleontis)

Cir - Circinus (Circini)

Col - Columba (Columbae)

Com - Coma Berenices (Comae Berenices)

CrA - Corona Australis (Coronae Australis)

CrB - Corona Borealis (Coronae Borealis)

Crv - Corvus (Corvi)

Crt - Crater (Crateris)

Cru - Crux (Crucis)

Cyg - Cygnus (Cygni)

Del - Delphinus (Delphini)

Dor - Dorado (Doradus)

Dra - Draco (Draconis)

Equ - Equuleus (Equulei)

Eri - Eridanus (Eridani)

For - Fornax (Fornacis)

Gem - Gemini (Geminorum)

Gru - Grus (Gruis)

Her - Hercules (Herculis)

Hor - Horologium (Horologii)

Hya - Hydra (Hydrae)

Hyi - Hydrus (Hydri)

Ind - Indus (Indi)

Lac - Lacerta (Lacertae)

Leo - Leo (Leonis)

LMi - Leo Minor (Leonis Minoris)

Lep - Lepus (Leporis)

Lib - Libra (Librae)

Lup - Lupus (Lupi)

Lyn - Lynx (Lyncis)

Lyr - Lyra (Lyrae)

Men - Mensa Mensae)

Mic - Microscopium (Microscopii)

Mon - Monoceros (Monocerotis)

Mus - Musca (Muscae)

Nor - Norma (Normae)

Oct - Octans (Octantis)

Oph - Ophiuchus (Ophiuchi)

Ori - Orion (Orionis)

Pav - Pavo (Pavonis)

Peg - Pegasus (Pegasi)

Per - Perseus (Persei)

Phe - Phoenix (Phoenicis)

Pic - Pictor (Pictoris)

Psc - Pisces (Piscium)

PsA - Piscis Austrinus (Piscis Austrini)

Pup - Puppis (Puppis)

Pyx - Pyxis (Pyxidis)

Ret - Reticulum (Reticuli)

Sge - Sagitta (Sagittae)

Sgr - Sagittarius (Sagittarii)

Sco - Scorpius (Scorpii)

Scl - Sculptor (Sculptoris)

Sct - Scutum (Scuti)

Ser - Serpens (Serpentis)

Sex - Sextans (Sextantis)

Tau - Taurus (Tauri)

Tel - Telescopium (Telescopii)

Tri - Triangulum (Trianguli)

TrA - Triangulum Australe (Trianguli Australis)

Tuc - Tucana (Tucanae)

UMa - Ursa Major (Ursae Majoris)

UMi - Ursa Minor (Ursae Minoris)

Vel - Vela (Velorum)

Vir - Virgo (Virginis)

Vol - Volans (Volantis)

Vul - Vulpecula (Vulpeculae)

Greek letters are used in Bayer designations of stars, such as Alpha Canis Majoris (Sirius). Greek letters also have standardised three-letter abbreviations as follows:

α - alf - alpha

β - bet - beta

γ - gam - gamma

δ - del - delta

ε - eps - epsilon

ζ - zet - zeta

η - eta - eta

θ - tet - theta

ι - iot - iota

κ - kap - kappa

λ - lam -lamda, lambda

μ - mu. - mu

ν - nu. - nu

ξ - ksi - xi

ο - omi - omicron

π - pi. - pi

ρ - rho - rho

σ - sig - sigma

τ - tau - tau

υ - ups - upsilon

φ - phi - phi

χ - khi - chi

ψ - psi - psi

ω - ome - omega

Doubles by Constellation

Antlia

Zet1 Ant: page 115 — A close, bright pair of white stars.

Observed:

Aquarius

107 Aqr: page 56 — A bright white primary with a fairly bright yellowish companion close by.

Observed:

12 Aqr: page 200 — A very tight yellow-blue system, with the small blue component sufficiently bright to show some color.

Observed:

4 Aqr: page 197 — An extremely tight pair of fairly balanced yellowish stars.

Observed:

41 Aqr: page 202 — A close, balanced with a bright orange primary and yellowish secondary.

Observed:

53 Aqr: page 202 — An extremely tight and exactly equal pair of yellow suns.

Observed:

94 Aqr: page 55 — A bright yellowish primary easily separated from a fairly bright companion.

Observed:

Ome2 Aqr: page 59 — A brilliant bluish primary with a faint orange companion close by.

Observed:

Psi1 Aqr: page 58 — A brilliant orange primary distantly separated from a faint orange secondary.

Observed:

STF 2838: page 200 — An easily separated pair of white stars with a bright primary and a faint secondary.

Observed:

STF 2944: page 53 — An extremely tight pair of yellow stars, with a fainter distant third component.

Observed:

STF 3008: page 54 — An equal pair, with an orange primary closely separated from a slightly fainter secondary.

Observed:

Zeta Aqr: page 197 — A balanced, tight pair of white stars.

Observed:

Aquila

11 Aql: page 183 — A wide pair with a white primary and a faint blue companion.

Observed:

15 Aql: page 176 — A very wide pair of yellow stars.

Observed:

28 Aql: page 184 — A bright yellowish primary with a distant much fainter companion.

Observed:

57 Aql: page 198 — A very wide and balanced pair of bright, bluish stars.

Observed:

STF 2434: page 178 — A yellow-yellow pairing, widely separated.

Observed:

Struve 2404: page 184 — Two orange stars with very tight separation.

Observed:

Struve 2426: page 186 — A less common white-orange pair, the two components are easily separated.

Observed:

Struve 2449: page 187 — A close and well balanced yellow-blue pair.

Observed:

Struve 2532: page 208 — A very widely separated orange-blue duo, but the blue component is very faint.

Observed:

Aries

Gamma Ari: page 82 — An equal pair of icy blue stars with close separation.

Observed:

Bootes

Pi Boo: page 162 — A close and reasonably balanced pair of white stars.

Observed:

Struve 1835: page 163 — A bright white primary close to a yellow secondary.

Observed:

Struve 1910: page 165 — A close pair of perfectly balanced yellow stars.

Observed:

Xi Boo: page 161 — A close yellow-orange duo, with a bright primary and brightish secondary.

Observed:

Cancer

Struve 1245: page 127 — A well matched white-yellow pair, easily separated.

Observed:

Struve 1254: page 126 — A wide yellow-blue pairing, but the small blue component is very faint.

Observed:

Zeta Cnc: page 127 — An equal pair of closely bound and bright yellow stars.

Observed:

Canis Major

17 CMa: page 100 — A bright white primary widely separated from a moderately fainter secondary.

Observed:

Beta CMa: page 105 — A fiercely brilliant blue primary with a distant very faint companion.

Observed:

HJ 3945: page 106 — A bright, wide and balanced pair of stars, the primary being orange, and the secondary pale yellow.

Observed:

STF 1097: page 104 — A fairly bright yellow primary with an easily separated and relatively faint companion.

Observed:

Sirius: page 105 — A ferociously brilliant white primary moderately separated from a relatively dim white dwarf companion.

Observed:

Tau CMa: page 106 — A brilliant blue primary with two faint stars close to the east, and a brighter component some distance beyond them.

Observed:

Zeta CMa: page 88 — A brilliant bluish primary distantly separated from a fairly apparent orange secondary.

Observed:

Canis Minor

Struve 1103: page 128 — A close but relatively faint yellow-blue pairing.

Observed:

Capricornus

Alpha1/2 Cap: page 201 — A distantly separated pair of brilliant white stars.

Observed:

Beta Cap: page 201 — A brilliant yellow primary distantly separated from bright white secondary.

Observed:

HJ 1537: page 199 — A yellow primary with a very close, faint companion.

Observed:

Pi Cap: page 199 — A very close pair, with a bright blue primary and fairly faint secondary.

Observed:

STF 2683: page 198 — An equal pair of easily separated yellowish stars.

Observed:

Carina

HJ 4383: page 34 — An extremely tight and relatively balanced pair of bluish stars.

Observed:

Centaurus

HJ 4491: page 136 — A widely separated, balanced pair with a yellowish primary and a somewhat yellower secondary.

Observed:

HJ 4500: page 133 — A fair bright orange primary distantly separated from a faint yellow secondary.

Observed:

HJ 4554: page 136 — A very wide pair dominated by a fairly bright red primary accompanied by an extremely faint companion.

Observed:

Rigel Kent: page 150 — A close, extremely brilliant pair with a yellow primary and orange secondary.

Observed:

Cetus

12 Cet: page 57 — A bright red primary separated comfortably from a very faint companion.

Observed:

37 Cet: page 58 — A very widely separated pair, with a brilliant yellowish primary and a significantly fainter, strongly yellow secondary.

Observed:

66 Cet: page 78 — A comfortably separated yellow and blue pair.

Observed:

HJ 1968 AB: page 59 — A yellowish primary very widely separated from a faint secondary.

Observed:

HJ 2004: page 60 — A fairly bright white primary with a very close, faint secondary.

Observed:

S 390: page 55 — A close and equal pair of bluish stars.

Observed:

STF 39: page 57 — A wide pair with a yellow primary and pale yellow secondary.

Observed:

STF 49: page 54 — A close pair with a yellow primary and tiny orange secondary.

Observed:

STF 80 AB: page 66 — An orange primary widely separated from a slightly fainter yellow secondary.

Observed:

Columba

Dunlop 22: page 88 — A close and balanced pair with a white primary.

Observed:

Coma Berenices

24 Com: page 144 — An orange-blue pair, with a reasonable bright secondary and easy separation.

Observed:

Corona Austrina

BSO 14: page 170 — A fairly bright, balanced double, easily separated. Both components have a blue hue.

Observed:

Gamma CrA: page 171 — A brilliant yellowish primary tightly bound to a fairly bright companion.

Observed:

HJ 5014: page 171 — An extremely tight pairing of two equally bright white stars.

Observed:

Corvus

58 Crv: page 141 — A close pair of bright, yellowish stars, with a third faint, widely separated component.

Observed:

Delta Crv: page 141 — A brilliant bluish primary widely separated from a moderately faint companion.

Observed:

Crater

17 Crt: page 133 — A close, equal pair of bright, somewhat yellow stars.

Observed:

Gamma Crt: page 142 — A close pair with a brilliant white primary somewhat fainter secondary.

Observed:

Crux

Alpha Cru: page 135 — Two extremely brilliant blue stars, very close together. A third very bright component lies distantly from them.

Observed:

Beta Cru: page 137 — A extremely brilliant blue primary very widely separated from a faint blue secondary.

Observed:

Delphinus

Gamma Del: page 209 — A very bright yellow primary close to a bright blue secondary.

Observed:

Struve 2725: page 206 — A close yellow and blue pair.

Observed:

Equuleus

Eps Equ: page 211 — A yellow-blue combination with a moderately bright secondary. Easy separation.

Observed:

Lamda Equ: page 207 — An extremely tight and exactly equal pair of yellow stars.

Observed:

Struve 2786: page 210 — An extremely close and fairly balanced pair of white stars.

Observed:

Eridanus

32 Eri: page 79 — A close double with bright components; yellow and white.

Observed:

55 Eri: page 98 — An equal pair of quite close, moderately bright, yellow stars.

Observed:

62 Eri: page 97 — A distantly separated pair, with a bright, blue primary and a significantly fainter secondary.

Observed:

66 Eri: page 96 — A bright, bluish primary with an extremely close faint secondary; a further faint, white C component lies at some distance from A and B.

Observed:

Burnham 1042: page 78 — A very wide and unequal pairing. The primary is yellow, while the secondary is a very faint, balanced double (1.3", p.a. 40°).

Observed:

Chi Eri: page 74 — A brilliant yellow primary with a very close but vastly fainter secondary.

Observed:

Gamma Eri: page 80 — A brilliant red primary widely separated from a very dim companion.

Observed:

HJ 3527: page 69 — A tight pair of blue stars with third distant and dim companion.

Observed:

HJ 3556: page 70 — A yellowish primary very close to significantly fainter secondary.

Observed:

Omicron2 Eri: page 80 — A brilliant yellow-orange primary distantly separated from a dim white companion.

Observed:

Rho2 Eri: page 79 — A bright yellow-orange star with an extremely close, faint companion.

Observed:

Theta Eri: page 72 — A close, balanced double composed of two brilliant white stars.

Observed:

Gemini

20 Gem: page 108 — A widely separated but balanced yellow-white pair.

Observed:

38 Gem: page 109 — A brilliant white primary with close yellow companion.

Observed:

Grus

COO 252 AC: page 43 — A bright yellow primary with a very faint close companion, and somewhat more distant and slightly less faint third member.

Observed:

DQ Gru: page 43 — A bright and easily separated pair of white stars.

Observed:

DUN 248: page 47 — An easy, equal pair of fairly bright stars; the primary is white, the secondary is yellow.

Observed:

Sig2 Gru: page 42 — An equal pair of bright white stars, very distantly separated.

Observed:

TOK 36: page 191 — A fairly bright yellow star with a tightly bound faint companion.

Observed:

Hercules

Alpha Her: page 186 — A reasonably balanced orange-blue pair, very close with a brilliant primary and bright secondary.

Observed:

Gamma Her: page 161 — A yellow-yellow pairing with a brilliant primary and dim secondary. Distantly separated.

Observed:

Kappa Her: page 164 — A reasonably balanced and bright, but widely separated, pair of yellow stars.

Observed:

Struve 2411: page 183 — A comfortably separated pair with a yellow primary and a faint secondary.

Observed:

Horoglium

COO 14: page 71 — A balanced pair of yellowish stars close together, with a somewhat brighter star some distance from them.

Observed:

DUN 10: page 70 — A balanced pair with a yellow primary widely separated from an orange secondary.

Observed:

DUN 7: page 75 — A wide and equal pairing of a yellow star and white companion.

Observed:

HJ 3503: page 71 — An extremely tight, balanced pair of yellow stars with an easily separated, faint yellow component.

Observed:

HJ 3520: page 74 — A balanced pair of yellow stars, widely separated.

Observed:

HJ 3576: page 73 — A very close pair with a white primary.

Observed:

HJ 3611: page 73 — A very close, balanced pair with a white primary.

Observed:

Hydra

27 Hya: page 122 — A brilliant orange-yellow primary with a pale yellow secondary, distantly separated.

Observed:

HJ 99: page 121 — A yellow primary with a reasonably balanced secondary, distantly separated.

Observed:

STF 1329: page 120 — A close and equal yellow pairing.

Observed:

Struve 1347: page 128 — A wide pair of slightly yellowish stars.

Observed:

Hydrus

CVN 14: page 32 — A brilliant yellow primary with a very close red companion.

Observed:

HJ 3464 AB: page 35 — A yellowish primary with very close, faint secondary.

Observed:

HJ 3475: page 72 — An equal and extremely tight pair of yellowish stars.

Observed:

Indus

Theta Ind: page 192 — A brilliant white primary with a close fairly bright yellow companion.

Observed:

Leo

49 Leo: page 145 — A bright white primary with an extremely close, reasonably apparent companion.

Observed:

78 Leo: page 145 — A tight white-yellow pair. The secondary is not too faint, but the primary shines brilliantly.

Observed:

83 Leo: page 146 — A fairly bright yellow primary with an easily apparent orange secondary, widely separated.

Observed:

90 Leo: page 144 — A balanced pair of fairly bright bluish stars, very closely separated.

Observed:

Gamma Leo: page 126 — Known variously as Gamma Leonis or Algeiba, this is one of the finest yellow-yellow doubles, being both bright, fairly balanced and tightly bound.

Observed:

Lepus

Alpha Lep: page 99 — A brilliant yellowish primary widely separated from a very faint companion.

Observed:

BU 314: page 99 — An extremely tight pair of yellowish stars, with a faint, distant third companion.

Observed:

HJ 3752: page 100 — A bright yellow primary with a fairly bright and very close secondary.

Observed:

Libra

Alpha Lib: page 156 — A brilliant white primary with distant bright, white companion.

Observed:

Iota Lib: page 157 — A distantly separated pair, with a brilliant white primary and tiny secondary.

Observed:

SHJ 195: page 156 — A widely separated, fairly balanced pair of yellowish stars.

Observed:

Struve 1962: page 154 — An easily separated equal pair of yellow stars.

Observed:

Lupus

HJ 4690: page 149 — A bright yellow primary easily separated from a white secondary.

Observed:

Mu Lup: page 149 — An extraordinarily tight pair of equally brilliant bluish stars, with a widely separated, fairly bright, white third component.

Observed:

Xi Lup: page 148 — A bright white primary with an almost as bright blue companion close by.

Observed:

Microscopium

DUN 236: page 191 — A fairly bright, nearly equal pair, with a yellow primary widely separated from an orange companion.

Observed:

HJ 5218: page 190 — A fairly bright yellow primary with a very faint secondary close by.

Observed:

Monoceros

Beta Mon: page 103 — A wonderful triple showing a brilliant bluish primary closely separated from a tight pair of bluish stars.

Observed:

Epsilon Mon: page 110 — An unequal pair of bright yellow stars, easily separated.

Observed:

STF 1112: page 121 — A yellow primary widely separated from a somewhat fainter white secondary.

Observed:

STF 914: page 98 — A fairly bright white primary widely separated from a faint secondary.

Observed:

Zeta Mon: page 120 — A widely separated triple system with two brighter yellow components and a fainter orange companion.

Observed:

Musca

Beta Mus: page 38 — A sub-arcsecond pair of equally bright bluish stars.

Observed:

HJ 4498: page 138 — A fairly bright yellow primary with an orange companion close by.

Observed:

Lambda Mus: page 138 — A very brilliant white primary widely separated from an extremely faint companion.

Observed:

Theta Mus: page 135 — A close pair of blue stars with a bright primary and moderate secondary.

Observed:

Norma

HJ 4813: page 150 — A bright yellow primary with a very close companion.

Observed:

Octans

GLI 14: page 32 — A balanced, close pair with an orange primary.

Observed:

Lambda Oct: page 36 — And very close pair with a bright yellow-orange primary and a white companion.

Observed:

Mu2 Oct: page 36 — A well balanced and easily separated pair of yellow suns.

Observed:

R 38: page 37 — A very tight double, but the moderately bright blueish primary does not overwhelm the fainter secondary.

Observed:

Ophiuchus

36 Oph: page 180 — A bright, equal pair of orange dwarfs, closely separated.

Observed:

41 Oph: page 175 — A fantastically close unequal orange-white pairing.

Observed:

61 Oph: page 188 — A widely separated pair of white stars. Both components are fairly bright.

Observed:

70 Oph: page 185 — A brilliant yellow star with a bright orange companion. The pair are very close, especially given their apparent magnitude. The gap is currently near the maximum.

Observed:

Struve 2276: page 187 — A balanced and close pair of white stars.

Observed:

Tau Oph: page 179 — An extremely tight, balanced pair of yellowish stars.

Observed:

Orion

42/45 Ori: page 102 — A very wide and bright binocular pair, the brighter star (42 Ori) being bluish and the other white.

Observed:

Delta Ori: page 95 — A very wide pair consisting of a brilliant primary and significantly fainter blue secondary.

Observed:

Iota Ori: page 103 — In the same field as Struve 747, Iota Orionis is a brilliant white star with an easily separated and reasonably bright blue companion.

Observed:

Lamda Ori: page 109 — A close pair of white stars, with a brilliant primary and bright secondary.

Observed:

Rigel: page 104 — Rigel, one of the brightest stars in the sky, has a moderately bright companion that seems very faint in the glare of its primary. The separation is reasonable and the white secondary contrasts nicely with the blue primary.

Observed:

Sigma Ori: page 95 — A blue primary, flanked by one fainter star to the west, and two relatively bright white stars to the east, all easily separated from the primary.

Observed:

Struve 747: page 97 — A very wide pair of well matched and bright white stars.

Observed:

Struve 790: page 101 — A close blue-yellow pair roughly a degree north-east of the Orion Nebula.

Observed:

Theta1 Ori: page 96 — Better known as the Trapezium, this multiple star system pushes the boundaries between a multiple star system and a star cluster. The 4 brightest components form a trapezium, but fainter components can also be picked out.

Observed:

Theta2 Ori: page 102 — A very wide line of three bright white stars, often overlooked as it is on the border of the spectacular Orion Nebula.

Observed:

Zeta Ori: page 101 — A fiercely brilliant close blue-blue pairing, made difficult by the brightness of the primary.

Observed:

Pavo

R 314: page 33 — A very tight double consisting of a fairly bright blueish primary and a significantly fainter secondary.

Observed:

RMK 8550: page 192 — An equal and very tight pair of bright white stars.

Observed:

Pegasus

1 Peg: page 208 — A triple system, with a brilliant orange primary with two faint companions, one very close and the other quite widely separated.

Observed:

3 Peg: page 210 — A bright white primary distantly separated from a reasonably apparent yellowish secondary.

Observed:

57 Peg: page 62 — A bright red primary widely separated from a faint white secondary.

Observed:

Struve 2841: page 205 — A wide yellow-blue pairing. Some see some green in the secondary.

Observed:

Struve 2848: page 207 — An equal and easily split pair of yellow stars.

Observed:

Phoenix

Beta Phe: page 47 — A equal and extremely tight pair of yellow stars.

Observed:

HJ 3390: page 46 — An yellow-orange primary with a faint white secondary, easily separated.

Observed:

HJ 3395: page 46 — A close, faint pair with an orange primary and a slightly fainter red secondary.

Observed:

Theta Phe: page 42 — A white primary with a slightly fainter yellowish secondary, very closely separated.

Observed:

Zeta Phe: page 48 — A pair of close bluish stars, the brilliant primary is much brighter and is itself an extreme sub-arcsecond pairing.

Observed:

Pictor

DUN 20: page 90 — A balanced and widely separated pair of fairly bright, white stars.

Observed:

I 5: page 91 — An extremely tight pair dominated by a fairly bright, yellow primary.

Observed:

Iota Pic: page 90 — An easily separated, balanced pair of bright yellowish stars.

Observed:

Pisces

100 Psc: page 83 — A comfortably separated pair of white stars.

Observed:

34 Psc: page 62 — A bright bluish primary with a faint secondary close by.

Observed:

35 Psc: page 63 — An easy, bright double star with comfortable separation and a reasonably bright secondary, consisting of a white primary and light yellow secondary.

Observed:

38 Psc: page 63 — A very close and equal pair of yellow stars.

Observed:

77 Psc: page 65 — A wide, fairly bright pairing of two yellow-white stars, separated in brightness by nearly one magnitude.

Observed:

Alrisha: page 84 — An extremely tight pair of bright, white stars.

Observed:

STF 3019: page 64 — A balanced pair with a yellowish primary and white secondary.

Observed:

STF 8: page 53 — A yellowish primary with a close and faint secondary.

Observed:

Struve 3009: page 65 — A close combination of an orange primary close to a 2 magnitude fainter secondary. The secondary at magnitude 8.76 is too faint to show much color in smaller scopes, but some report it to be be blue.

Observed:

Zeta Psc: page 64 — A widely separated pair of closely matched bright white stars.

Observed:

Piscis Austrinus

Dunlop 241: page 41 — A bright orange primary separated distantly from a moderate secondary.

Observed:

H 6 119: page 45 — An orange primary distantly separated from a somewhat fainter companion. The secondary has a tightly bound little companion.

Observed:

Puppis

DUN 23: page 89 — An equal pair of yellow stars, very closely separated.

Observed:

DUN 59: page 117 — An easily separated pair of fairly bright, blue stars.

Observed:

Kappa Pup: page 113 — A close pair of brilliant, bluish stars.

Observed:

NO Pup: page 116 — A balanced pair or fairly bright stars, the brighter being bluish and the companion white.

Observed:

STF 1121: page 122 — A close and equal pair of bluish stars.

Observed:

Y Pup: page 89 — A bright yellow-orange primary easily separated from a very slightly bluish secondary.

Observed:

Pyxis

HJ 4166: page 113 — A white primary easily separated from a very tightly separated unequal pair.

Observed:

Kappa Pyx: page 123 — A brilliant orange primary with a tightly bound very faint companion.

Observed:

Sagitta

H N 84: page 206 — A wide pair with a strongly orange primary and fainter blue companion.

Observed:

Zet Sge: page 209 — A bright white star with a relatively dim companion, closely separated.

Observed:

Sagittarius

Dunlop 219: page 170 — A yellow primary with two widely separated companions, one extremely faint.

Observed:

Eta Sgr: page 169 — A trio of stars, a brilliant red primary and very close secondary are distantly separated from a very faint third component.

Observed:

H N 40: page 177 — A close trio of stars, none of which are very bright. The primary is blue.

Observed:

HJ 5188: page 190 — A complex of 6 stars, centered on a fairly bright white primary. The widely separated C component is moderately bright, but the remaining four members are all faint.

Observed:

PZ 6: page 168 — A bright red star with a fairly bright, yellow companion close by.

Observed:

RS Sgr: page 169 — A very wide pair with a bright, blue primary and a fairly faint secondary.

Observed:

Zeta Sge: page 205 — A bright yellow primary with a much fainter blue secondary.

Observed:

Scorpius

Antares: page 148 — A fiercely brilliant and intensely red primary with a very close, bright, blue or green companion.

Observed:

HJ 4962: page 168 — A bright blue star with a close but faint blue companion.

Observed:

Nu Sco: page 157 — A bright, extremely tight and balanced pair of blue stars.

Observed:

Struve 1999: page 155 — An easily separated and well balanced pair of deep yellow stars.

Observed:

Xi Sco: page 155 — Xi Sco (Grafias) is a triple star system. The yellow primary can be split by larger telescopes into a an equal pale yellow pair with a separation of 1.1". Lesser telescopes show a single yellow point distantly separated from a fairly apparent blue companion.

Observed:

Sculptor

HJ 3377: page 56 — A widely separated pair with an orange primary and a faint companion.

Observed:

HJ 5429: page 41 — An unequal and widely separated pair with a strongly red primary.

Observed:

LAL 193: page 60 — A close and balanced pair of yellowish stars.

Observed:

Tau Scl: page 69 — A bright yellowish primary with an almost inseparable companion. Requires a large telescope.

Observed:

Scutum

S Sct: page 176 — A deep red primary with an easily separated, tiny orange companion.

Observed:

STF 2306: page 180 — A deep yellow primary with a balanced secondary, closely separated.

Observed:

Struve 2313: page 179 — A close yellow and blue pair.

Observed:

Serpens

AC 11: page 175 — A balanced but difficult white-white double with a tiny separation.

Observed:

Delta Ser: page 162 — A reasonably balanced and very tight yellow-yellow pair.

Observed:

Eta Ser: page 178 — The primary is a a brilliant orange but the companion is very faint indeed.

Observed:

STF 2204: page 177 — An equal pair of easily separated white stars.

Observed:

STT300: page 164 — An easily separated yellow-blue pair, although the B component is quite dim.

Observed:

Struve 1919: page 163 — A less bright and quite wide yellow-blue pairing.

Observed:

Struve 1987: page 165 — A white primary with a somewhat fainter blue companion, easily separated.

Observed:

Theta Ser: page 185 — A widely separated pair of bright blue stars.

Observed:

Sextans

35 Sex: page 146 — An unusual orange-yellow pairing, reasonably balanced and closely separated.

Observed:

HJ 2530: page 129 — An bright equal pair, extremely widely separated. Best enjoyed in the finder scope!

Observed:

Taurus

30 Tau: page 84 — An unusual blue-red color combination, with reasonable separation, but the faint red companion needs a larger telescope to bring out its color.

Observed:

Struve 422: page 85 — A bright yellow primary close to a relatively faint orange companion.

Observed:

Struve 495: page 83 — A close pair of yellow stars. The primary is almost three magnitudes brighter than the secondary, meaning it is roughly 15 times brighter.

Observed:

Struve 670: page 108 — A balanced, very close pair; the primary is bluish.

Observed:

Theta Tau: page 82 — A balanced blue-yellow pair of stars, with a barely visible distant companion.

Observed:

Triangulum Australe

RMK 20: page 151 — An extremely tight, equal pair of fairly bright, white stars.

Observed:

SLR 11: page 151 — A fairly bright blue primary with an almost inseparable companion.

Observed:

Tucana

Beta1 Tuc: page 44 — An equal pair of very bright, easily separated stars; Beta1 is bluish, while Beta2 is white.

Observed:

COO 3: page 48 — A fairly bright yellowish primary with a tightly bound secondary.

Observed:

Delta Tuc: page 193 — A brilliant bluish primary close to a fairly faint secondary.

Observed:

GLI 289: page 49 — A yellow primary very close to a faint secondary.

Observed:

HJ 3408: page 45 — An easily separated pair of yellow stars.

Observed:

HJ 3416 AB: page 44 — A close and equal pair of yellowish stars.

Observed:

HJ 3426: page 31 — An extremely close pairing, with a fairly bright white primary and moderate secondary.

Observed:

I 340: page 49 — A unbalanced sub-arcsecond pairing dominated by its orange primary.

Observed:

Kappa Tuc: page 35 — A tight pair of light yellow and yellow stars distantly separated from an extremely tight pair of orange suns.

Observed:

Lam1 Tuc: page 31 — A balanced and fairly bright pair of yellow stars, easily separated.

Observed:

Vela

DUN 70: page 114 — A bright blue primary with a very close and fairly bright secondary.

Observed:

Gamma Vel: page 117 — An extremely brilliant blue primary widely separated from a brilliant blue companion.

Observed:

HJ 4191: page 114 — A bright, bluish primary with a close faint companion.

Observed:

HJ 4220: page 115 — A well-balanced pair, with a bright bluish primary and a tightly bound, fairly bright companion.

Observed:

HJ 4330: page 137 — A bright orange primary widely separated from a fairly faint white secondary.

Observed:

HJ 4332: page 134 — A white primary widely separated from a faint secondary.

Observed:

KL Vel: page 116 — A bright bluish star with a fairly bright and very close companion.

Observed:

Mu Vel: page 134 — A very brilliant yellow primary with a bright yellow companion, very tightly separated.

Observed:

Virgo

Phi Vir: page 154 — A very close and unequal yellow-blue pair.

Observed:

Porrima: page 140 — An almost perfectly equal and very close pair of brilliant yellowish stars.

Observed:

STF 1627: page 140 — An equal and easily separated pair of fairly bright white stars.

Observed:

Volans

Epsilon Vol: page 38 — A close, unbalanced pair with a very bright blue primary and white secondary.

Observed:

Gam2 Vol: page 33 — A brilliant orange primary easily separated from a bright yellowish companion.

Observed:

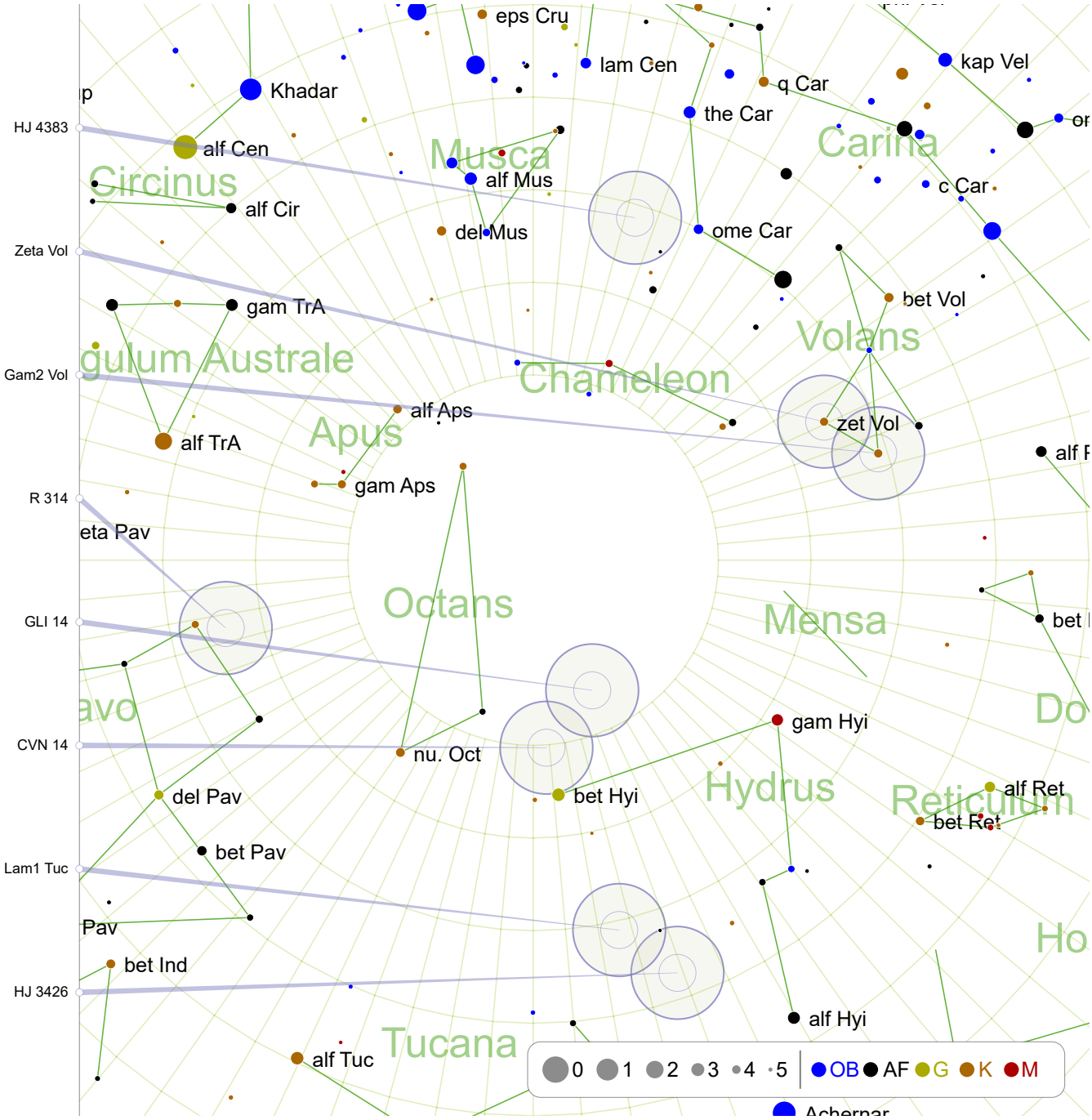
HJ 3997: page 37 — An equal and extremely tight pair of bluish stars.

Observed:

Zeta Vol: page 34 — A very bright orange primary star comfortably separated from a much fainter companion.

Observed:

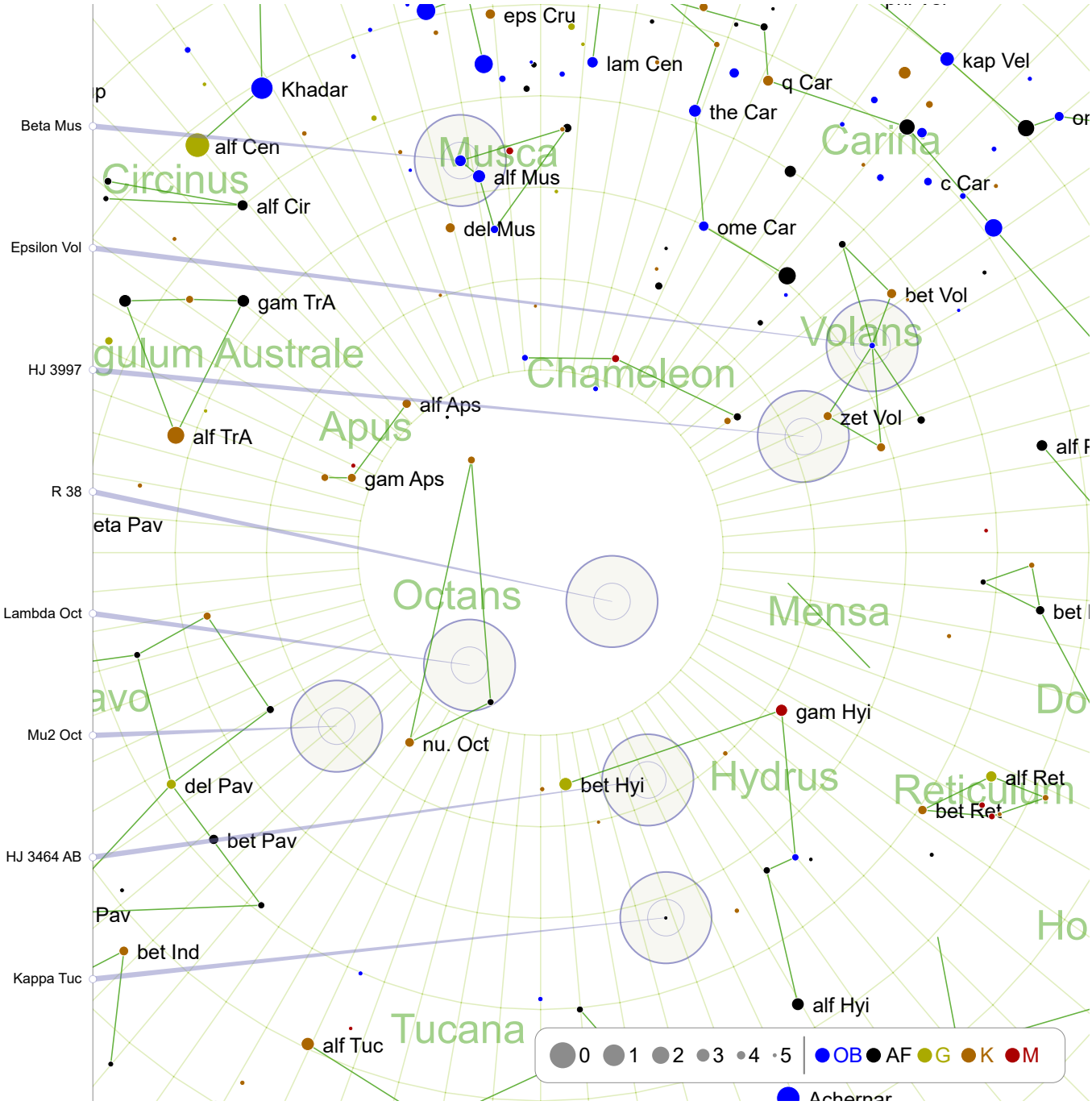
Southern Circumpolar Sky (1)



HJ 3426: page 31 | Lam1 Tuc: page 31 | CVN 14: page 32 | GLI 14: page 32

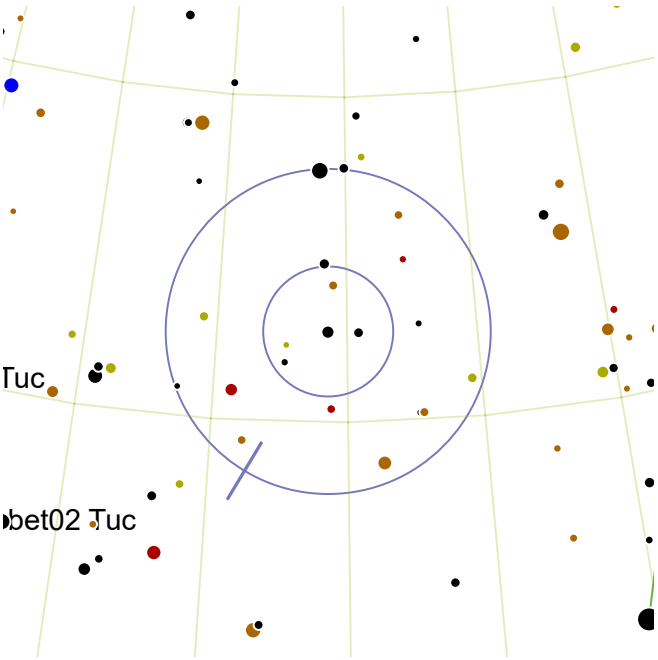
R 314: page 33 | Gam2 Vol: page 33 | Zeta Vol: page 34 | HJ 4383: page 34

Southern Circumpolar Sky (2)



Kappa Tuc: page 35 | HJ 3464 AB: page 35 | Mu2 Oct: page 36 | Lambda Oct: page 36

R 38: page 37 | HJ 3997: page 37 | Epsilon Vol: page 38 | Beta Mus: page 38



HJ 3426

RA: 19.27° | 1h 17.09' — DEC: -66.4° | -66° 23'

Magnitude: 6.4 | 8.3

Separation: 2.4"

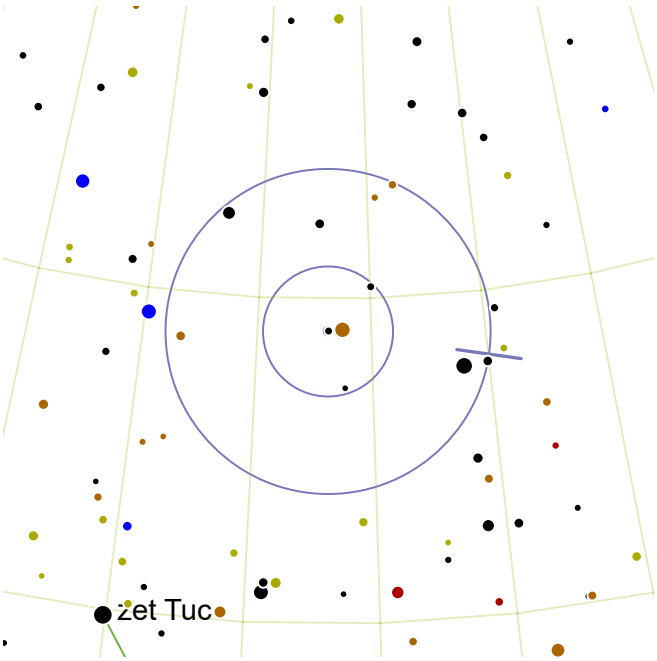
Position Angle: 329°

SAO 248350 | HIP 5992 | GDR2 35297588480

An extremely close pairing, with a fairly bright white primary and moderate secondary.

One finder circle SW from magnitude 3.02 alf Hyi. One and a half finder circles SSW from magnitude 0.6 Achernar.

The system is 307 light-years from Earth. Globular cluster Caldwell 104 (mag. 6.6) is one finder circle to the south, and the Small Magellanic Cloud is a further two degrees south of that.



Lam1 Tuc

RA: 13.1° | 0h 52.4' — DEC: -69.5° | -69° 29'

Magnitude: 6.7 | 7.4

Separation: 20.4"

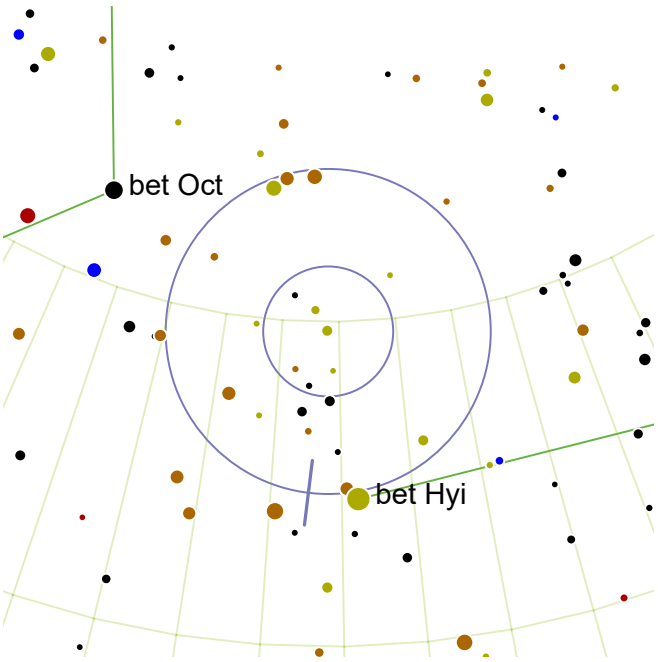
Position Angle: 82°

SAO 248269 | HIP 4084 | GDR2 92046507520

A balanced and fairly bright pair of yellow stars, easily separated.

One and a half finder circles NNE from magnitude 2.9 bet Hyi. Two finder circles SSW from magnitude 3.02 alf Hyi.

Globular cluster Caldwell 104 (mag. 6.6) is two degrees to the south east. The Small Magellanic Cloud lies just beyond the southern edge of the finder circle.



CVN 14

RA: 4.05° | 0h 16.2' — DEC: -79.85° | -79° 50'

Magnitude: 4.9 | 9.9

Separation: 4.0"

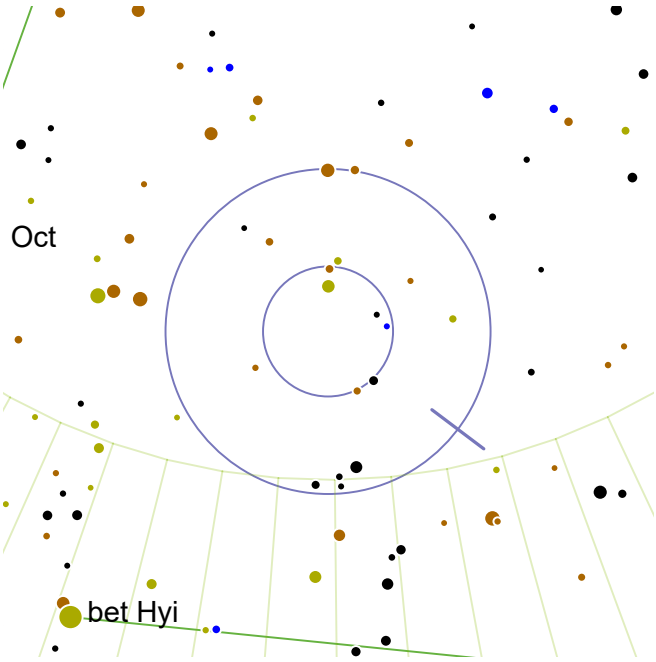
Position Angle: 353°

SAO 258219 | HIP 1292

A brilliant yellow primary with a very close red companion.

Half a finder circle S from magnitude 2.9 bet Hyi. Two finder circles SW from magnitude 3.17 gam Hyi.

On the southern edge of the finder, Gamma 1, 2 and 3 Oct form a nice low power triple.



GLI 14

RA: 24.4° | 1h 37.59' — DEC: -82.28° | -82° 16'

Magnitude: 7.6 | 8.4

Separation: 5.5"

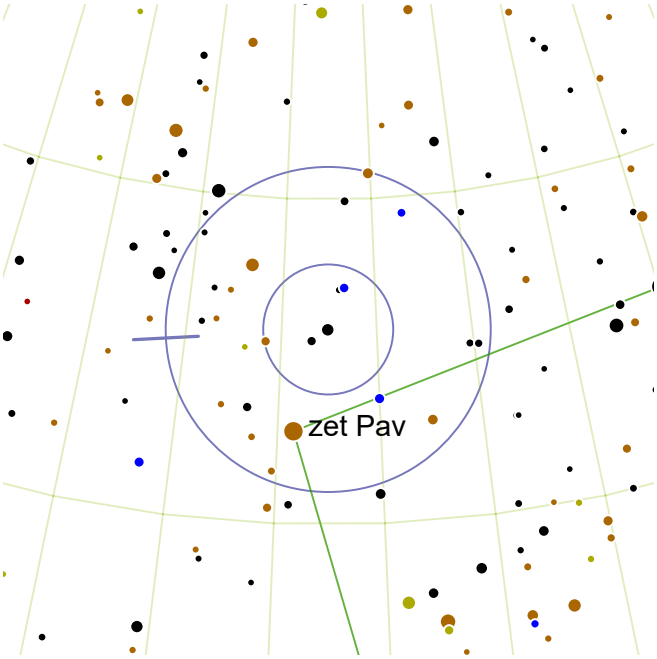
Position Angle: 53°

SAO 258270 | HIP 7560 | GDR2 81150415616

A balanced, close pair with an orange primary.

One finder circle SSE from magnitude 2.9 bet Hyi. Two finder circles SSW from magnitude 3.17 gam Hyi.

It is unknown if this pair are gravitationally bound. The primary is 400 light-years from Earth.



R 314

RA: 282.45° | 18h 49.79' — DEC: -73.0° | -73° 0'

Magnitude: 6.2 | 8.1

Separation: 2"

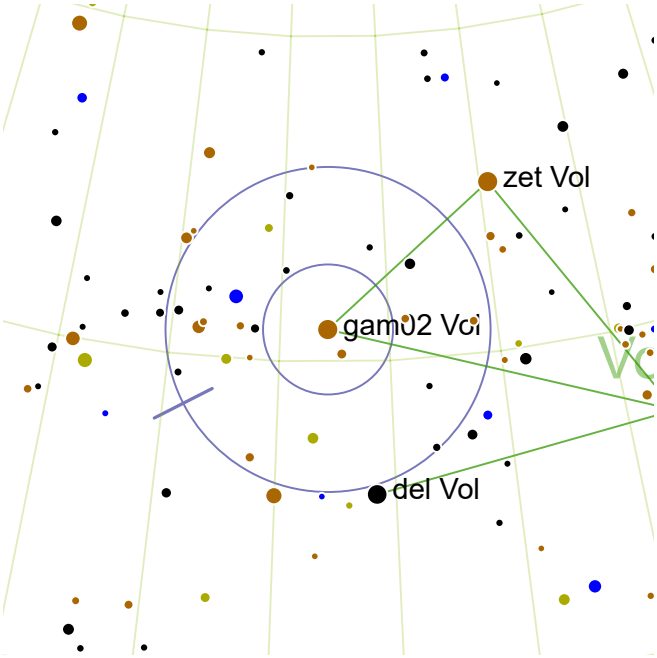
Position Angle: 273°

SAO 257630 | HIP 92394 | GDR2 13847155712

A very tight double consisting of a fairly bright blueish primary and a significantly fainter secondary.

One and a half finder circles SW from magnitude 3.64 del Pav. One and a half finder circles NEE from magnitude 3.9 gam Aps.

Discovered by H C Russell, a prolific double star observer and a pioneer of photographic astronomy; he discovered over 500 southern hemisphere double stars.



Gam2 Vol

RA: 107.2° | 7h 8.8' — DEC: -70.5° | -70° 29'

Magnitude: 3.9 | 5.4

Separation: 13.7"

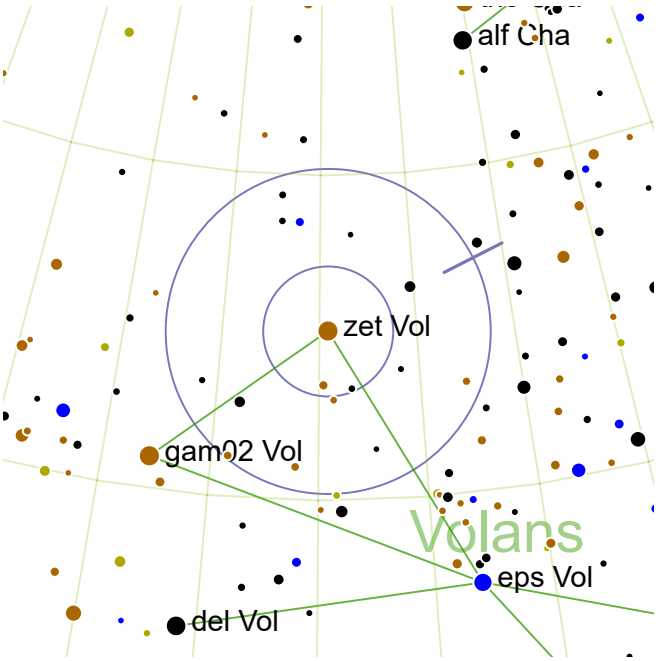
Position Angle: 297°

SAO 256374 | HIP 34481 | GDR2 95348357120

A brilliant orange primary easily separated from a bright yellowish companion.

Gam2 Vol is a bright star in Volans. Half a finder circle NW from magnitude 3.89 zet Vol.

This physical double is 140 light-years from Earth. The brighter K-class giant is Gamma 2 Volantis, while the companion, a main sequence F star, is Gamma 1 Volantis.



Zeta Vol

RA: 115.45° | 7h 41.8' — DEC: -72.6° | -72° 35'

Magnitude: 3.9 | 9

Separation: 16"

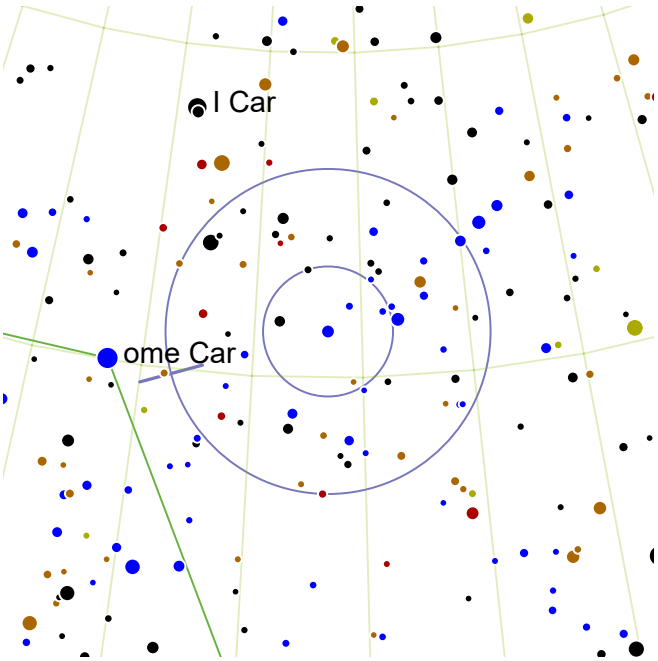
Position Angle: 117°

SAO 256438 | HIP 37504 | GDR2 88430032256

A very bright orange primary star comfortably separated from a much fainter companion.

Zeta Vol is a bright star in Volans. Two and a half finder circles SSW from magnitude 3.98 c Car.

The system is also known as DUN 57, after its discoverer J Dunlop (1829). The primary is an orange giant 11 times the radius of the Sun. With Zeta Volantis centered, the double HJ 3997 lies to the southern edge of the finder circle.



HJ 4383

RA: 163.43° | 10h 53.7' — DEC: -70.72° | -70° 42'

Magnitude: 6.6 | 7.2

Separation: 1.6"

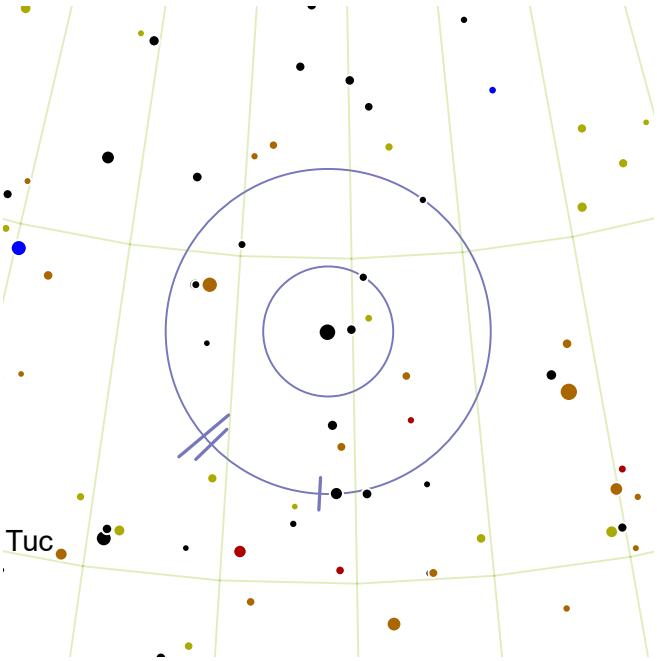
Position Angle: 285°

SAO 256770 | HIP 53272 | GDR2 70702032640

An extremely tight and relatively balanced pair of bluish stars.

Half a finder circle SEE from magnitude 3.56 ome Car. One finder circle SW from magnitude 3.8 lam Mus.

The brilliant "Southern Pleiades" open cluster (IC 2602) is one finder circle north of this double. This cluster, also known as the Theta Carinae cluster after its brightest member, is the third brightest open cluster in Earth's sky.



Kappa Tuc

RA: 18.95° | 1h 15.79' — DEC: -68.88° | -68° 52'

Magnitude: 4.9 | 7.5 | 7.8 | 8.3

Separation: 319" | 4.6" | 1.0"

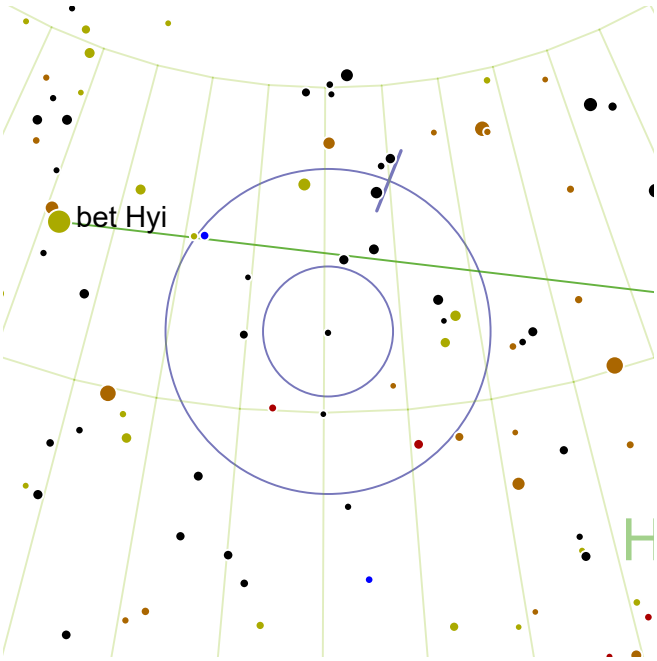
Position Angle: 310° | 314° | 357°

SAO 248346 | HIP 5896

A tight pair of light yellow and yellow stars distantly separated from an extremely tight pair of orange suns.

One and a half finder circles SSW from magnitude 3.02 alf Hyi. Two finder circles S from magnitude 0.6 Achernar.

A fine triple system, even quadruple on perfect nights with a large telescope. The system is in our stellar neighborhood, being a mere 68 light-years from Earth.



HJ 3464 AB

RA: 25.25° | 1h 41.0' — DEC: -76.25° | -76° 14'

Magnitude: 8.1 | 9.9

Separation: 2.7"

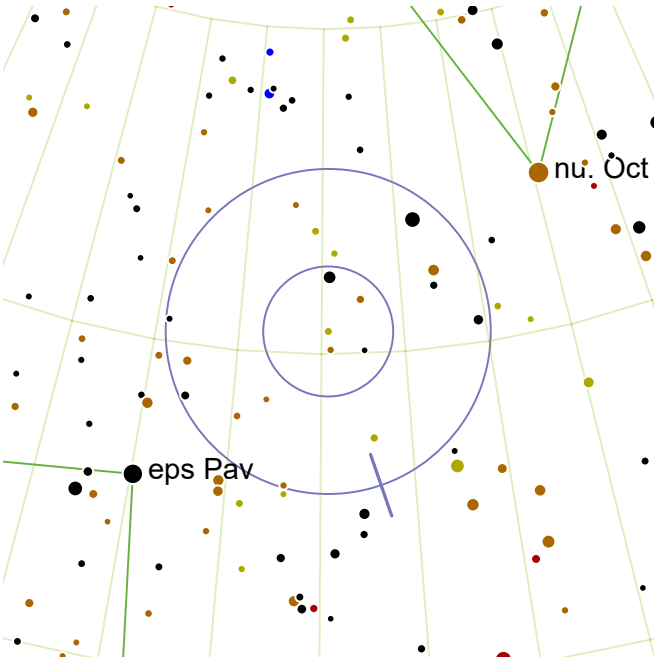
Position Angle: 158°

SAO 255803 | HIP 7853

A yellowish primary with very close, faint secondary.

Half a finder circle E from magnitude 2.9 bet Hyi. One and a half finder circles SWW from magnitude 3.17 gam Hyi.

The Small Magellanic Cloud is one finder circle to the north west.



Mu2 Oct

RA: 310.4° | 20h 41.59' — DEC: -75.35° | -75° 20'

Magnitude: 6.5 | 7.1

Separation: 17"

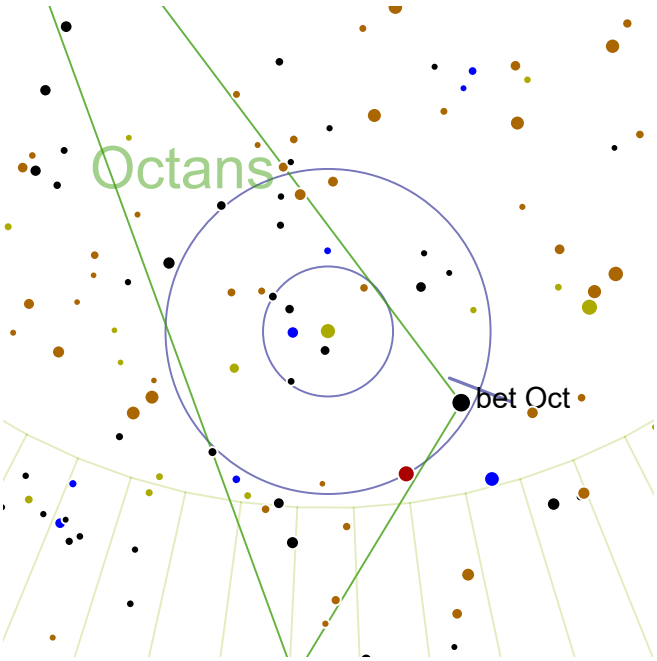
Position Angle: 19°

SAO 257836 | HIP 102125 | GDR2 18965772416

A well balanced and easily separated pair of yellow suns.

Half a finder circle NWW from magnitude 3.74 nu. Oct. One and a half finder circles S from magnitude 3.6 bet Pav.

The pair are quite similar to our Sun, although somewhat brighter (the primary is 3.7 times the Sun's luminosity). Mu2 Oct has a massive exoplanet at least 6.9 times Jupiter's mass.



Lambda Oct

RA: 327.73° | 21h 50.9' — DEC: -82.72° | -82° 42'

Magnitude: 5.5 | 7.7

Separation: 3.1"

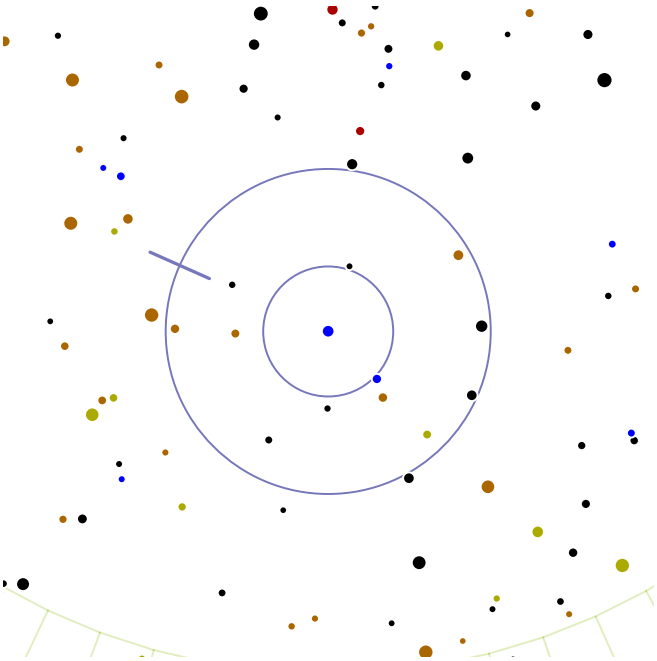
Position Angle: 69°

SAO 258914 | HIP 107843 | GDR2 63360976256

And very close pair with a bright yellow-orange primary and a white companion.

One finder circle S from magnitude 3.74 nu. Oct. One and a half finder circles SSW from magnitude 2.9 bet Hyi.

The primary star is a giant star 102 times the luminosity of the sun. It is also thirteen times the diameter of the Sun.



R 38

RA: 55.63° | 3h 42.5' — DEC: -85.27° | -85° 15'

Magnitude: 6.7 | 8.2

Separation: 2.1"

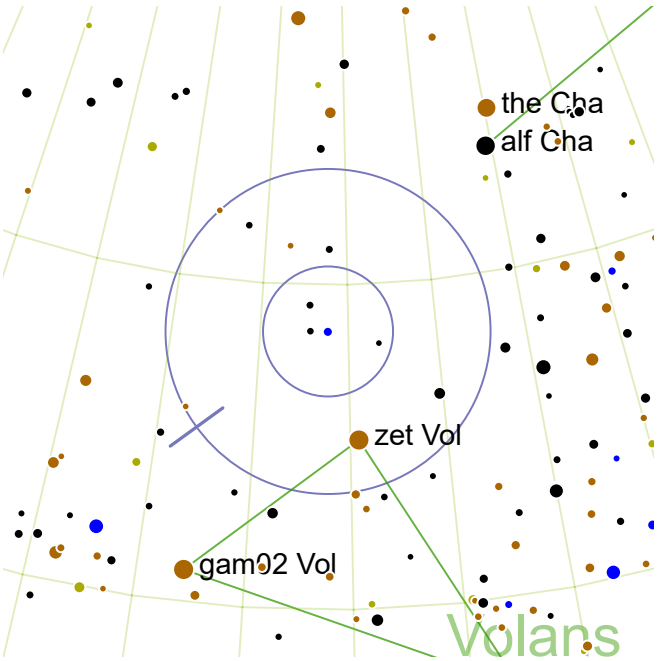
Position Angle: 246°

SAO 258356 | HIP 17328 | GDR2 82770275968

A very tight double, but the moderately bright blueish primary does not overwhelm the fainter secondary.

Two finder circles SSE from magnitude 2.9 bet Hyi. Two finder circles S from magnitude 3.17 gam Hyi.

The "R" code in the Washington Double Star Catalog refers to H C Russell's observations from Sydney in the period 1871 to 1881.



HJ 3997

RA: 113.85° | 7h 35.39' — DEC: -74.28° | -74° 16'

Magnitude: 7.0 | 7.1

Separation: 1.9"

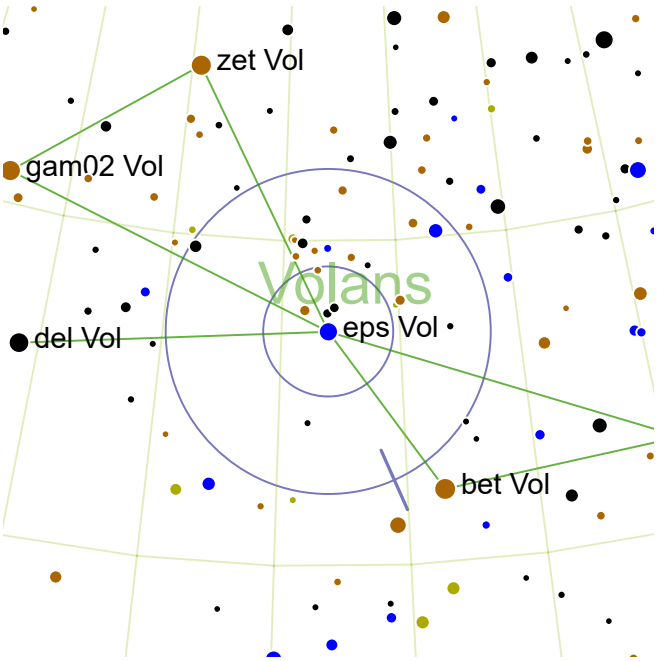
Position Angle: 306°

SAO 256428 | HIP 36914 | GDR2 01474858624

An equal and extremely tight pair of bluish stars.

One degree SSW from magnitude 3.89 zet Vol.

Bright Zeta Volantis is on the northern edge of the finder circle; it is also a fine double



Epsilon Vol

RA: 121.98° | 8h 7.89' — DEC: -68.62° | -68° 36'

Magnitude: 4.5 | 7.4

Separation: 5.4"

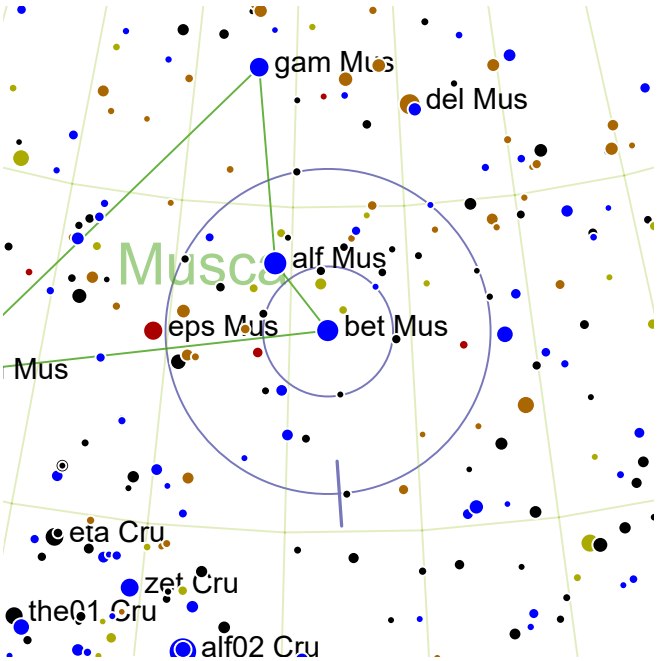
Position Angle: 24°

SAO 250128 | HIP 39794 | GDR2 08289935232

A close, unbalanced pair with a very bright blue primary and white secondary.

Half a finder circle SSW from magnitude 3.65 bet Vol. Half a finder circle NNE from magnitude 3.89 zet Vol.

This system is composed of four stars. The primary is actually a spectroscopic pair of blue B-class stars, while the secondary is a spectroscopic pair of white A-class stars.



Beta Mus

RA: 191.58° | 12h 46.29' — DEC: -68.1° | -68° 5'

Magnitude: 3.9 | 4.2

Separation: 1.3"

Position Angle: 4°

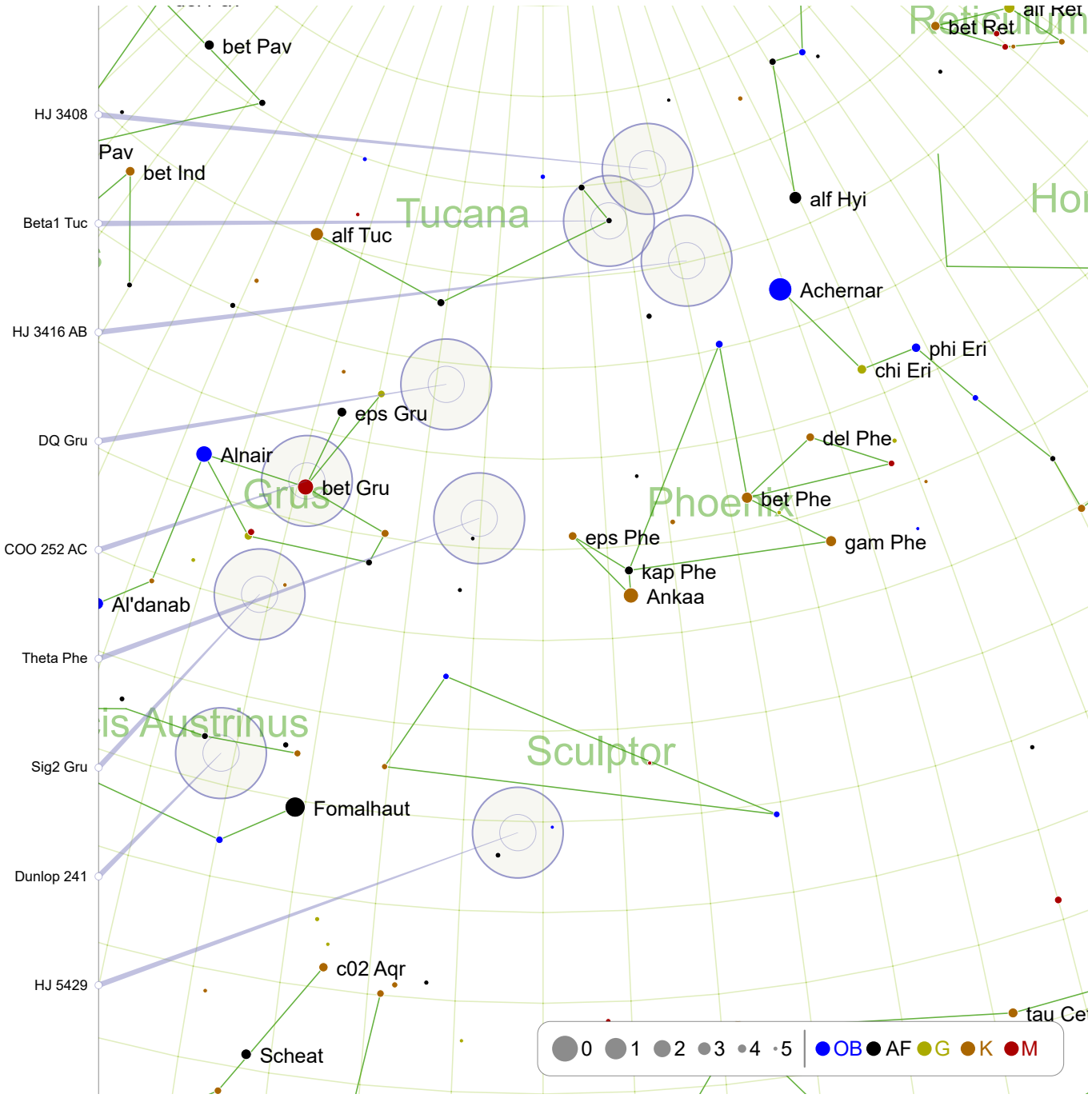
SAO 252019 | HIP 62322 | GDR2 71032914944

A sub-arcsecond pair of equally bright bluish stars.

Beta Mus is a bright star in Musca. One degree NE from magnitude 2.94 alf Mus.

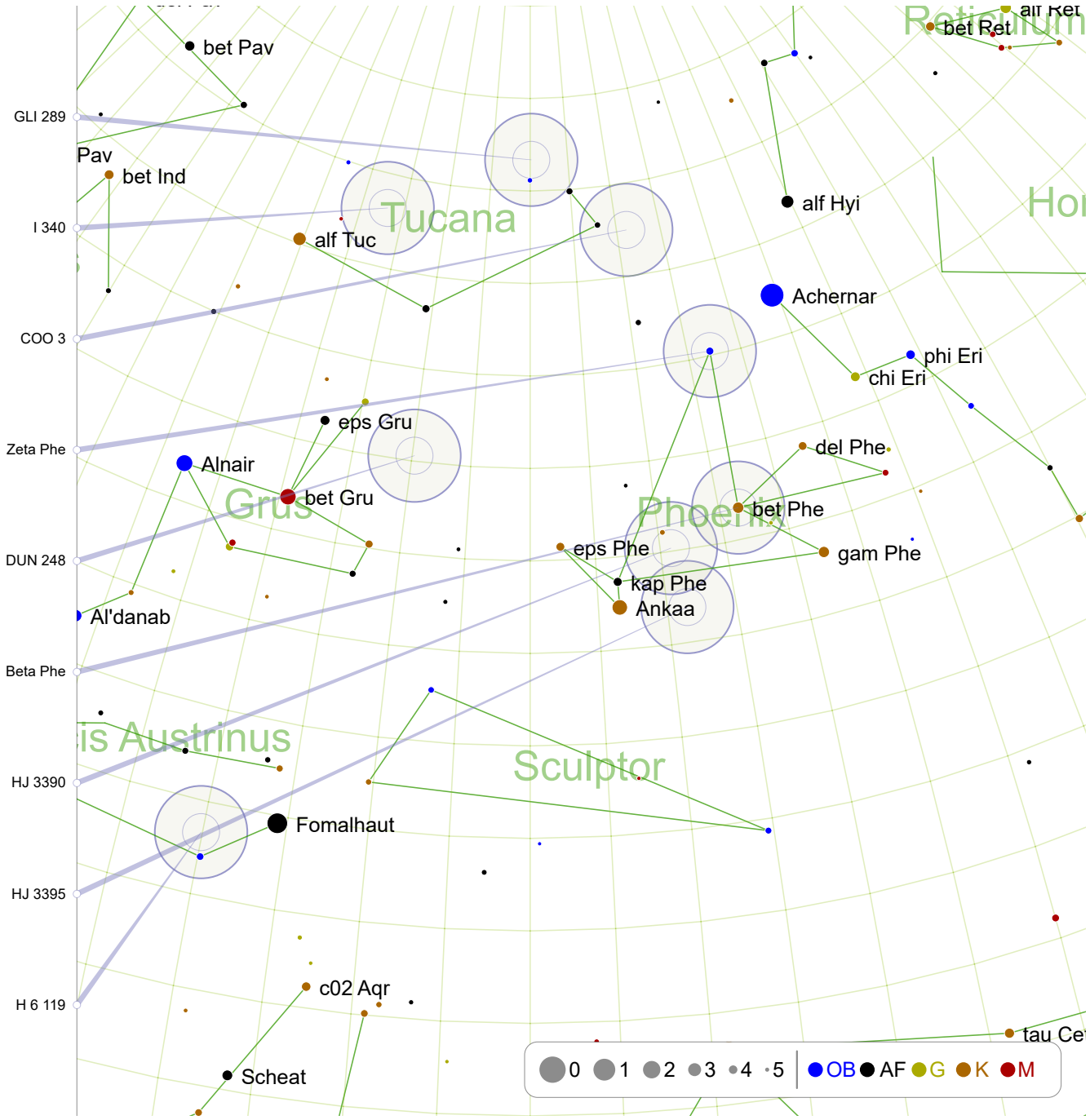
This pair is only possible in larger telescopes on nights of excellent seeing. The pair orbit each other in roughly 194 years. Beta Muscae is a member of the Scorpius-Centaurus Association, and in addition is a runaway star, meaning it is moving significantly faster than the average velocity of galactic rotation.

Early Spring - Looking South (1)

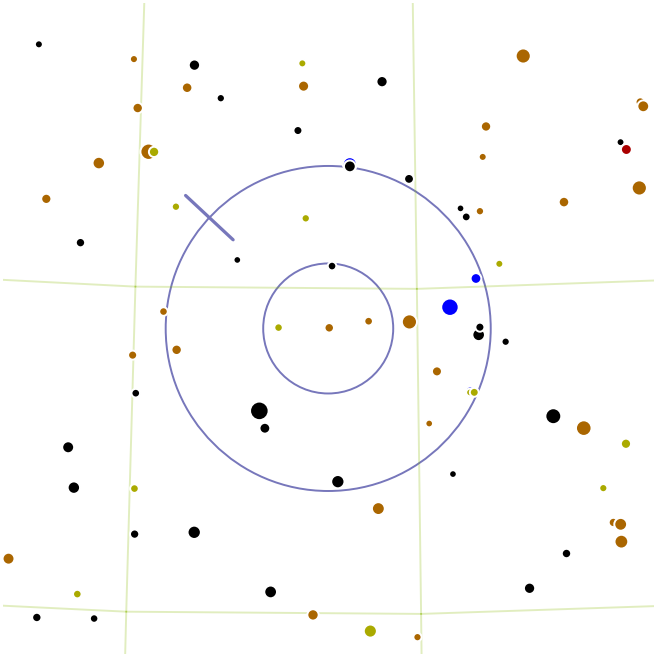


HJ 5429: page 41
Dunlop 241: page 41
Sig2 Gru: page 42
Theta Phe: page 42
COO 252 AC: page 43
DQ Gru: page 43
HJ 3416 AB: page 44
Beta1 Tuc: page 44
HJ 3408: page 45

Early Spring - Looking South (2)



H 6 119: page 45
HJ 3395: page 46
HJ 3390: page 46
Beta Phe: page 47
DUN 248: page 47
Zeta Phe: page 48
COO 3: page 48
I 340: page 49
GLI 289: page 49



HJ 5429

RA: 358.43° | 23h 53.7' — DEC: -29.4° | -29° 23'

Magnitude: 7.5 | 10.6

Separation: 31.3"

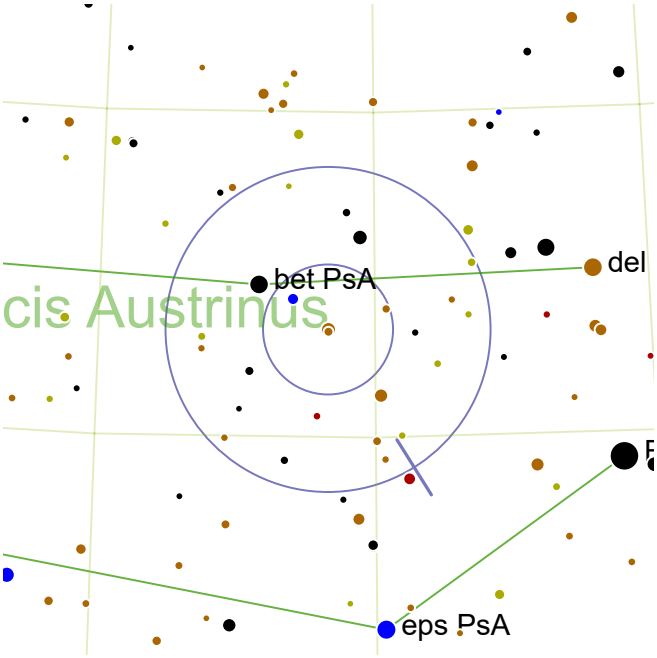
Position Angle: 227°

SAO 192224 | HIP 117822 | GDR2 32441844352

An unequal and widely separated pair with a strongly red primary.

Two finder circles E from magnitude 1.29 Fomalhaut.

There are several galaxies nearby. With this double centered, NGC 7755 is in the south-western quarter of the finder. Just beyond the southern edge of the finder circle is Bond's Galaxy (NGC 7793) which at magnitude 9.1 is 2.2 magnitudes brighter than NGC 7793.



Dunlop 241

RA: 339.15° | 22h 36.59' — DEC: -31.67° | -31° 39'

Magnitude: 5.9 | 7.6

Separation: 93.4"

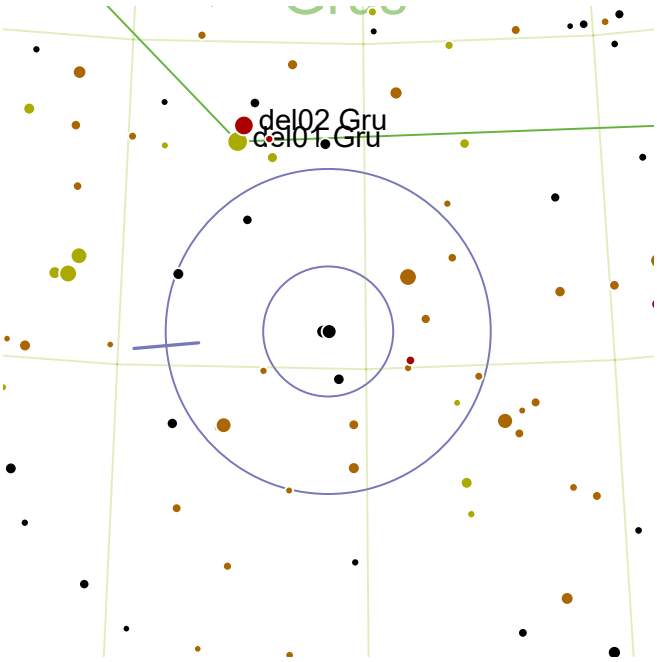
Position Angle: 32°

SAO 213948 | HIP 111600 | GDR2 54099267456

A bright orange primary separated distantly from a moderate secondary.

Half a finder circle SWW from magnitude 1.29 Fomalhaut. Two finder circles NEE from magnitude 3.16 Al'danab.

The primary is a K-class giant star 358 light-years from Earth. The secondary is an unrelated background star.



Sig2 Gru

RA: 339.24° | 22h 36.95' — DEC: -40.58° | -40° 34'

Magnitude: 5.9 | 6.3

Separation: 337.9"

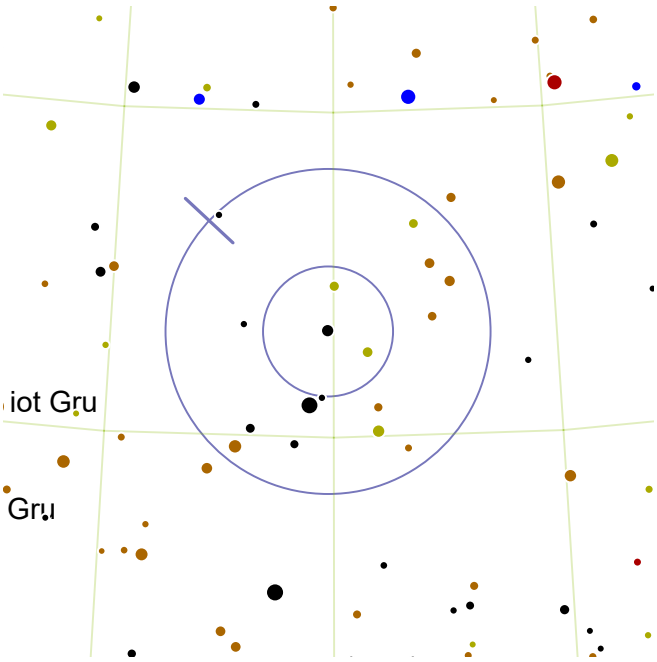
Position Angle: 275°

SAO 231217 | HIP 111643 | GDR2 25165622144

An equal pair of bright white stars, very distantly separated.

One finder circle N from magnitude 2.24 bet Gru. One and a half finder circles NE from magnitude 2.16 Alnair.

Sig2 Gru is a very close double, with a magnitude 10.0 companion separated by 2.7".



Theta Phe

RA: 354.88° | 23h 39.5' — DEC: -46.63° | -46° 37'

Magnitude: 6.5 | 7.3

Separation: 3.9"

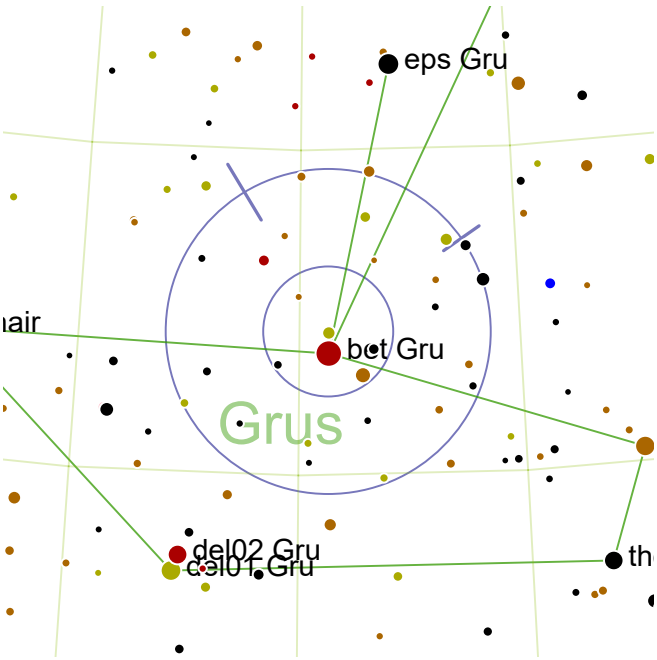
Position Angle: 227°

SAO 231719 | HIP 116737 | GDR2 31089676800

A white primary with a slightly fainter yellowish secondary, very closely separated.

One finder circle SWW from magnitude 3.94 eps Phe.

A dim galaxy shares the finder view, two degrees to the north west: magnitude 11.0 IC 5328.



COO 252 AC

RA: 340.65° | 22h 42.59' — DEC: -47.22° | -47° 12'

Magnitude: 6.1 | 9.5 | 11.1

Separation: 45.3" | 7.1"

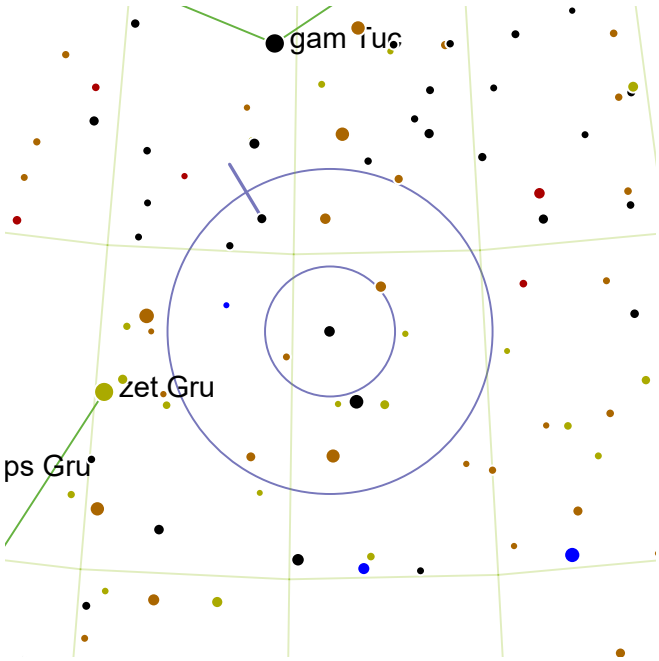
Position Angle: 211° | 125°

SAO 231257 | HIP 112117

A bright yellow primary with a very faint close companion, and somewhat more distant and slightly less faint third member.

Less than half a degree S from magnitude 2.24 bet Gru. One finder circle E from magnitude 2.16 Alnair.

Nearby Beta Gruis (proper name Tiaki) is a red, variable star with magnitude slowly varying between roughly 2.0 and 2.3.



DQ Gru

RA: 350.98° | 23h 23.9' — DEC: -53.82° | -53° 48'

Magnitude: 6.1 | 7.1

Separation: 26.4"

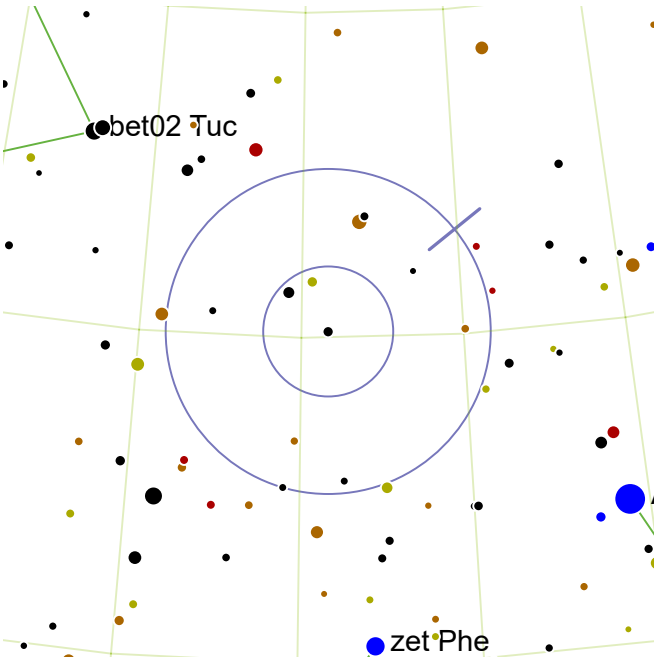
Position Angle: 211°

SAO 247854 | HIP 115510 | GDR2 65274954496

A bright and easily separated pair of white stars.

One finder circle SEE from magnitude 3.69 eps Gru. One and a half finder circles SE from magnitude 2.24 bet Gru.

The hot white giant primary is 387 light-years from Earth.



HJ 3416 AB

RA: 15.83° | 1h 3.29' — DEC: -60.1° | -60° 5'

Magnitude: 7.6 | 7.7

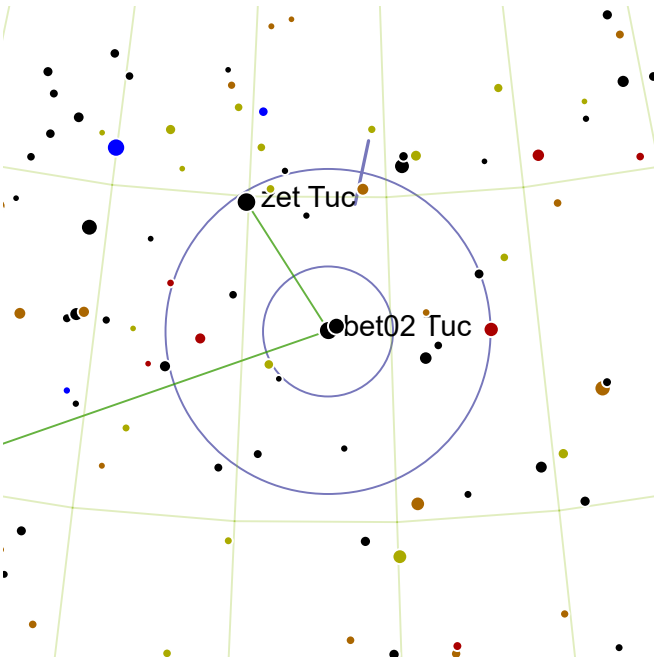
Separation: 5.1"

Position Angle: 129°

SAO 248309 | HIP 4934 | GDR2 43079066752

A close and equal pair of yellowish stars.

One finder circle SW from magnitude 0.6 Achernar.



Beta1 Tuc

RA: 7.88° | 0h 31.5' — DEC: -62.95° | -62° 56'

Magnitude: 4.3 | 4.5

Separation: 27.1"

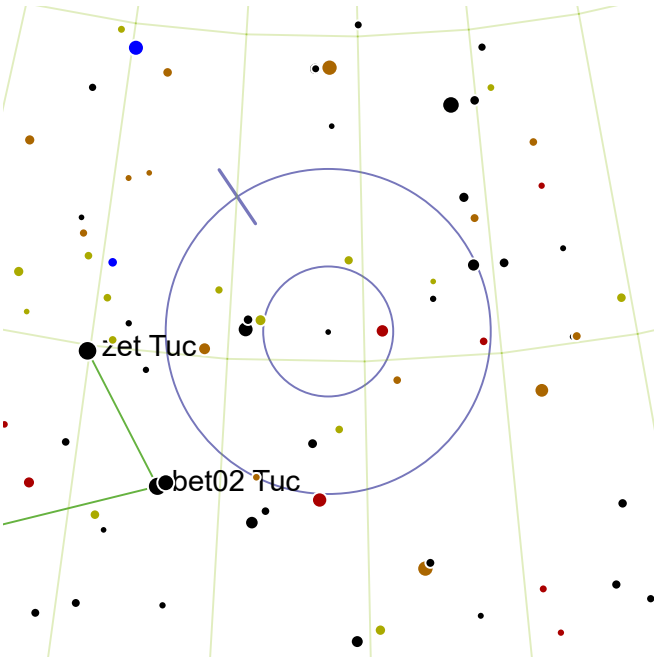
Position Angle: 168°

SAO 248201 | HIP 2484 | GDR2 34176620160

An equal pair of very bright, easily separated stars; Beta1 is bluish, while Beta2 is white.

One and a half finder circles SW from magnitude 0.6 Achernar.

The primary has a faint magnitude 13.5 companion (2.6" separation, position angle 153).



HJ 3408

RA: 13.68° | 0h 54.7' — DEC: -65.47° | -65° 27'

Magnitude: 8.0 | 9.5

Separation: 16.1"

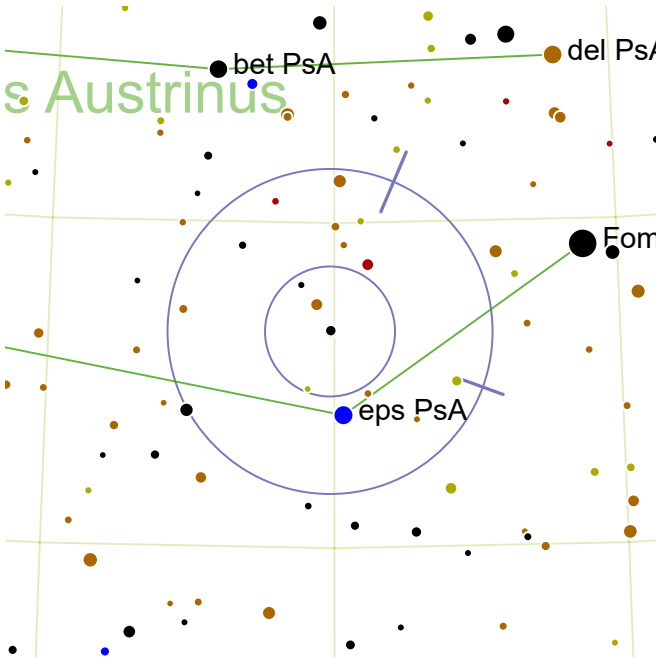
Position Angle: 214°

SAO 248280 | HIP 4273 | GDR2 16185020416

An easily separated pair of yellow stars.

One and a half finder circles SW from magnitude 3.02 alf Hyi. One and a half finder circles SSW from magnitude 0.6 Achernar.

The bright double Bet1 Tuc is one finder circle to the north west.



H 6 119

RA: 339.93° | 22h 39.7' — DEC: -28.33° | -28° 19'

Magnitude: 6.4 | 7.5 | 8.6

Separation: 86" | 3.1"

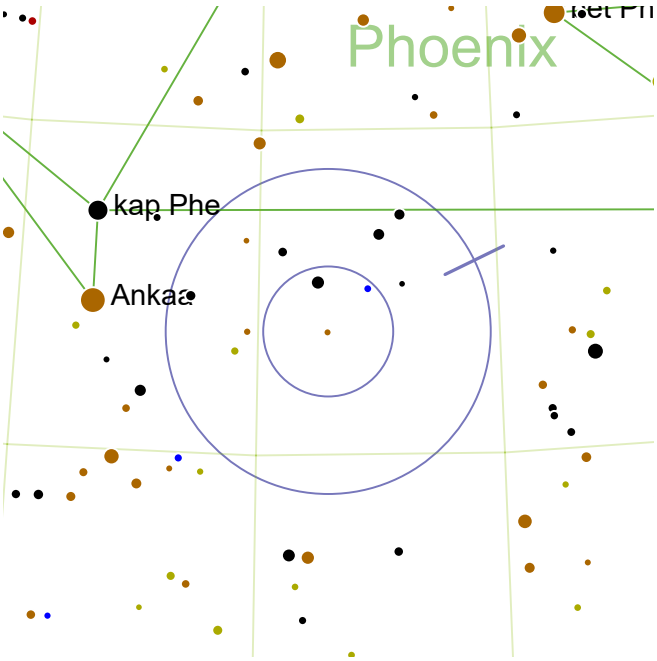
Position Angle: 157° | 70°

4.1° NWW from mag.1.29 Fomalhaut

An orange primary distantly separated from a somewhat fainter companion. The secondary has a tightly bound little companion.

Half a finder circle NWW from magnitude 1.29 Fomalhaut. Two and a half finder circles NE from magnitude 3.16 Al'danab.

This system is 367 light-years from Earth.



HJ 3395

RA: 11.45° | 0h 45.8' — DEC: -41.92° | -41° 54'

Magnitude: 8.5 | 9.1

Separation: 4.8"

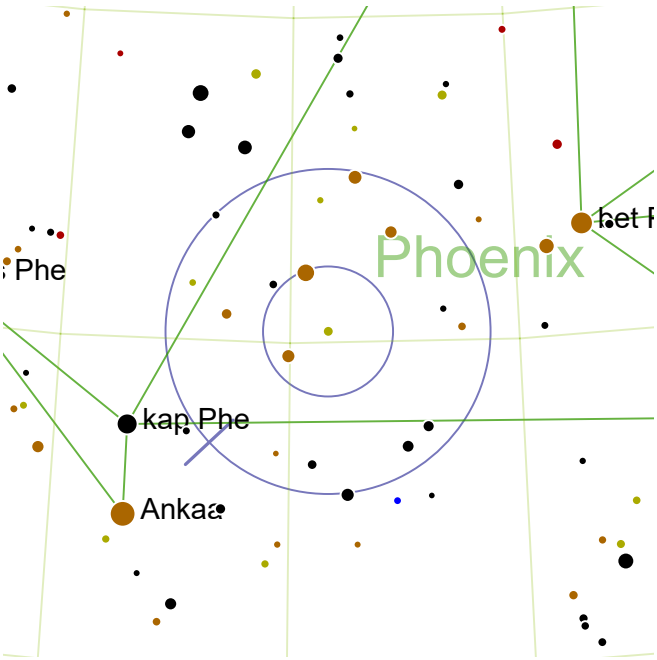
Position Angle: 116°

SAO 215231 | HIP 3588 | GDR2 75602213504

A close, faint pair with an orange primary and a slightly fainter red secondary.

Half a finder circle E from magnitude 2.44 Ankaa. Half a finder circle NEE from magnitude 3.9 kap Phe.

Only 51 light-years away, the pair is composed of a faint orange dwarf and an even fainter red dwarf.



HJ 3390

RA: 10.83° | 0h 43.3' — DEC: -45.18° | -45° 10'

Magnitude: 7.1 | 9.7

Separation: 14"

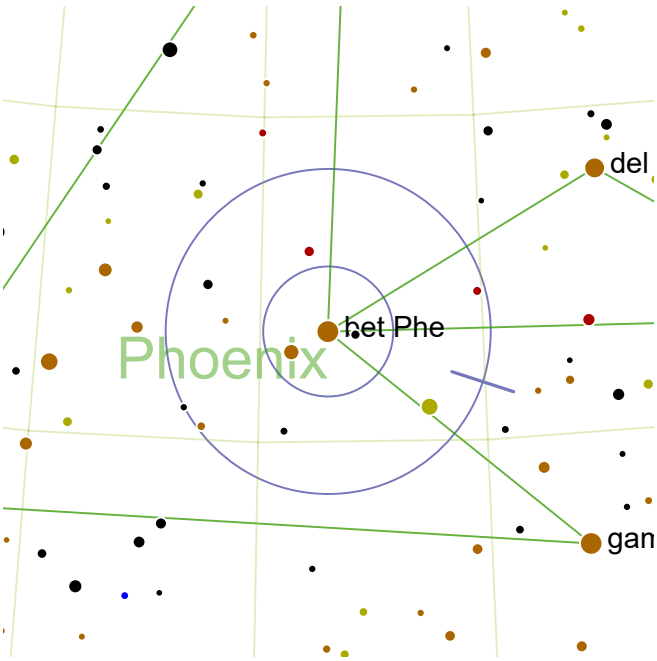
Position Angle: 313°

SAO 215208 | HIP 3397 | GDR2 18874792576

An yellow-orange primary with a faint white secondary, easily separated.

Half a finder circle SEE from magnitude 3.9 kap Phe. Half a finder circle NWW from magnitude 3.35 bet Phe.

The primary is an orange giant 514 light-years from Earth. The pair are gravitationally bound.



Beta Phe

RA: 16.52° | 1h 6.09' — DEC: -46.72° | -46° 42'

Magnitude: 4.1 | 4.2

Separation: 0.7"

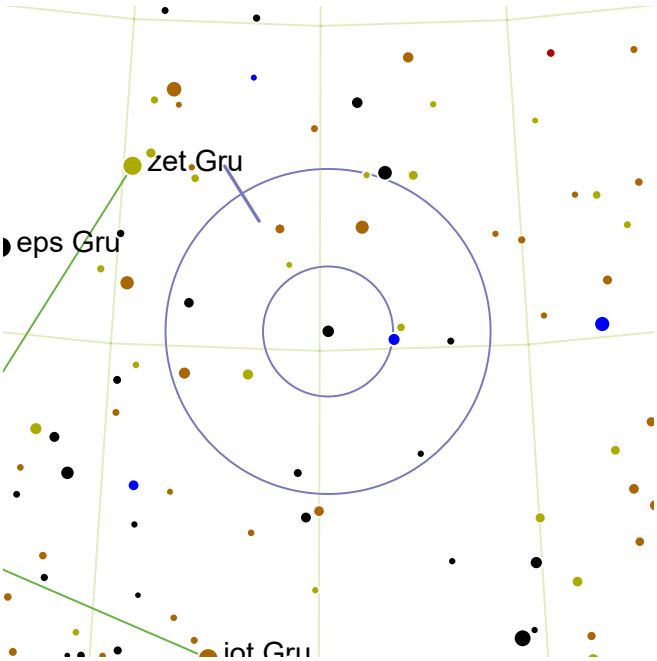
Position Angle: 72°

SAO 215365 | HIP 5165 | GDR2 24587749504

A equal and extremely tight pair of yellow stars.

Beta Phe is a bright star in Phoenix. One and a half finder circles E from magnitude 3.94 eps Phe.

Requires excellent seeing and a larger telescope. It has been difficult measuring the distance to this system, with figures ranging from 200 to 27000 light-years being given!



DUN 248

RA: 350.2° | 23h 20.79' — DEC: -50.3° | -50° 17'

Magnitude: 6.2 | 6.6

Separation: 17.0"

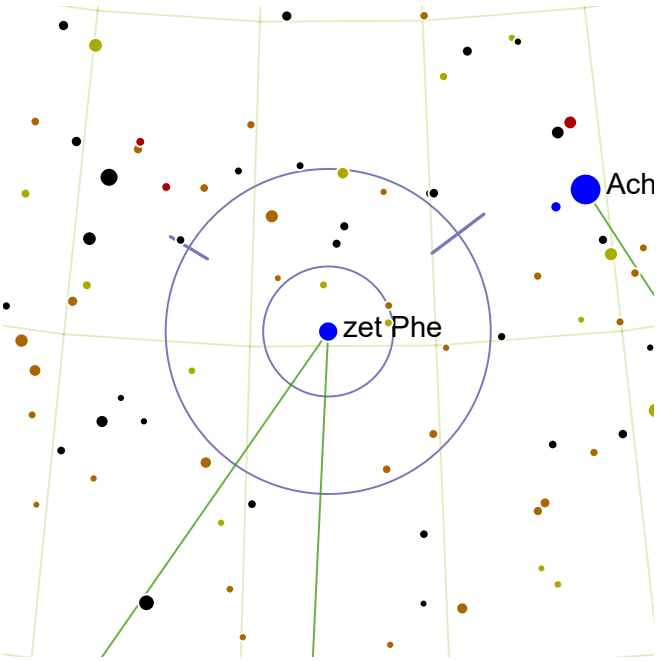
Position Angle: 212°

SAO 247838 | HIP 115272 | GDR2 31546224512

An easy, equal pair of fairly bright stars; the primary is white, the secondary is yellow.

One finder circle E from magnitude 3.69 eps Gru. One finder circle SEE from magnitude 2.24 bet Gru.

Although the stars are quite close and well-balanced, the pair are not part of the same system.



Zeta Phe

RA: 17.1° | 1h 8.4' — DEC: -55.25° | -55° 14'

Magnitude: 4.1 | 6.8 | 8.2

Separation: 0.6" | 6.5"

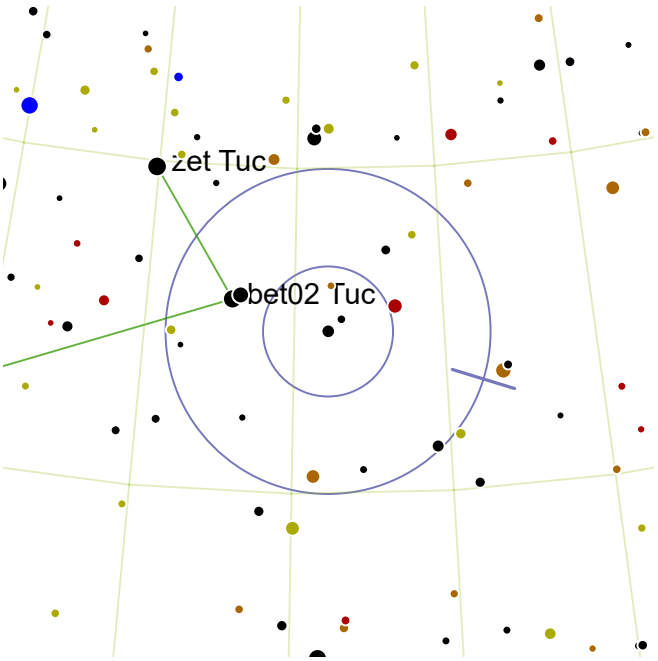
Position Angle: 127° | 239°

SAO 232306 | HIP 5348 | GDR2 89156808960

A pair of close bluish stars, the brilliant primary is much brighter and is itself an extreme sub-arcsecond pairing.

Half a finder circle NWW from magnitude 0.6 Achernar. Two and a half finder circles SE from magnitude 3.94 eps Phe.

The wider pairing is also referred to as Rossiter 1205. Richard Alfred Rossiter (1886-1977) discovered more than 5000 double stars.



COO 3

RA: 11.13° | 0h 44.5' — DEC: -62.5° | -62° 29'

Magnitude: 6.3 | 8.0

Separation: 2.4"

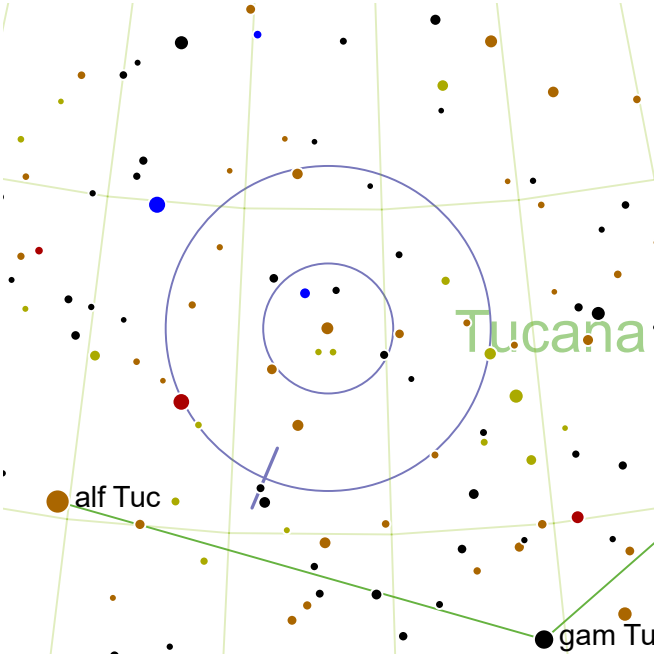
Position Angle: 73°

SAO 248243 | HIP 3489 | GDR2 40124725760

A fairly bright yellowish primary with a tightly bound secondary.

One and a half finder circles SW from magnitude 0.6 Achernar.

BQ Tuc is a strongly red and moderately variable star one degree to the south east (mag 5.7, Δ mag. 0.2). Beta 1 and 2 Tuc are a lovely brilliant double just over a degree to the south west.



I 340

RA: 343.05° | 22h 52.2' — DEC: -63.18° | -63° 10'

Magnitude: 6.3 | 9.0

Separation: 0.9"

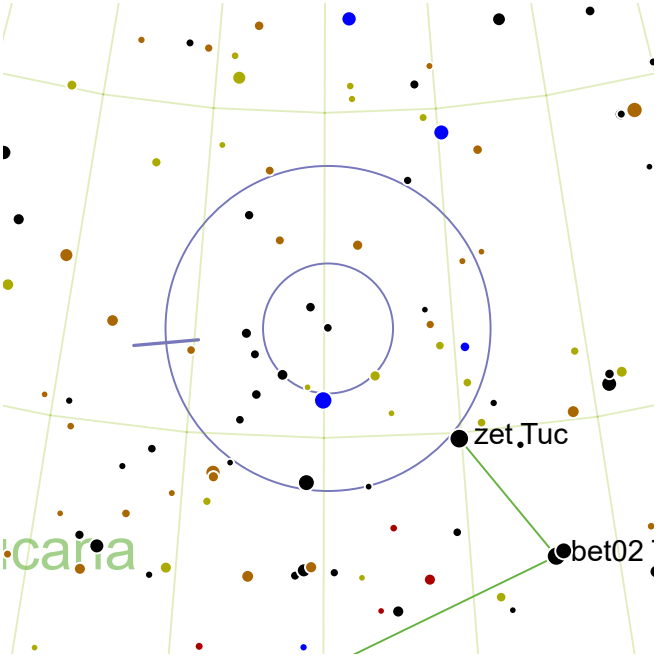
Position Angle: 337°

SAO 255339 | HIP 112924 | GDR2 64734625920

A unbalanced sub-arcsecond pairing dominated by its orange primary.

Half a finder circle SE from magnitude 2.91 alf Tuc. Two and a half finder circles E from magnitude 3.6 bet Pav.

"I" 340 denotes Robert T.A. Innes (1861-1933), a self-taught astronomer and the discoverer of Proxima Centauri and of many doubles. His main telescope was the 26.5 inch refractor at the Union Observatory in Johannesburg. I too have looked through that instrument, at Mars however!



GLI 289

RA: 0.15° | 0h 0.6' — DEC: -66.68° | -66° 40'

Magnitude: 7.7 | 9.2

Separation: 3.8"

Position Angle: 275°

SAO 255620 | HIP 55 | GDR2 73434034048

A yellow primary very close to a faint secondary.

Two finder circles NNW from magnitude 2.9 bet Hyi. Two and a half finder circles SE from magnitude 2.91 alf Tuc.

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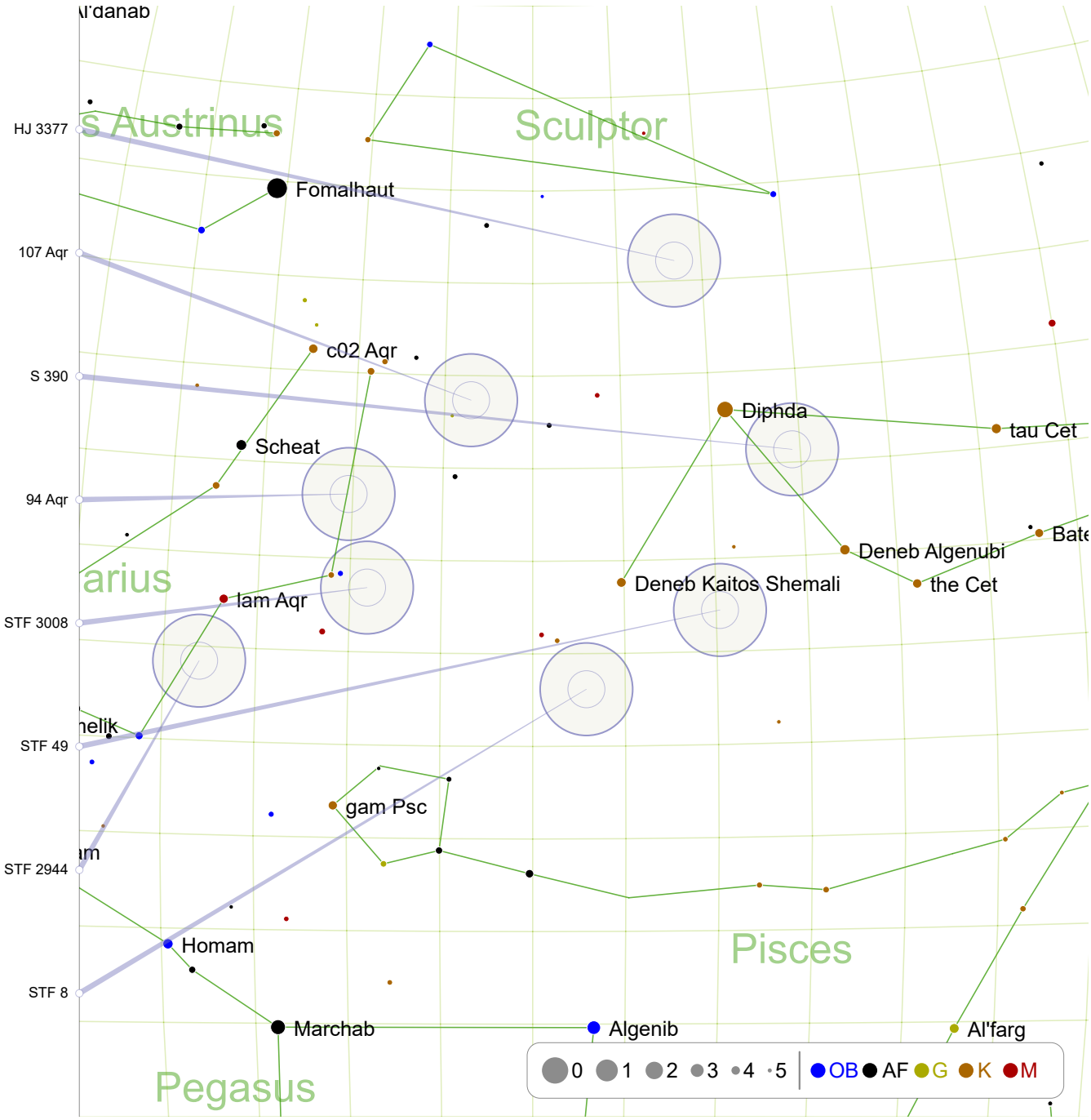
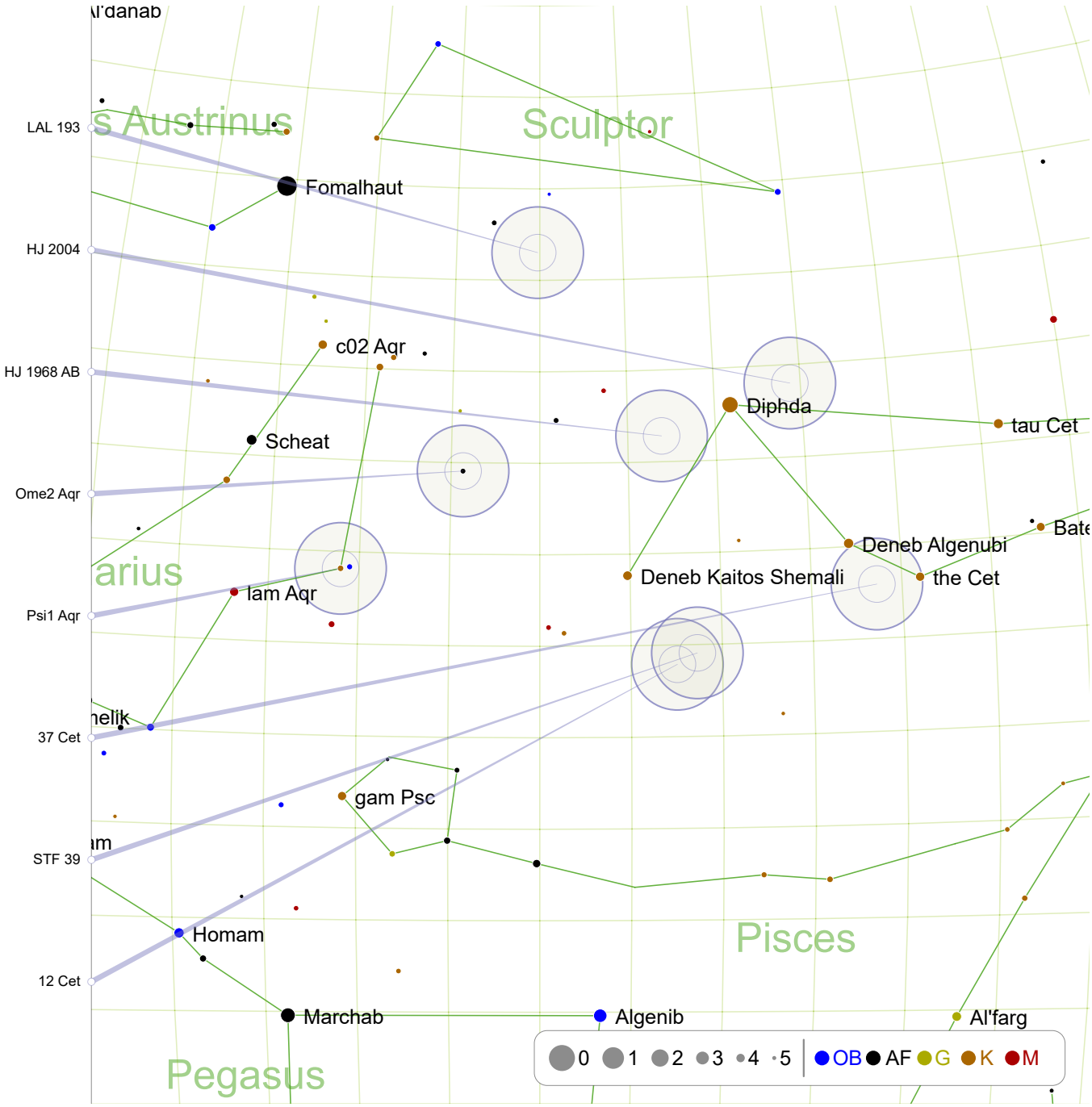
Early Spring - Looking North (1)

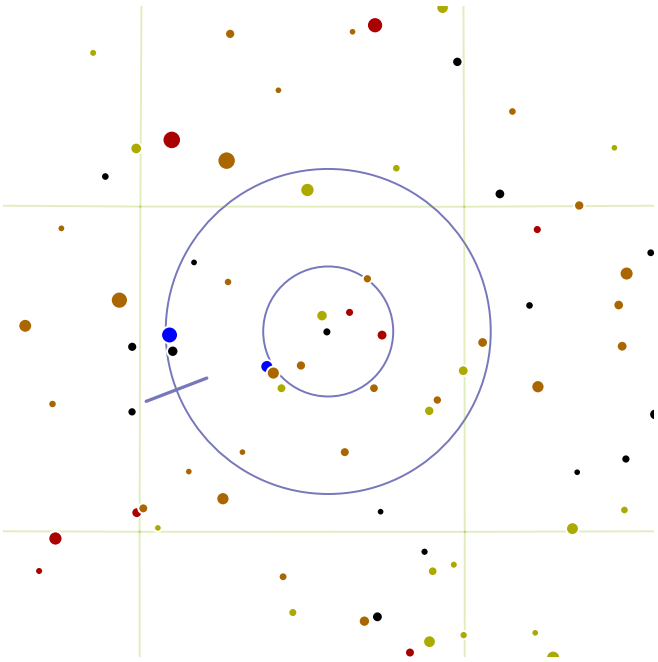


STF 8: page 53
STF 2944: page 53
STF 49: page 54
STF 3008: page 54
94 Aqr: page 55
S 390: page 55
107 Aqr: page 56
HJ 3377: page 56

Early Spring - Looking North (2)



12 Cet: page 57 | STF 39: page 57 | 37 Cet: page 58 | Psi1 Aqr: page 58
Ome2 Aqr: page 59 | HJ 1968 AB: page 59 | HJ 2004: page 60 | LAL 193: page 60



STF 8

RA: 2.9° | 0h 11.6' — DEC: -3.08° | -3° 4'

Magnitude: 7.8 | 9.3

Separation: 7.8"

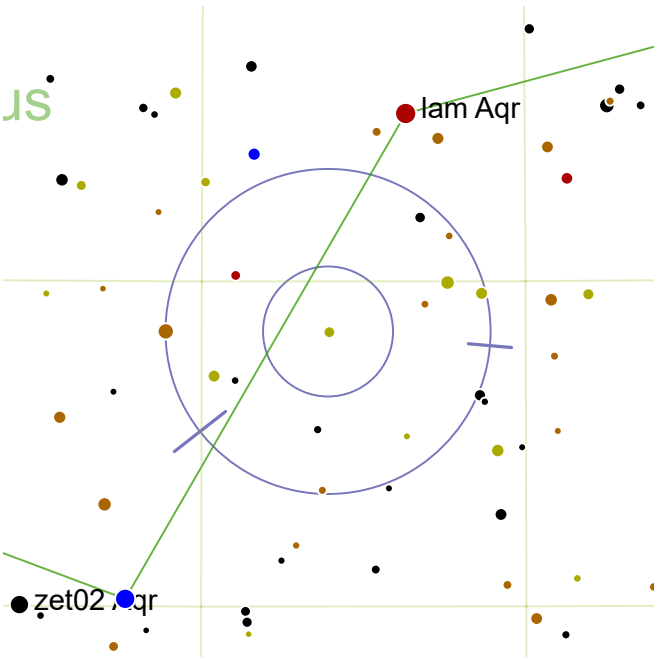
Position Angle: 291°

SAO 128631 | HIP 931 | GDR2 82076017408

A yellowish primary with a close and faint secondary.

One finder circle NNW from magnitude 3.75 Deneb Kaitos Shemali.

The star is surrounded in the finder view by a lovely grouping of fairly bright orange and red stars.



STF 2944

RA: 341.95° | 22h 47.79' — DEC: -4.23° | -4° 13'

Magnitude: 7.3 | 7.7 | 8.6

Separation: 1.8" | 60.6"

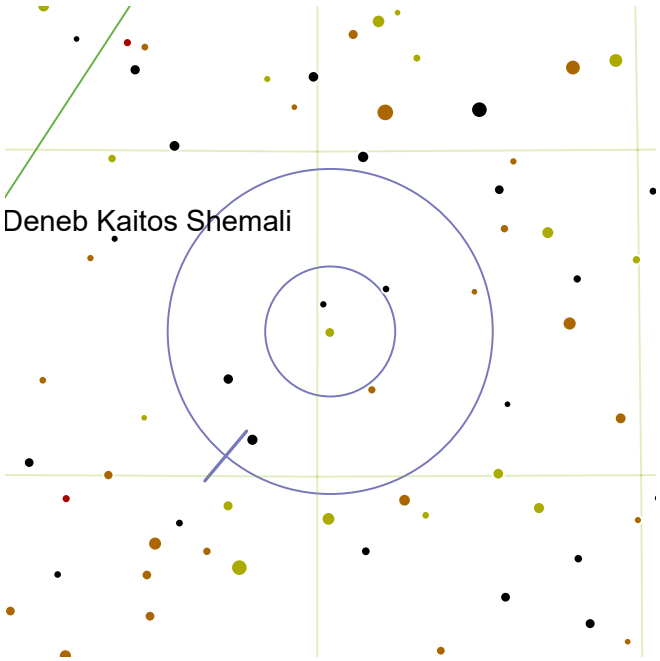
Position Angle: 308° | 85°

SAO 146315 | HIP 112559

An extremely tight pair of yellow stars, with a fainter distant third component.

Half a finder circle NNW from magnitude 3.84 lam Aqr. One finder circle SEE from magnitude 3.97 Sadalachbia.

The two brightest components are very similar to the Sun in color and absolute magnitude. This gravitationally bound system is 104 light-years from Earth.



STF 49

RA: 10.2° | 0h 40.79' — DEC: -7.23° | -7° 13'

Magnitude: 7.1 | 10.0

Separation: 8.6"

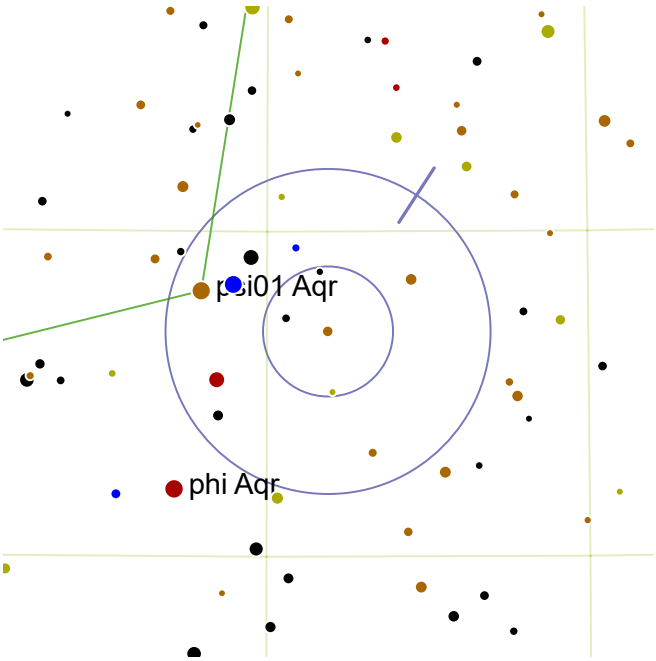
Position Angle: 320°

SAO 128892 | HIP 3203 | GDR2 51179609344

A close pair with a yellow primary and tiny orange secondary.

One finder circle NEE from magnitude 3.75 Deneb Kaitos Shemali. One finder circle NWW from magnitude 3.6 Deneb Algenubi.

Only 86 light-years away, the primary is a slightly brighter version of our Sun.



STF 3008

RA: 350.95° | 23h 23.79' — DEC: -8.47° | -8° 27'

Magnitude: 7.2 | 7.7

Separation: 7.1"

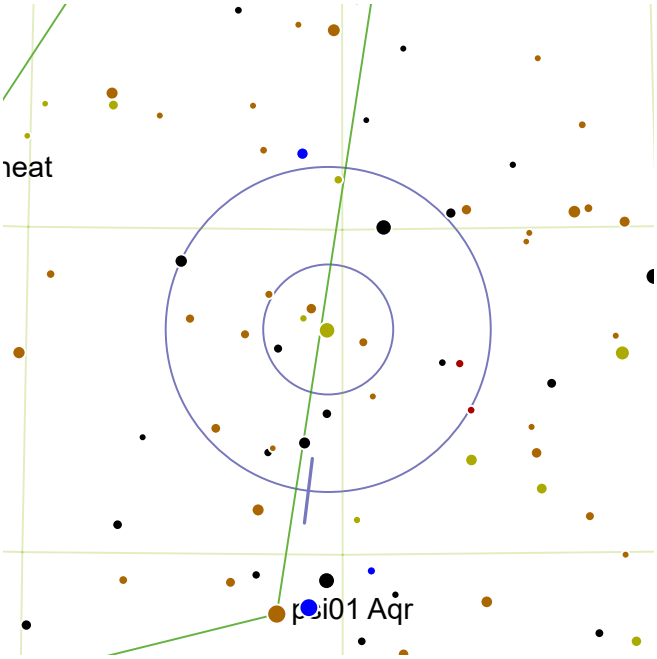
Position Angle: 147°

HIP 115495 | GDR2 34443398656

An equal pair, with an orange primary closely separated from a slightly fainter secondary.

One and a half finder circles E from magnitude 3.84 lam Aqr. Two finder circles NE from magnitude 3.51 Scheat.

The pair are not gravitationally bound. The primary is K-class giant 588 light-years from Earth.



94 Aqr

RA: 349.78° | 23h 19.09' — DEC: -13.47° | -13° 27'

Magnitude: 5.3 | 7.0

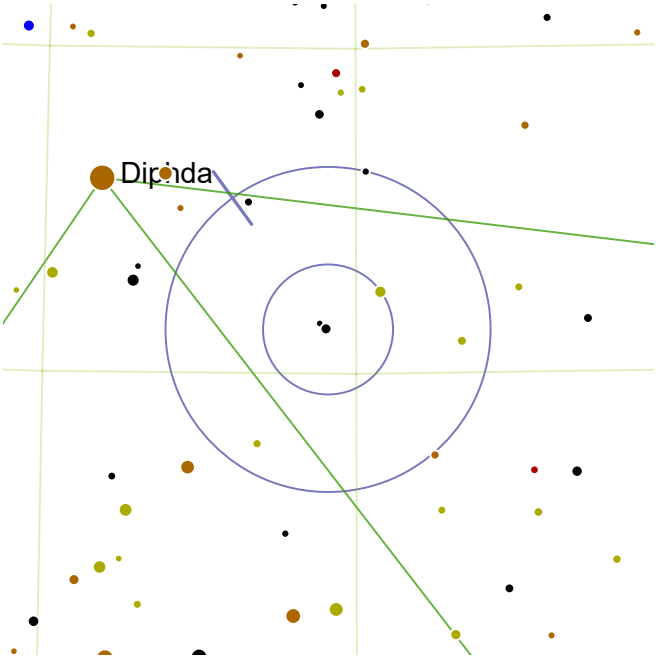
Separation: 12.1"

Position Angle: 353°

SAO 165625 | HIP 115126

A bright yellowish primary easily separated from a fairly bright companion.

One finder circle NEE from magnitude 3.51 Scheat.



S 390

RA: 14.55° | 0h 58.2' — DEC: -15.68° | -15° 40'

Magnitude: 7.8 | 7.9

Separation: 6.5"

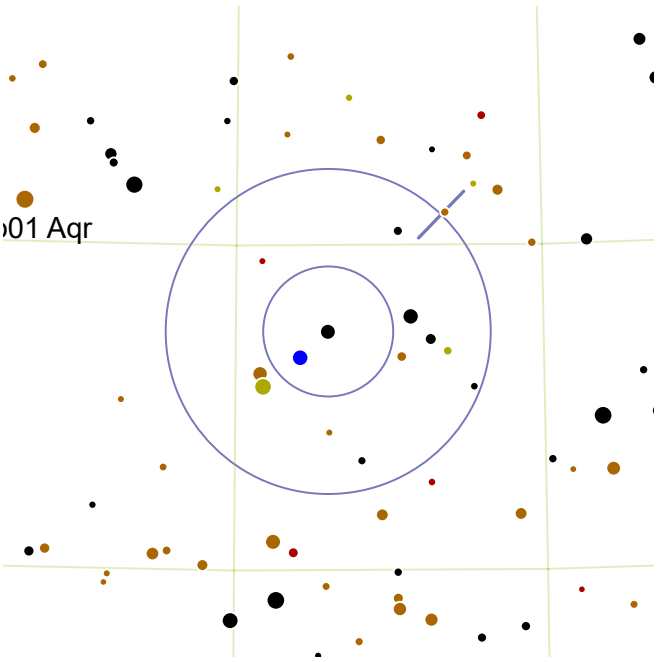
Position Angle: 216°

SAO 147543 | HIP 4540 | GDR2 73629560704

A close and equal pair of bluish stars.

Half a finder circle NEE from magnitude 2.24 Diphda.

This pair of hot bluish stars is 194 light-years from Earth.



107 Aqr

RA: 356.5° | 23h 46.0' — DEC: -18.68° | -18° 40'

Magnitude: 5.7 | 6.5

Separation: 7.0"

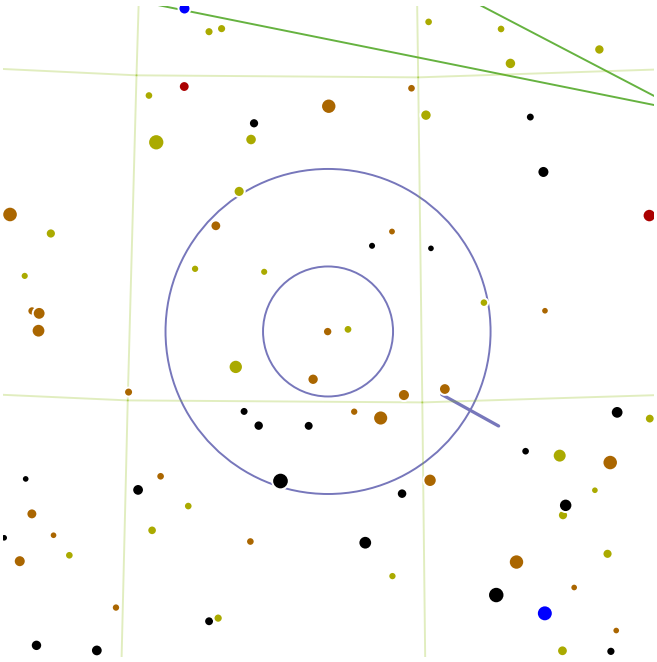
Position Angle: 136°

SAO 165867 | HIP 117218 | GDR2 07944627712

A bright white primary with a fairly bright yellowish companion close by.

One and a half finder circles NEE from magnitude 3.8 c02 Aqr. Two and a half finder circles SEE from magnitude 3.51 Scheat.

This double is not gravitationally bound and is only a line of sight coincidence. The primary is 239 light-years from Earth.



HJ 3377

RA: 8.4° | 0h 33.6' — DEC: -26.1° | -26° 5'

Magnitude: 7.5 | 9.8

Separation: 21.4"

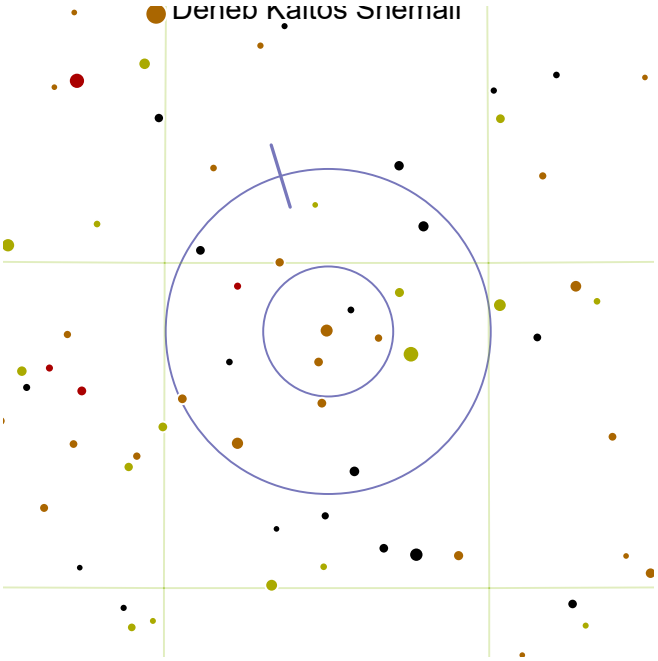
Position Angle: 61°

SAO 166362 | HIP 2649 | GDR2 46029987712

A widely separated pair with an orange primary and a faint companion.

One and a half finder circles SSW from magnitude 2.24 Diphda.

Several interesting objects are nearby. The Sculptor Galaxy (magnitude 8, NGC 253) is less than three degrees to the east. Two degrees to the south east of this galaxy in the globular cluster NGC 288 (magnitude 8), while active galaxy NGC 247 (magnitude 9) is four degrees to the north.



12 Cet

RA: 7.53° | 0h 30.1' — DEC: -3.95° | -3° 56'

Magnitude: 6.5 | 11

Separation: 10.7"

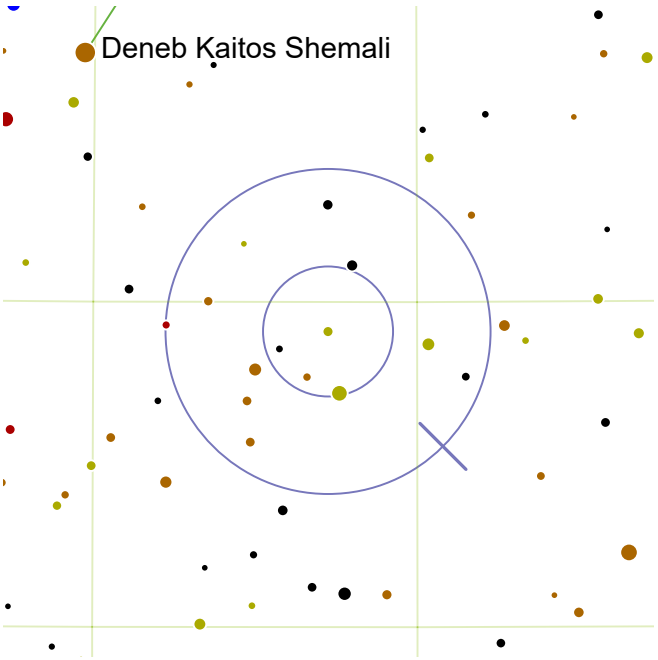
Position Angle: 197°

SAO 128791 | HIP 2353 | GDR2 21022169728

A bright red primary separated comfortably from a very faint companion.

One finder circle NNE from magnitude 3.75 Deneb Kaitos Shemali. Two finder circles NWW from magnitude 3.6 Deneb Algenubi.

Also known as h 322, the primary is a notably red Carbon Star.



STF 39

RA: 8.63° | 0h 34.5' — DEC: -4.55° | -4° 32'

Magnitude: 7.1 | 8.7

Separation: 20.1"

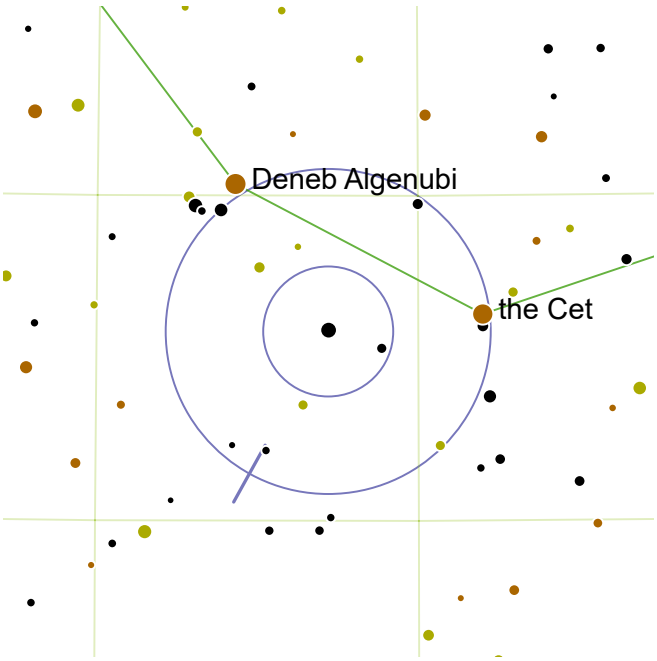
Position Angle: 45°

SAO 128831 | HIP 2713 | GDR2 34557758464

A wide pair with a yellow primary and pale yellow secondary.

One finder circle NE from magnitude 3.75 Deneb Kaitos Shemali. Two finder circles NWW from magnitude 3.6 Deneb Algenubi.

Caldwell 51 (mag. 9.2 galaxy) lies two and a half finder circles north east of this double. With Caldwell 51 centered in the finder,



37 Cet

RA: 18.6° | 1h 14.4' — DEC: -7.92° | -7° 54'

Magnitude: 5.2 | 7.9

Separation: 47.1"

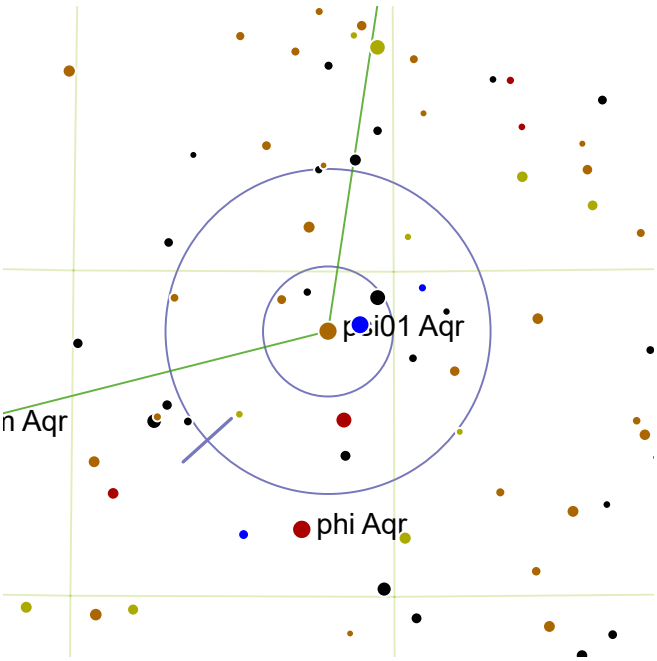
Position Angle: 331°

SAO 129193 | HIP 5799 | GDR2 28340199936

A very widely separated pair, with a brilliant yellowish primary and a significantly fainter, strongly yellow secondary.

One and a half degrees W from magnitude 3.83 the Cet. Half a finder circle NNE from magnitude 3.6 Deneb Algenubi.

This gravitationally bound system is only 73 light-years from Earth.



Psi1 Aqr

RA: 348.98° | 23h 15.9' — DEC: -9.08° | -9° 4'

Magnitude: 4.4 | 9.6

Separation: 49"

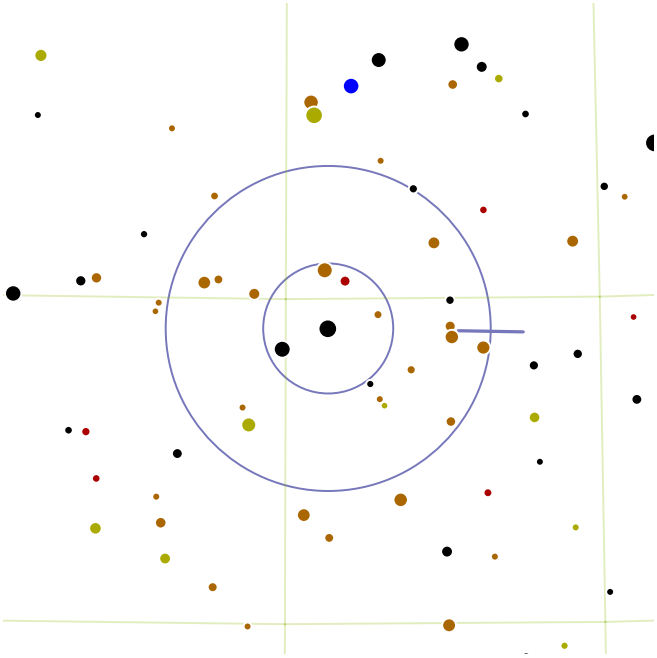
Position Angle: 312°

SAO 146598 | HIP 114855

A brilliant orange primary distantly separated from a faint orange secondary.

One finder circle SEE from magnitude 3.84 lam Aqr. One and a half finder circles NE from magnitude 3.51 Scheat.

The secondary is itself a reasonably balanced double with a separation of 0.4". Also known as 91 Aqr, the primary is orbited by a massive exoplanet as least 3.2 times the mass of Jupiter.



Ome2 Aqr

RA: 355.68° | 23h 42.7' — DEC: -14.55° | -14° 32'

Magnitude: 4.5 | 9.5

Separation: 5.5"

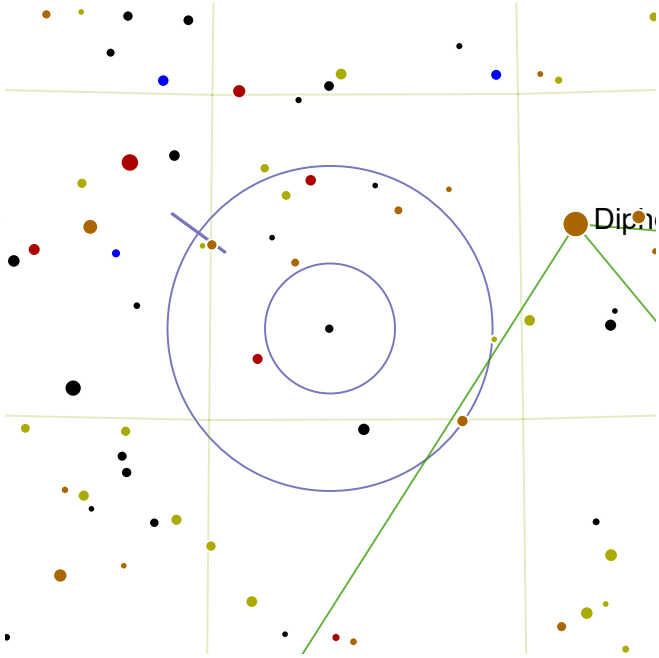
Position Angle: 89°

SAO 165842 | HIP 116971 | GDR2 49815948416

A brilliant bluish primary with a faint orange companion close by.

Two finder circles NE from magnitude 3.8 c02 Aqr. Two finder circles SWW from magnitude 3.75 Deneb Kaitos Shemali.

The system is a strong nearby X-ray source, as the primary is a hot B-type main sequence star with a surface temperature of 10,500 K.



HJ 1968 AB

RA: 6.93° | 0h 27.7' — DEC: -16.42° | -16° 24'

Magnitude: 7.3 | 10.0

Separation: 37.0"

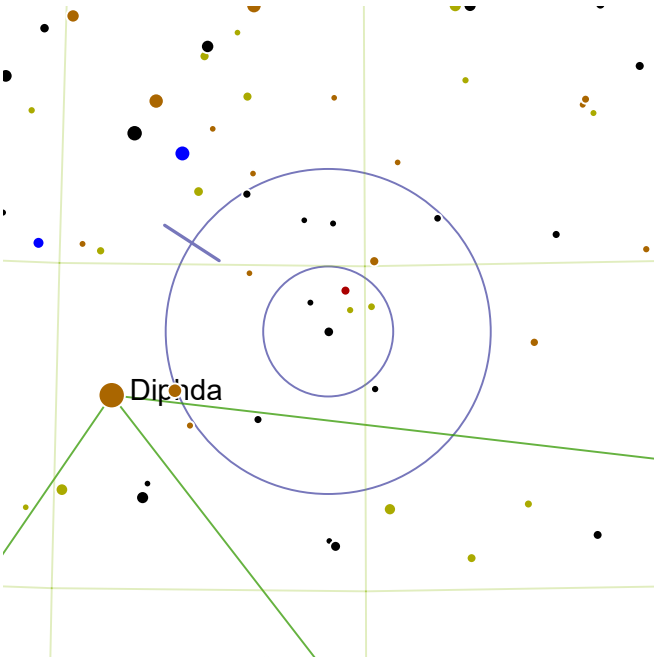
Position Angle: 234°

SAO 147286 | HIP 2190 | GDR2 26008993152

A yellowish primary very widely separated from a faint secondary.

Half a finder circle NWW from magnitude 2.24 Diphda.

Two and a half finder circles SSE is the bright galaxy Caldwell 65 (mag. 8.0) and globular cluster NGC 288 (mag. 8.1). Just over one finder circle SE is Caldwell 62 (mag. 9.1 active galaxy).



HJ 2004

RA: 14.4° | 0h 57.6' — DEC: -19.0° | -18° 59'

Magnitude: 7.0 | 9.8

Separation: 3.3"

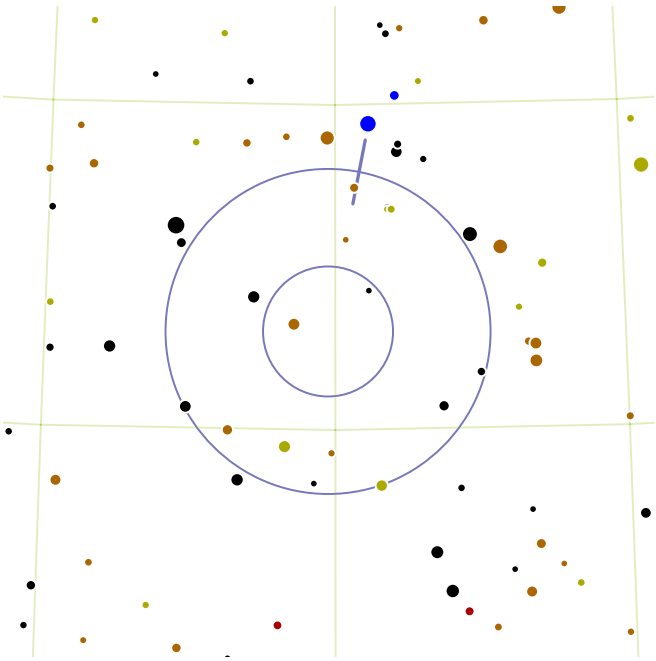
Position Angle: 237°

SAO 147537 | HIP 4496 | GDR2 63244742016

A fairly bright white primary with a very close, faint secondary.

Half a finder circle SEE from magnitude 2.24 Diphda.

Position this little double in the north-eastern quarter of the finder, and Caldwell 62 (mag. 9.1 active galaxy) is in the south-western quarter.



LAL 193

RA: 359.88° | 23h 59.5' — DEC: -26.52° | -26° 30'

Magnitude: 8.1 | 8.3

Separation: 10.4"

Position Angle: 169°

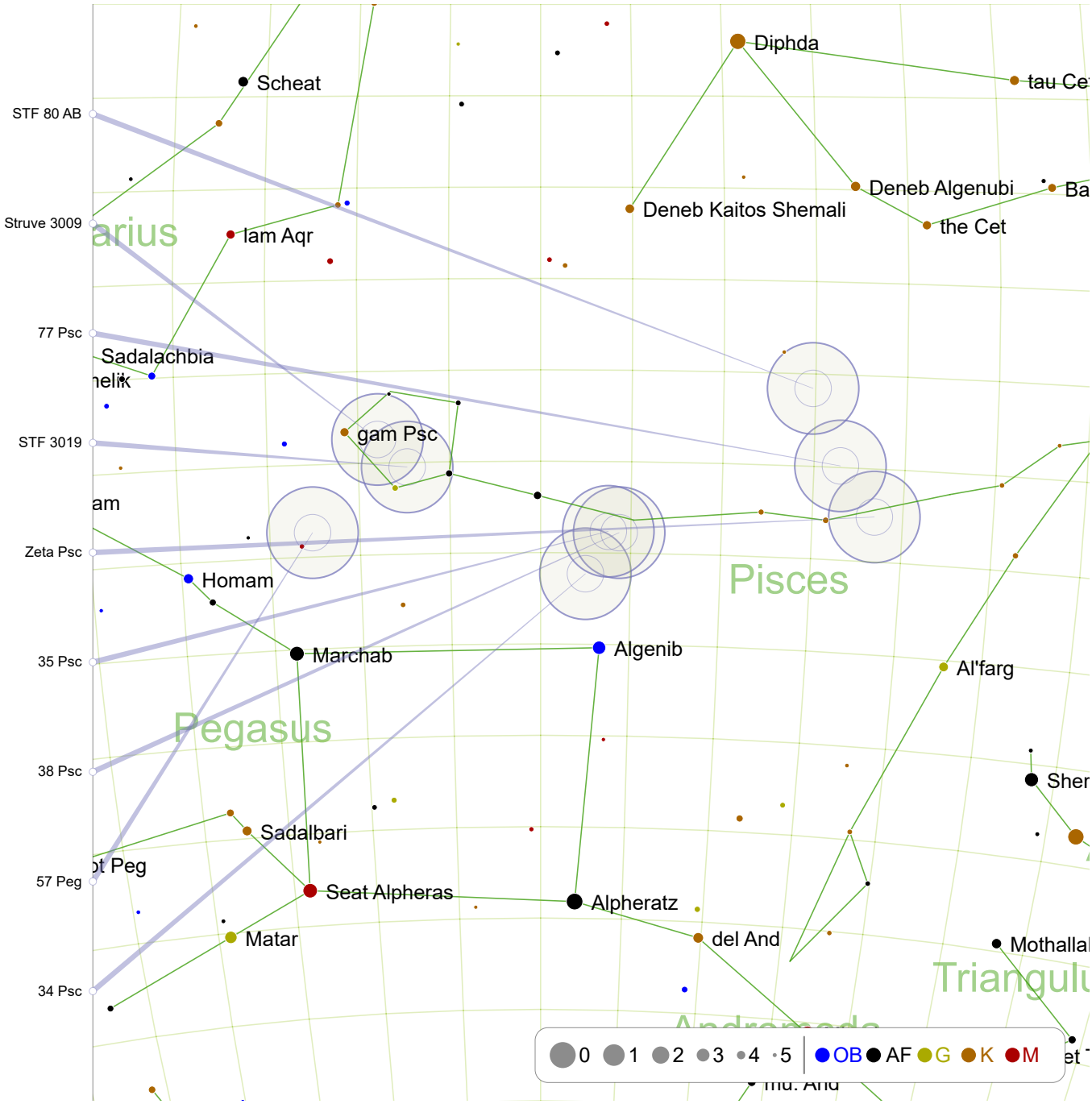
SAO 192295 | HIP 118284 | GDR2 78955522432

A close and balanced pair of yellowish stars.

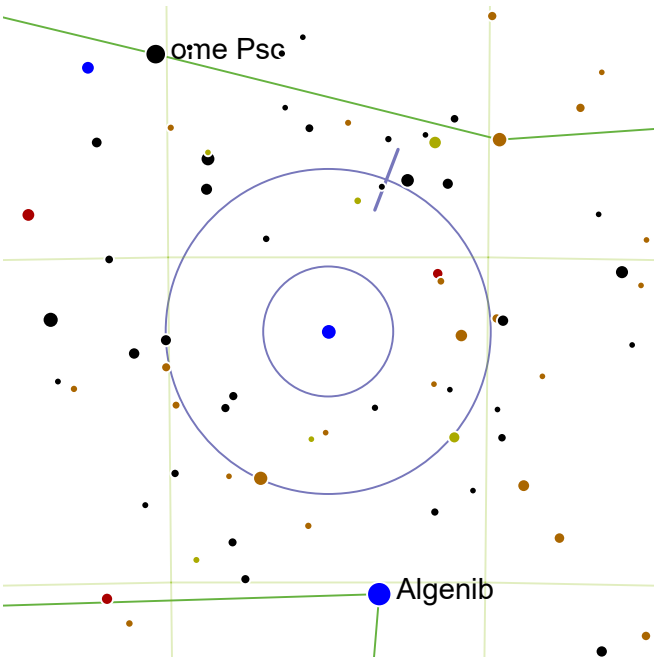
Two and a half finder circles SEE from magnitude 3.8 c02 Aqr. Two and a half finder circles SW from magnitude 2.24 Diphda.

This gravitationally bound binary system is 334 light-years from Earth.

Early Spring - Northern Horizon



34 Psc: page 62
57 Peg: page 62
38 Psc: page 63
35 Psc: page 63
Zeta Psc: page 64
STF 3019: page 64
77 Psc: page 65
Struve 3009: page 65
STF 80 AB: page 66



34 Psc

RA: 2.5° | 0h 10.0' — DEC: 11.15° | 11° 9'

Magnitude: 5.5 | 9.4

Separation: 7.6"

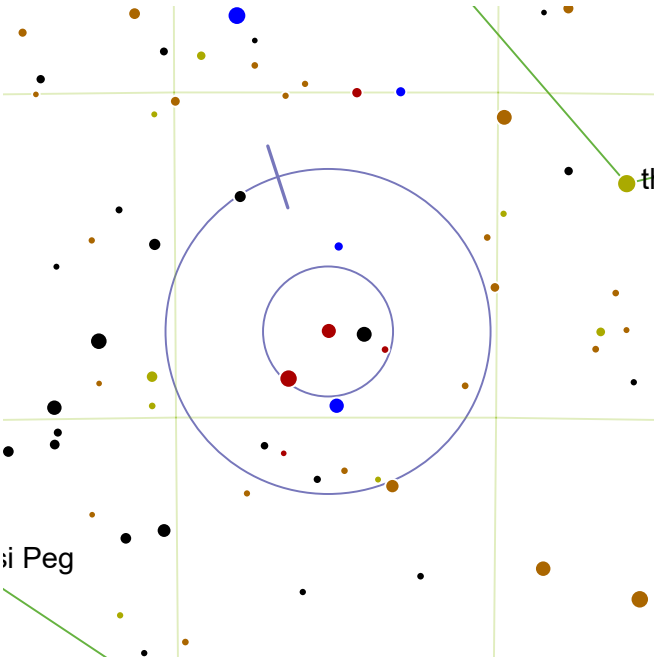
Position Angle: 159°

SAO 91750 | HIP 813 | GDR2 22041820928

A bright bluish primary with a faint secondary close by.

Half a finder circle S from magnitude 2.87 Algenib.

It is not known if this double is gravitationally bound. The primary is 305 light-years from Earth.



57 Peg

RA: 347.38° | 23h 9.5' — DEC: 8.68° | 8° 41'

Magnitude: 5.3 | 10.1

Separation: 32.6"

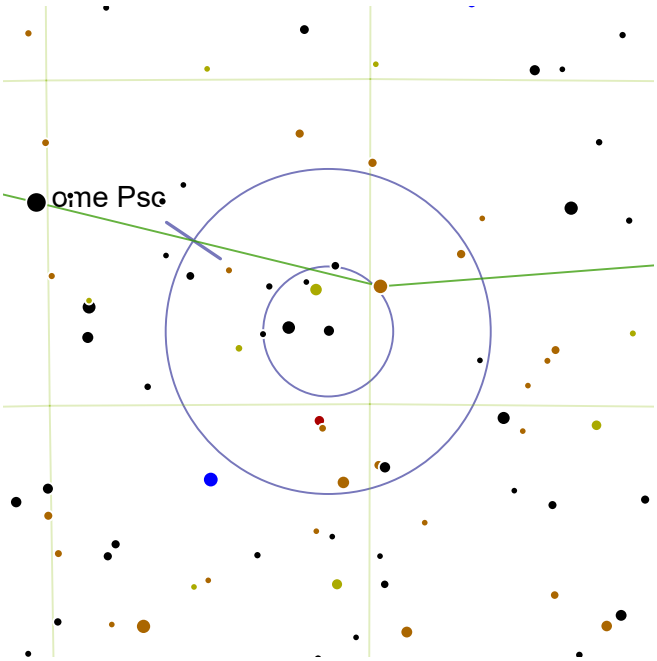
Position Angle: 198°

SAO 128001 | HIP 114347 | GDR2 26470336768

A bright red primary widely separated from a faint white secondary.

One finder circle NNW from magnitude 3.85 gam Psc. One finder circle S from magnitude 2.57 Marchab.

The primary is a semiregular variable designated as GZ Pegasi, varying in brightness from 4.95 to 5.23 over a period of roughly 93 days. Although the brightness range is quite small, the star can be compared to 55 Pegasi to 59 Peg (mag. 5.15) less than a degree to the east.



38 Psc

RA: 4.35° | 0h 17.39' — DEC: 8.88° | 8° 53'

Magnitude: 7.9 | 7.8

Separation: 4.3"

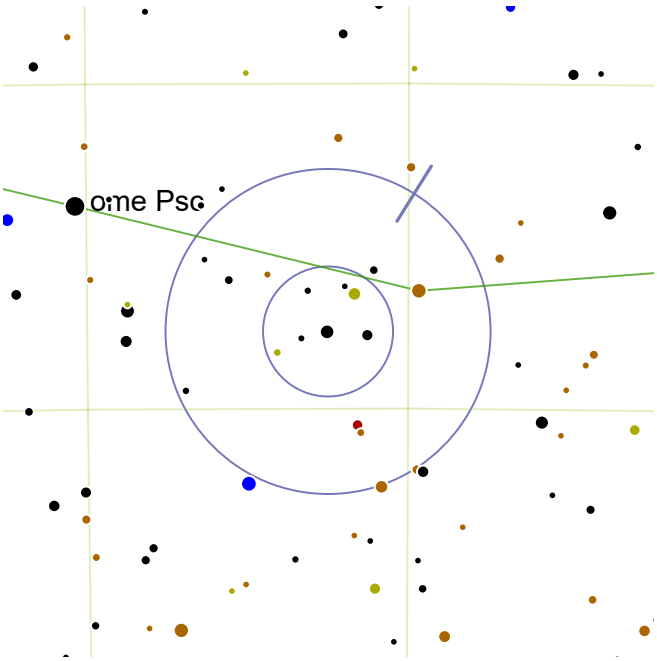
Position Angle: 236°

SAO 109111 | HIP 1317

A very close and equal pair of yellow stars.

One and a half finder circles south of Algenib, the magnitude 2.8 star marking the south-eastern corner of the square of Pegasus.

38 Psc shares the same finder circle as the slightly brighter 35 Psc, which lies half a degree to the west.



35 Psc

RA: 3.75° | 0h 15.0' — DEC: 8.82° | 8° 49'

Magnitude: 6.0 | 7.6

Separation: 11.6"

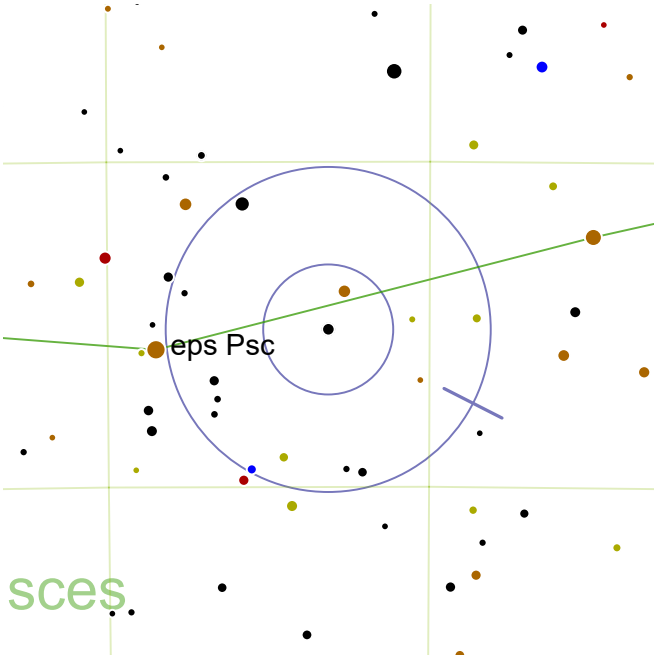
Position Angle: 148°

SAO 109087 | HIP 1196 | GDR2 27234710784

An easy, bright double star with comfortable separation and a reasonably bright secondary, consisting of a white primary and light yellow secondary.

One and a half finder circles south of magnitude 2.8 Algenib.

35 Piscium is a triple star system roughly 250 light-years from the Sun. The primary star is itself a spectroscopic binary, with two stars circling each other in just 0.84 days. This causes a slight variability in the primary star, which shows two dips of slightly less than 0.1 magnitude each cycle.



Zeta Psc

RA: 18.43° | 1h 13.7' — DEC: 7.58° | 7° 35'

Magnitude: 5.6 | 6.5

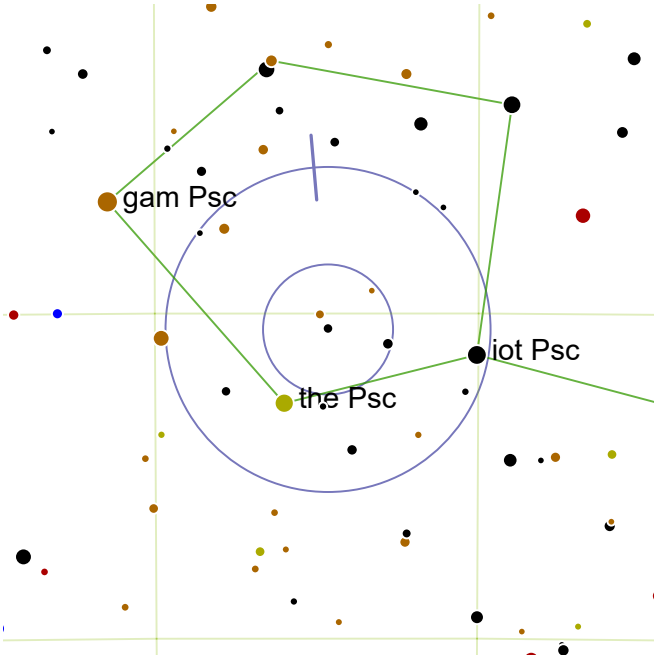
Separation: 23"

Position Angle: 63°

SAO 109739 | HIP 5737 | GDR2 92921353984

A widely separated pair of closely matched bright white stars.

The primary is a pair of A class stars with separation of 0.15”. The secondary is a triplet of stars - a spectroscopic pair of F and G stars, and a further magnitude 12.2 star separated by 1”.



STF 3019

RA: 352.68° | 23h 30.7' — DEC: 5.25° | 5° 15'

Magnitude: 7.8 | 8.4

Separation: 10.7"

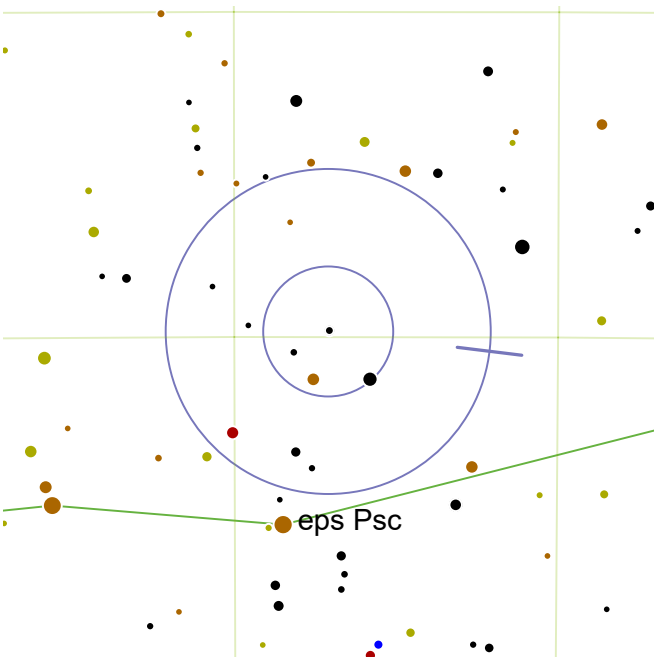
Position Angle: 185°

SAO 128216 | HIP 116035 | GDR2 60632206720

A balanced pair with a yellowish primary and white secondary.

Half a finder circle NEE from magnitude 3.85 gam Psc. Two finder circles SSE from magnitude 2.57 Marchab.

This highly luminous pair is gravitationally bound and is very distant - 5931 light-years from Earth.



77 Psc

RA: 16.45° | 1h 5.79' — DEC: 4.92° | 4° 55'

Magnitude: 6.8 | 7.6

Separation: 33"

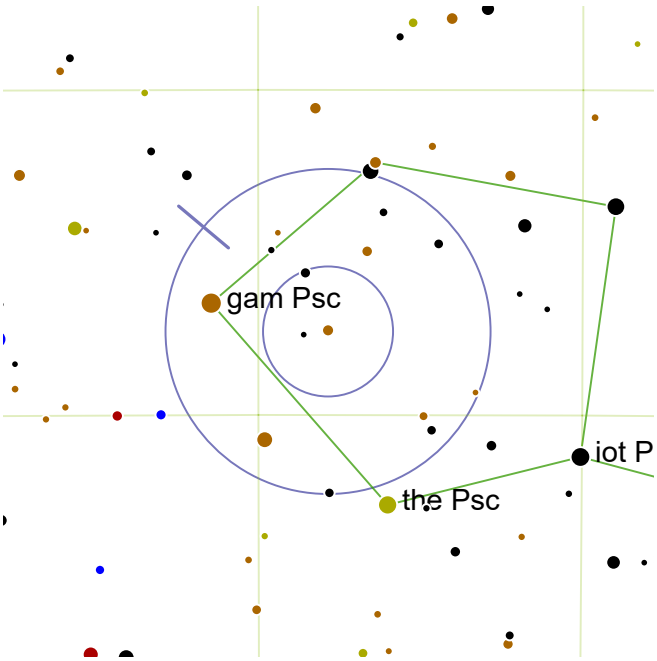
Position Angle: 83°

SAO 109666 | HIP 5141 | GDR2 91858705024

A wide, fairly bright pairing of two yellow-white stars, separated in brightness by nearly one magnitude.

Starting in the square of Pegasus, draw a line from the north-west corner (magnitude 2.40 Seat Alpheras) through the opposite corner (magnitude 2.8 Algenib), and extend the line an equal distance out to 77 Psc.

Only 132 light-years away, this system is composed of two F-class dwarfs.



Struve 3009

RA: 351.08° | 23h 24.29' — DEC: 3.72° | 3° 43'

Magnitude: 6.8 | 8.8

Separation: 7.0"

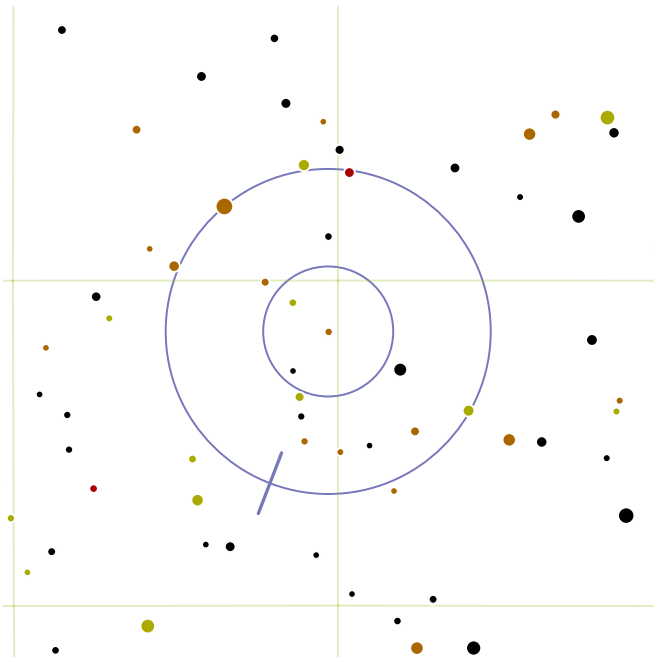
Position Angle: 230°

HIP 115544 | GDR2 98163694976 | TY2 0581-01198-1

A close combination of an orange primary close to a 2 magnitude fainter secondary. The secondary at magnitude 8.76 is too faint to show much color in smaller scopes, but some report it to be be blue.

Two and a half finder circles south east of Marchab.

The primary is a small K class giant star, similar in mass to the Sun but much older.



STF 80 AB

RA: 14.85° | 0h 59.4' — DEC: 0.78° | 0° 47'

Magnitude: 7.8 | 9.1

Separation: 29.9"

Position Angle: 339°

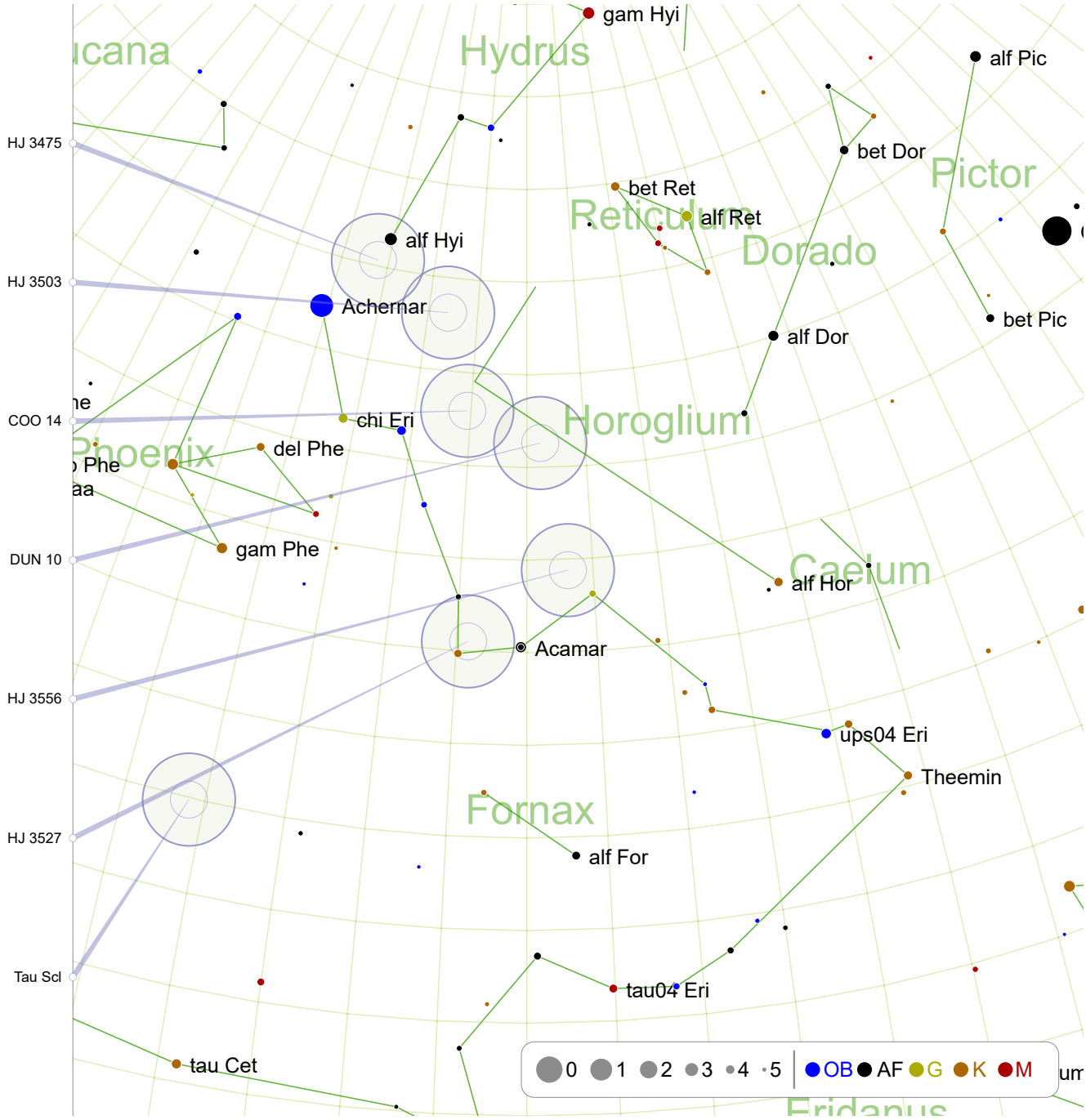
SAO 109577 | HIP 4624 | GDR2 39382201856

An orange primary widely separated from a slightly fainter yellow secondary.

Two finder circles NW from magnitude 3.83 the Cet. Two finder circles NNW from magnitude 3.6 Deneb Algenubi.

With the double centered in the finder, Caldwell 51 (mag. 9.2 galaxy) is in the north-eastern quarter of the finder view.

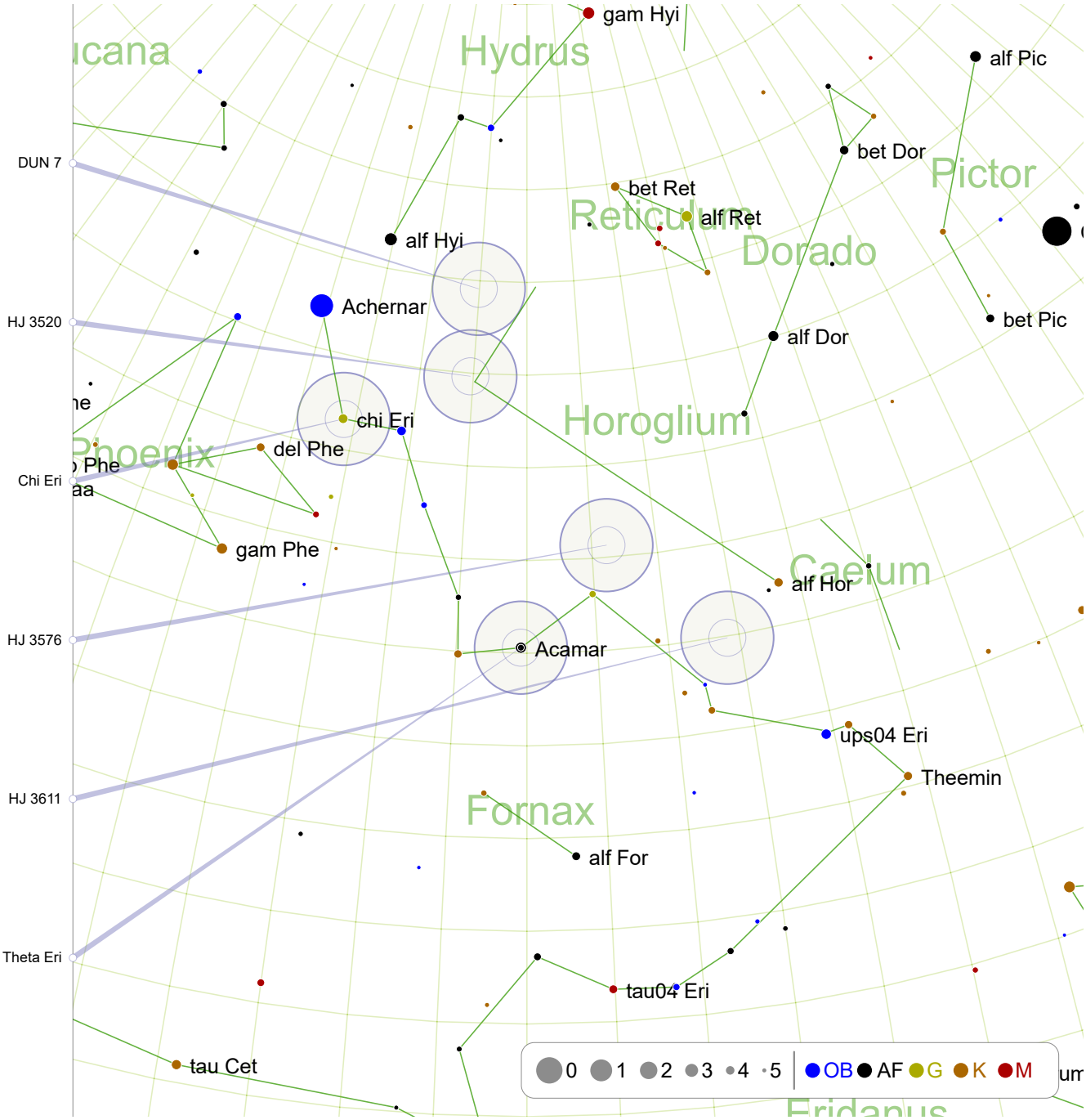
Late Spring - Looking South (1)



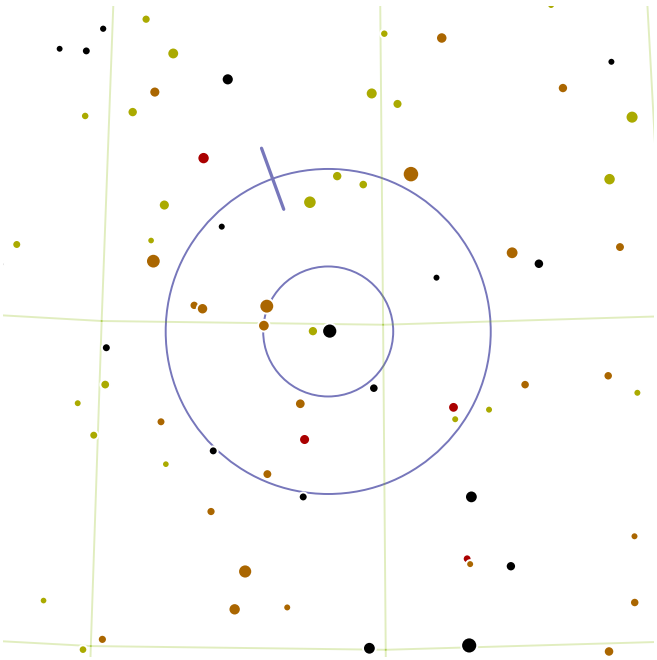
Tau Scl: page 69 HJ 3527: page 69 HJ 3556: page 70 DUN 10: page 70

COO 14: page 71 HJ 3503: page 71 HJ 3475: page 72

Late Spring - Looking South (2)



Theta Eri: page 72 HJ 3611: page 73 HJ 3576: page 73 Chi Eri: page 74
HJ 3520: page 74 DUN 7: page 75



Tau Scl

RA: 24.03° | 1h 36.09' — DEC: -29.9° | -29° 53'

Magnitude: 6.0 | 7.4

Separation: 0.82"

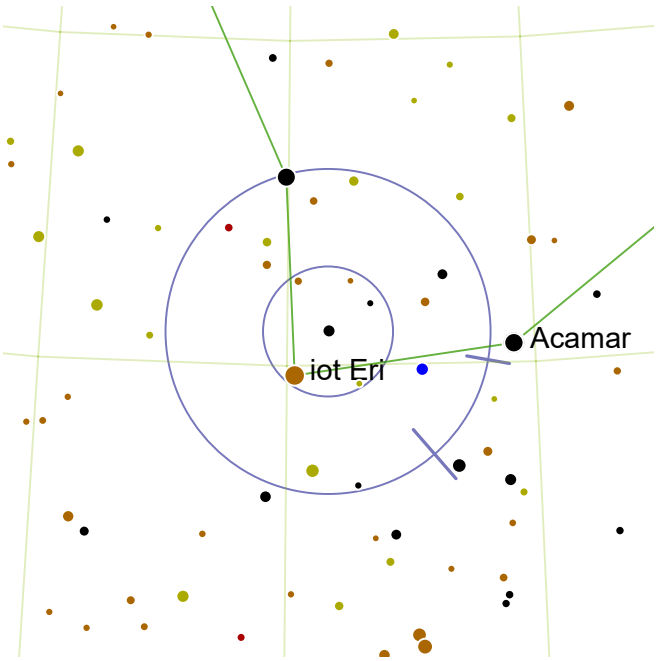
Position Angle: 200°

SAO 193201 | HIP 7463 | GDR2 91741784064

A bright yellowish primary with an almost inseparable companion. Requires a large telescope.

Two and a half finder circles N from magnitude 3.4 gam Phe. Two and a half finder circles S from magnitude 3.65 tau Cet.

This gravitationally bound binary system is 226 light-years from Earth.



HJ 3527

RA: 40.83° | 2h 43.3' — DEC: -40.53° | -40° 31'

Magnitude: 7.0 | 7.2 | 11.6

Separation: 2.3" | 132.8"

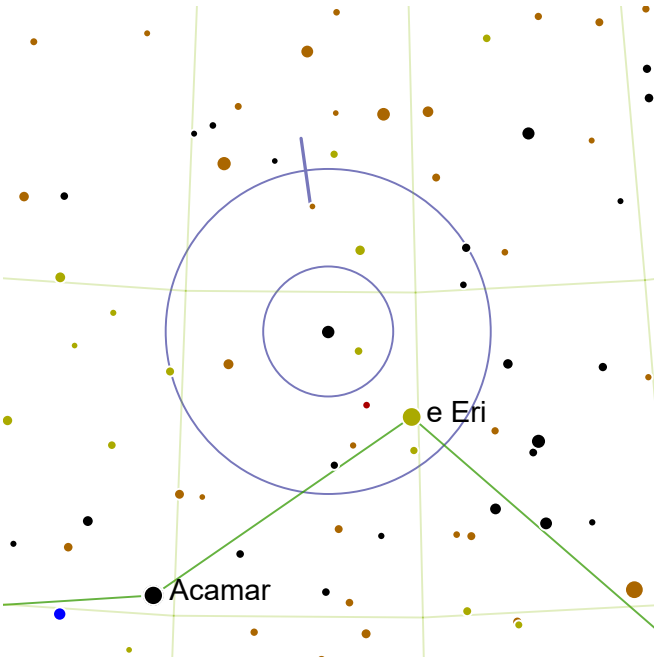
Position Angle: 41° | 80°

SAO 216019 | HIP 12708 | GDR2 04644963968

A tight pair of blue stars with third distant and dim companion.

Half a finder circle W from magnitude 3.42 Acamar. Two finder circles NNE from magnitude 3.78 phi Eri.

This system is 595 light-years from the Earth.



HJ 3556

RA: 48.1° | 3h 12.4' — DEC: -44.42° | -44° 24'

Magnitude: 6.4 | 8.9

Separation: 3.7"

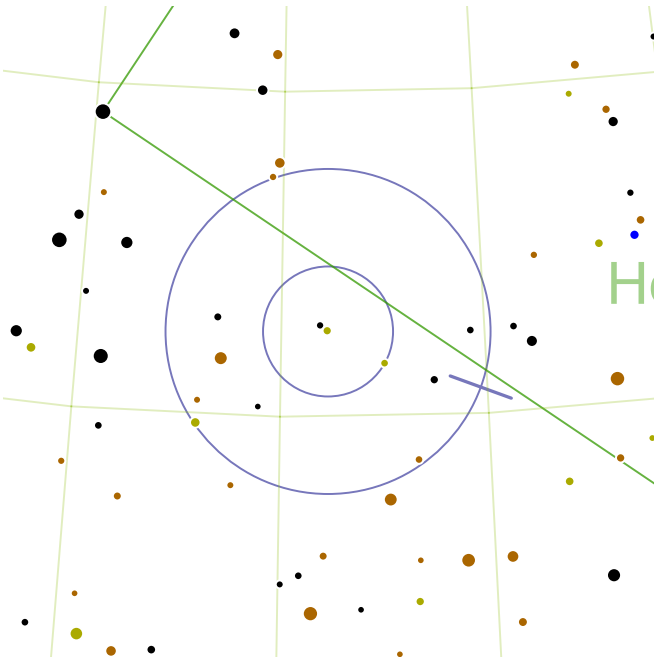
Position Angle: 188°

SAO 216209 | HIP 14913 | GDR2 74392311168

A yellowish primary very close to significantly fainter secondary.

Half a finder circle SSE from magnitude 3.42 Acamar. Two finder circles SWW from magnitude 3.83 alf Hor.

The primary is itself a double but at barely 0.2" separation is unsplittable in amateur instruments.



DUN 10

RA: 46.15° | 3h 4.59' — DEC: -51.32° | -51° 18'

Magnitude: 7.6 | 8.5

Separation: 38.3"

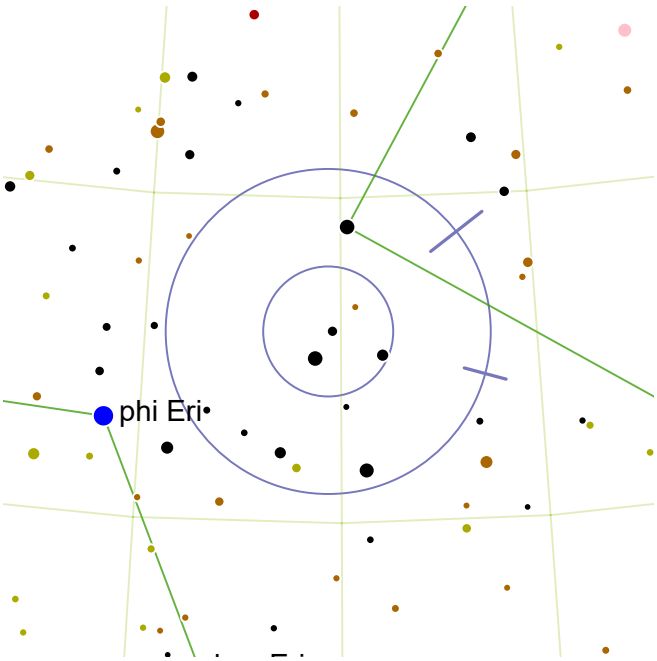
Position Angle: 70°

SAO 232983 | HIP 14307 | GDR2 78185293312

A balanced pair with a yellow primary widely separated from an orange secondary.

One and a half finder circles E from magnitude 3.78 phi Eri. Two finder circles E from magnitude 3.73 chi Eri.

This pair are gravitationally bound. Globular cluster Caldwell 87 is one finder circle south of this double.



COO 14

RA: 39.67° | 2h 38.69' — DEC: -52.95° | -52° 56'

Magnitude: 7.9 | 8.5 | 6.8

Separation: 8.7" | 218"

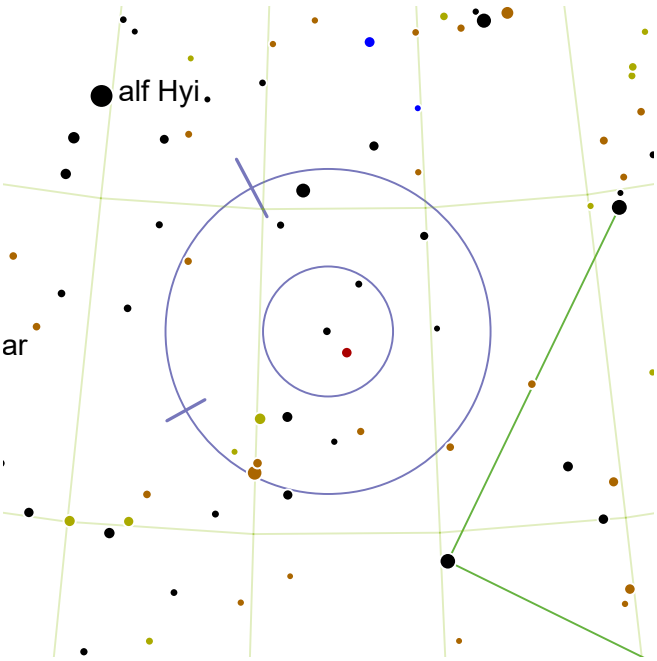
Position Angle: 128° | 75°

SAO 232841 | HIP 12326 | GDR2 23399969536

A balanced pair of yellowish stars close together, with a somewhat brighter star some distance from them.

Half a finder circle SEE from magnitude 3.78 phi Eri. One finder circle SEE from magnitude 3.73 chi Eri.

Globular cluster Caldwell 87 (magnitude 8.6) is one finder circle to the south-east.



HJ 3503

RA: 37.0° | 2h 28.0' — DEC: -58.13° | -58° 7'

Magnitude: 8.0 | 8.5 | 9.6

Separation: 1.2" | 17.6"

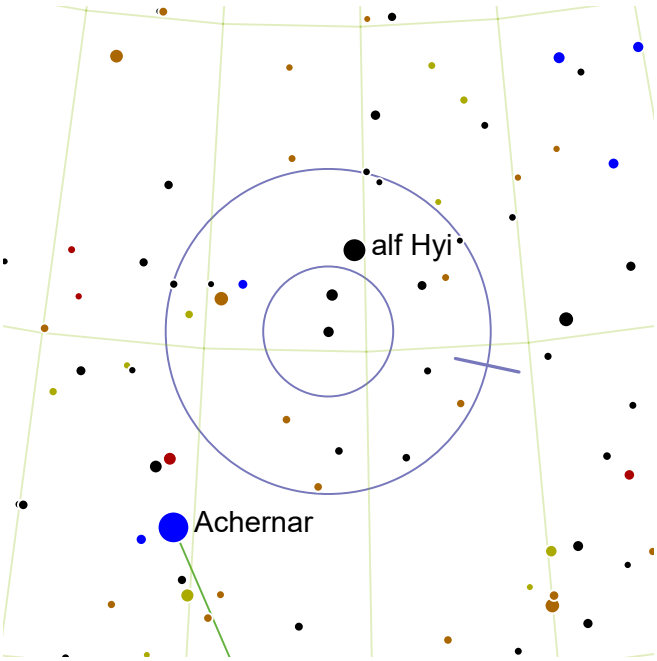
Position Angle: 208° | 299°

SAO 232780 | HIP 11469 | GDR2 40366808576

An extremely tight, balanced pair of yellow stars with an easily separated, faint yellow component.

One finder circle NE from magnitude 3.02 alf Hyi. One finder circle SEE from magnitude 0.6 Achernar.

The F-type main sequence primary star is 346 light-years from Earth.



HJ 3475

RA: 28.83° | 1h 55.3' — DEC: -60.32° | -60° 18'

Magnitude: 7.2 | 7.2

Separation: 2.5"

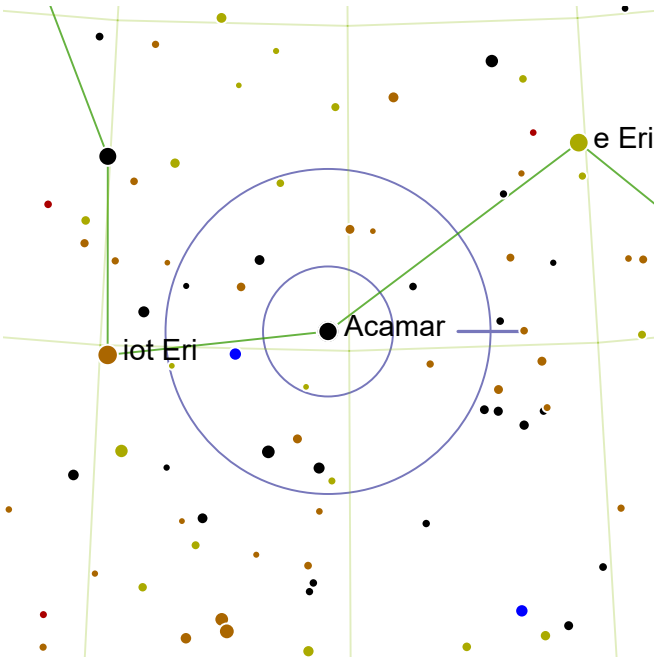
Position Angle: 78°

SAO 248461 | HIP 8957 | GDR2 54010869760

An equal and extremely tight pair of yellowish stars.

One degree NNW from magnitude 3.02 alf Hyi. Half a finder circle SE from magnitude 0.6 Achernar.

The minimally brighter primary is a F-type main sequence star 181 light-years from Earth.



Theta Eri

RA: 44.58° | 2h 58.3' — DEC: -40.3° | -40° 17'

Magnitude: 3.2 | 4.1

Separation: 8.2"

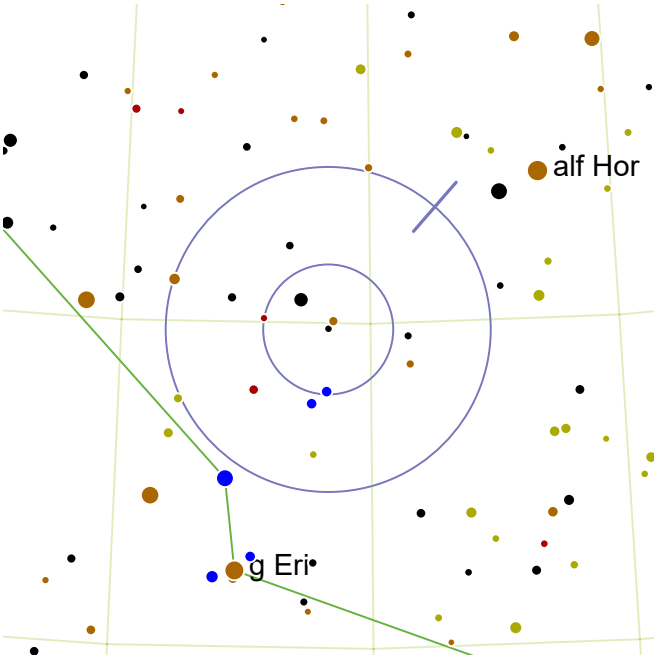
Position Angle: 90°

SAO 216113 | HIP 13847 | GDR2 71869592832

A close, balanced double composed of two brilliant white stars.

Theta Eri is a bright star in Eridanus. Two and a half finder circles NE from magnitude 3.78 phi Eri.

The system is composed of Theta1 and Theta2 Eridani and bears the proper name Acamar. In classical Greece this system marked the end of the river constellation Eridani, while in modern times the river continues south to the similarly named Achernar (both Achernar and Acamar mean "end of the river").



HJ 3611

RA: 59.15° | 3h 56.59' — DEC: -39.92° | -39° 54'

Magnitude: 8.0 | 8.7

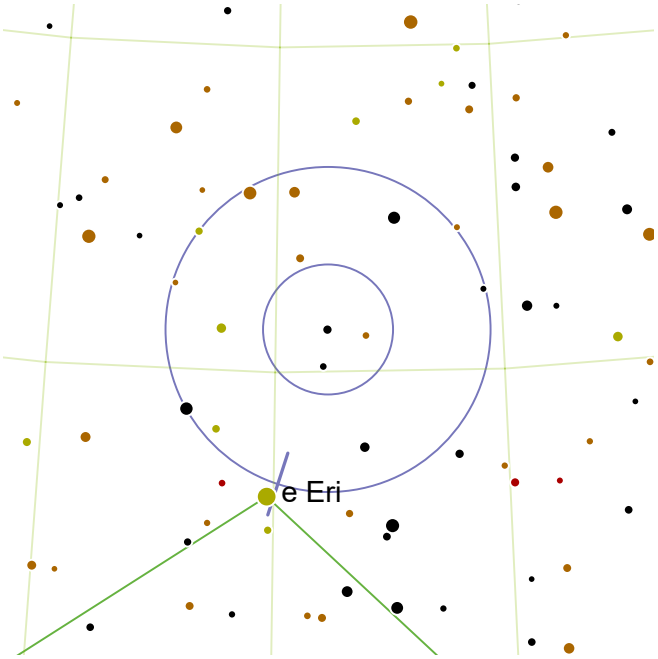
Separation: 4.2"

Position Angle: 139°

SAO 216564 | HIP 18452 | GDR2 55888851200

A very close, balanced pair with a white primary.

Half a finder circle NW from magnitude 3.83 alf Hor.



HJ 3576

RA: 51.15° | 3h 24.59' — DEC: -45.67° | -45° 39'

Magnitude: 7.3 | 8.8

Separation: 2.8"

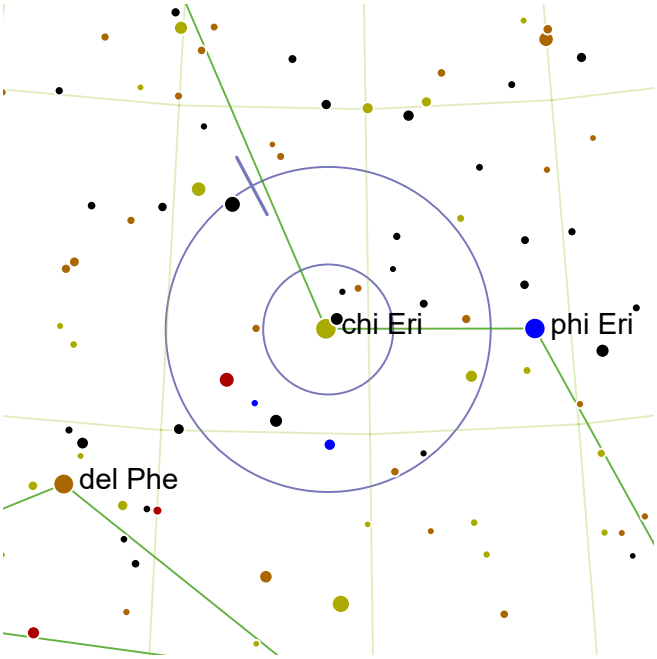
Position Angle: 342°

SAO 216302 | HIP 15883 | GDR2 61065332096

A very close pair with a white primary.

One finder circle SE from magnitude 3.42 Acamar. One and a half finder circles SWW from magnitude 3.83 alf Hor.

It is not clear if this pair is gravitationally bound. The primary is 449 light-years from Earth.



Chi Eri

RA: 29.0° | 1h 56.0' — DEC: -51.62° | -51° 36'

Magnitude: 3.8 | 10.7

Separation: 2.6"

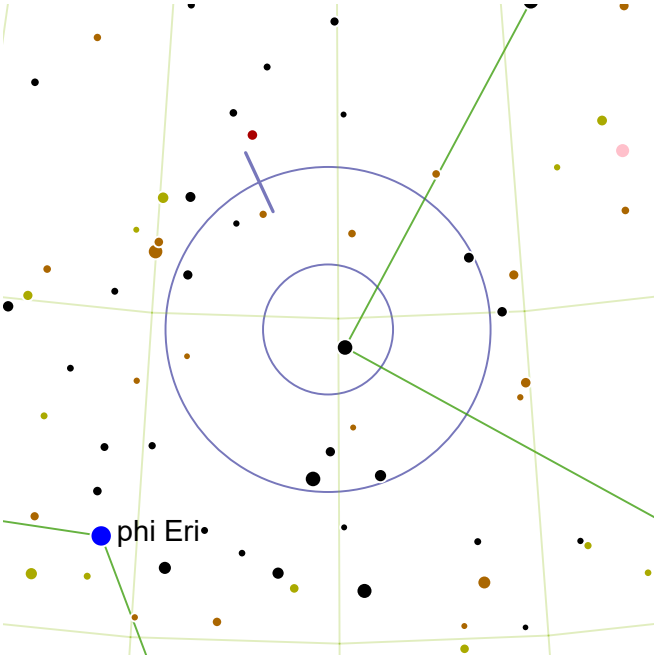
Position Angle: 208°

SAO 232573 | HIP 9007

A brilliant yellow primary with a very close but vastly fainter secondary.

Chi Eri is a bright star in Eridanus. One finder circle NNE from magnitude 0.6 Achernar.

Chi Eridani is nearby - only 58 light-years from Earth.



HJ 3520

RA: 39.73° | 2h 38.9' — DEC: -54.83° | -54° 49'

Magnitude: 7.7 | 8.6

Separation: 20.6"

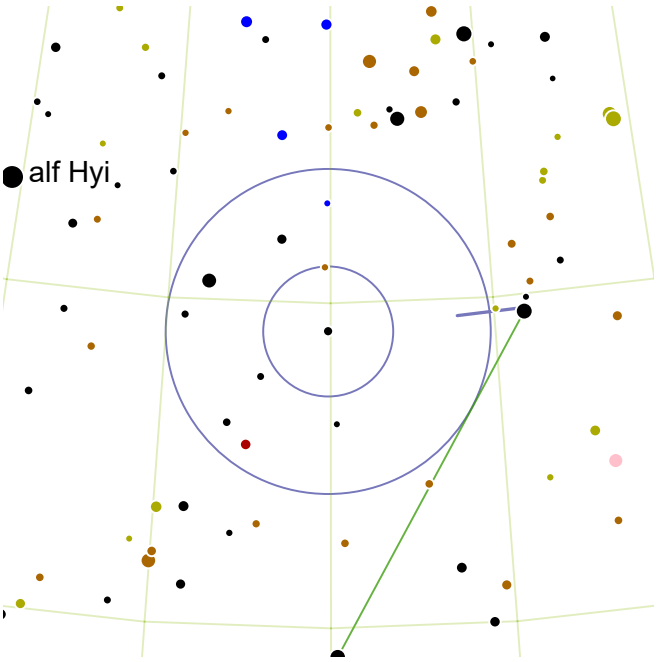
Position Angle: 205°

SAO 232845 | HIP 12345 | GDR2 18682255232

A balanced pair of yellow stars, widely separated.

Half a finder circle SE from magnitude 3.78 phi Eri. One finder circle SEE from magnitude 3.73 chi Eri.

This gravitationally bound pair are 420 light-years from Earth.



DUN 7

RA: 39.92° | 2h 39.69' — DEC: -59.57° | -59° 33'

Magnitude: 7.7 | 7.7

Separation: 36.5"

Position Angle: 97°

SAO 232851 | HIP 12401 | GDR2 11542143616

A wide and equal pairing of a yellow star and white companion.

One finder circle NEE from magnitude 3.02 alf Hyi. One and a half finder circles SEE from magnitude 0.6 Achernar.

The white component is itself an balanced, extreme double (separation: 0.4").

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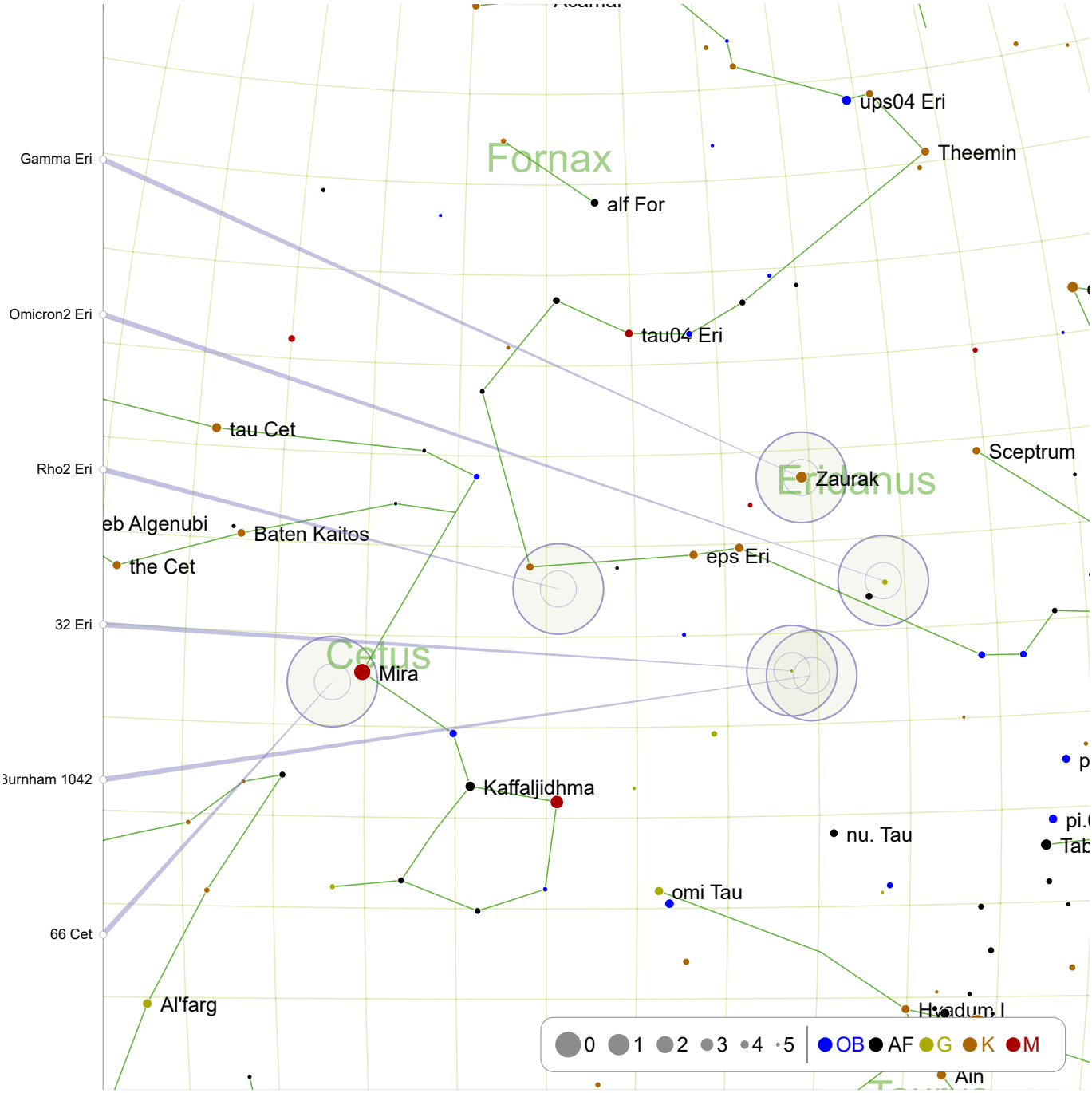
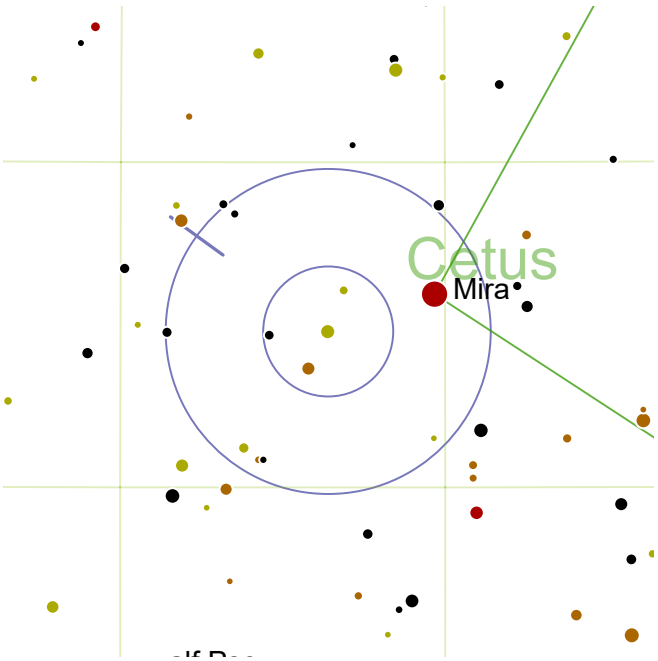
Late Spring - Looking North



66 Cet: page 78 Burnham 1042: page 78 32 Eri: page 79 Rho2 Eri: page 79
Omicron2 Eri: page 80 Gamma Eri: page 80



66 Cet

RA: 33.2° | 2h 12.8' — DEC: -2.4° | -2° 23'

Magnitude: 5.7 | 7.5

Separation: 16.5"

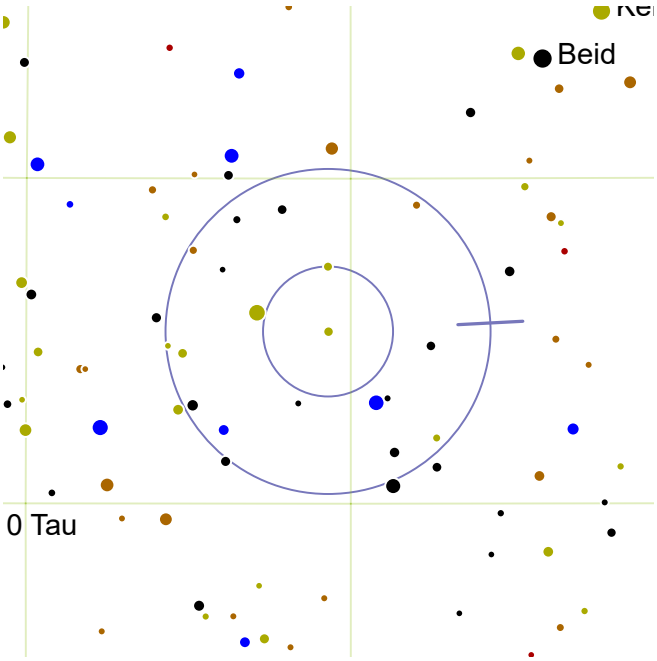
Position Angle: 234°

SAO 129752 | HIP 10305 | TY2 4690-01110-1

A comfortably separated yellow and blue pair.

The primary star is a shines brilliantly in the finder, while the secondary is also relatively bright and only appears dim in contrast to the primary.

Nearby Mira is a wildly variable star, varying between magnitude 3.0 and 10.1 over a period of 332 days. Sometimes Mira peaks at magnitude 2.0 but this is rare. The next peaks in visual luminosity are at 2021-08-18, 2022-07-16, and 2023-06-13.



Burnham 1042

RA: 59.65° | 3h 58.59' — DEC: -2.65° | -2° 38'

Magnitude: 7.5 | 8.5

Separation: 56"

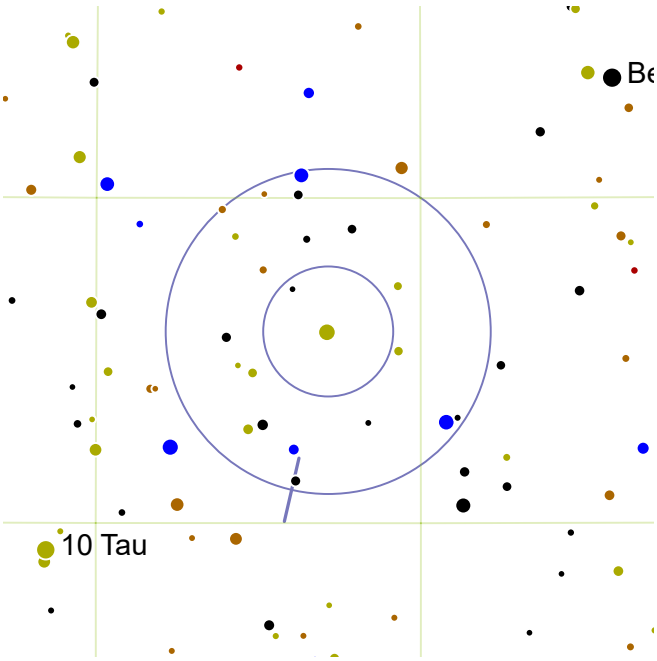
Position Angle: 93°

SAO 130858 | HIP 18583 | GDR2 3253028059856131456

A very wide and unequal pairing. The primary is yellow, while the secondary is a very faint, balanced double (1.3", p.a. 40°).

One and a half finder circles NNE from magnitude 3.72 Rana. One and a half finder circles NE from magnitude 3.81 eps Eri.

The Burnham Double Star Catalog was a comprehensive collection of all known double stars within 121° of the celestial North Pole. It was finally published in 1906, but Burnham had been attempting to publish it since 1870.



32 Eri

RA: 58.58° | 3h 54.3' — DEC: -2.95° | -2° 56'

Magnitude: 4.8 | 6.1

Separation: 6.8"

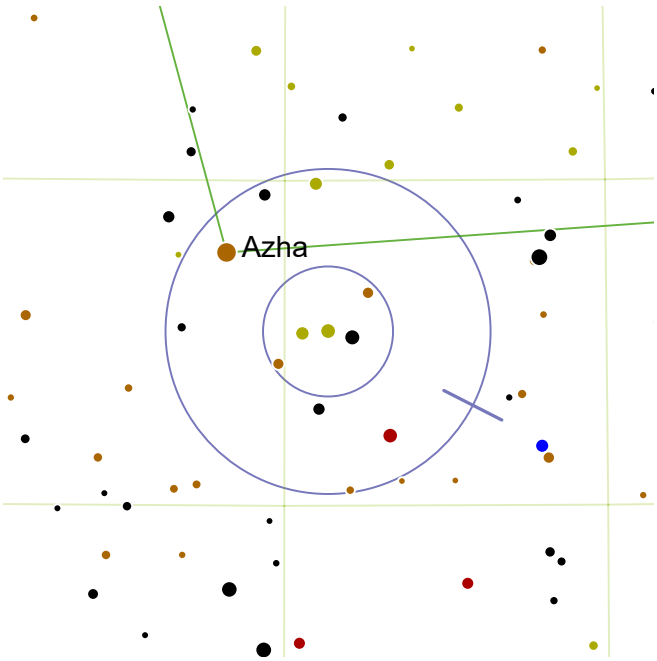
Position Angle: 347°

SAO 130806 | HIP 18255 | GDR2 73003772032

A close double with bright components; yellow and white.

One finder circle NNE from magnitude 3.72 Rana. One and a half finder circles NE from magnitude 3.81 eps Eri.

This double offers a very strong color contrast, because of the intrinsic color of the stars and their apparent brilliance.



Rho2 Eri

RA: 45.68° | 3h 2.69' — DEC: -7.68° | -7° 40'

Magnitude: 5.3 | 8.9

Separation: 1.4"

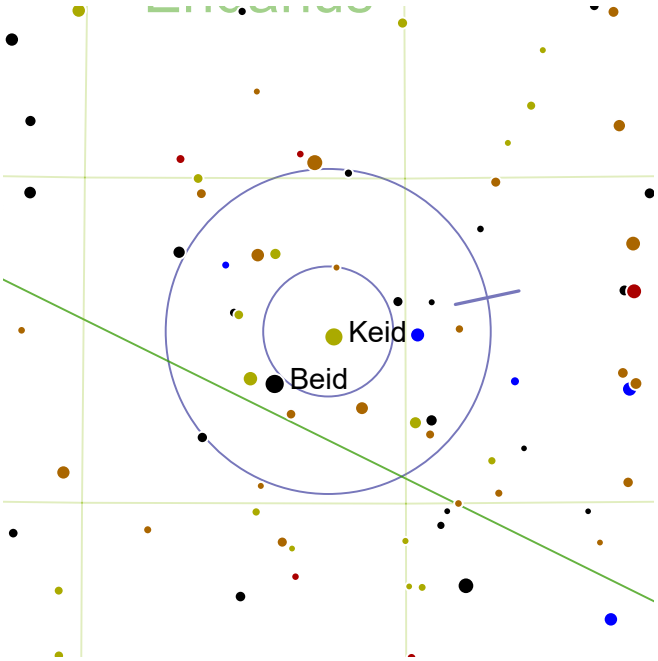
Position Angle: 63°

SAO 130254 | HIP 14168

A bright yellow-orange star with an extremely close, faint companion.

One and a half finder circles NWW from magnitude 3.81 eps Eri.

Rho2 is the central star of asterism of three equally bright stars in a 1° long line, namely Rho1, Rho2 and Rho3 Eridani.



Omicron2 Eri

RA: 63.8° | 4h 15.19' — DEC: -7.65° | -7° 38'

Magnitude: 4.4 | 9.3

Separation: 82.7"

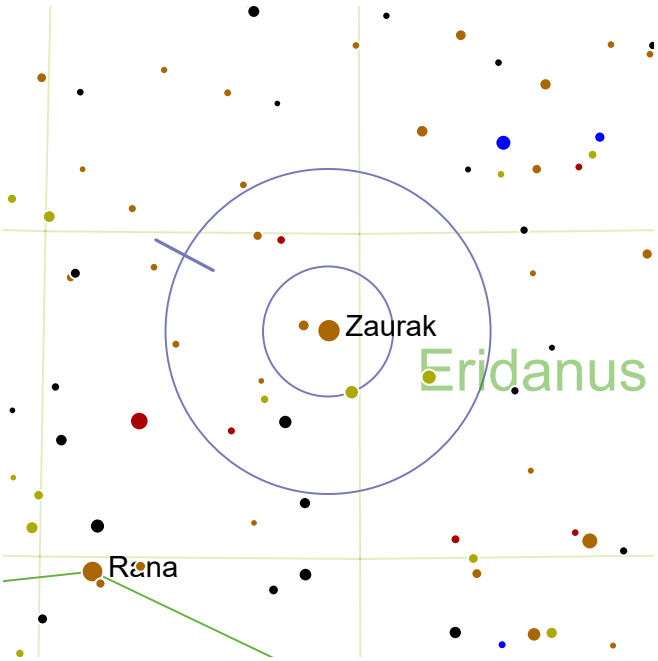
Position Angle: 102°

SAO 131063 | HIP 19849

A brilliant yellow-orange primary distantly separated from a dim white companion.

One finder circle NE from magnitude 3.19 Zaurak. One and a half finder circles NEE from magnitude 3.72 Rana.

The secondary component is a white dwarf (spectral class DA3). The primary is is an orange dwarf, and only shines so brightly in our skies as the system lies just 16 light-years from Earth.



Gamma Eri

RA: 59.5° | 3h 58.0' — DEC: -13.5° | -13° 29'

Magnitude: 3.5 | 11

Separation: 52.8"

Position Angle: 242°

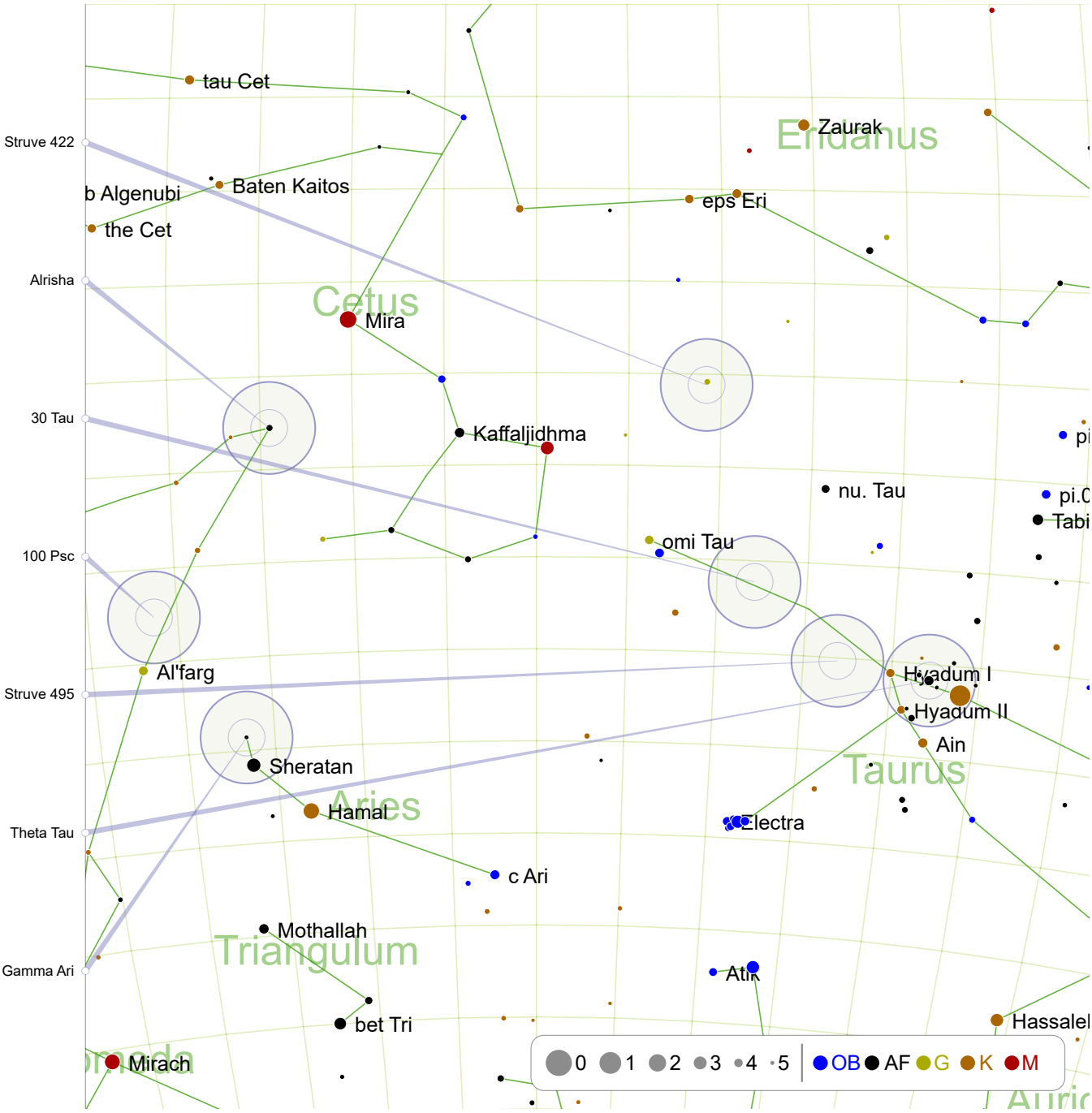
SAO 149283 | HIP 18543

A brilliant red primary widely separated from a very dim companion.

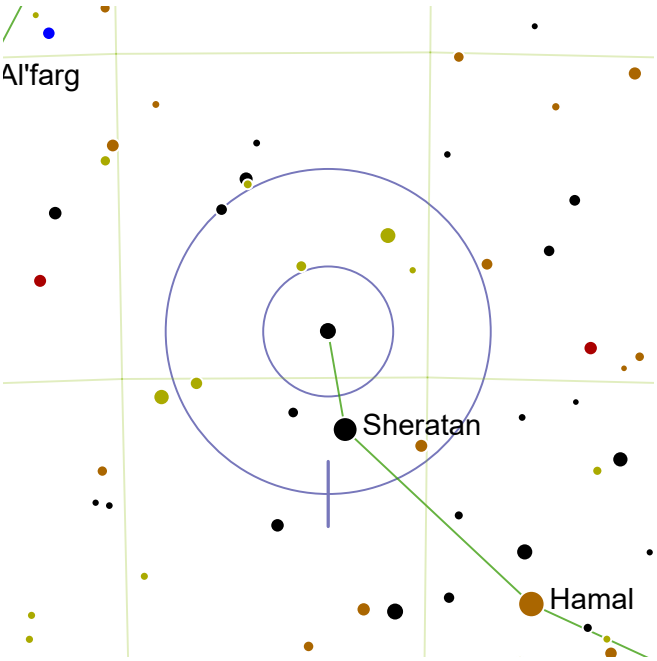
Gamma Eri is a bright star in Eridanus. One finder circle SE from magnitude 3.72 Rana.

This gravitationally bound system consists of a red giant and a very faint companion, lying 203 light-years from us. The primary bears the proper name Zaurak.

Late Spring - Northern Horizon



Gamma Ari: page 82
Theta Tau: page 82
Struve 495: page 83
100 Psc: page 83
30 Tau: page 84
Alrisha: page 84
Struve 422: page 85



Gamma Ari

RA: 28.38° | 1h 53.5' — DEC: 19.3° | 19° 18'

Magnitude: 4.8 | 4.8

Separation: 7.8"

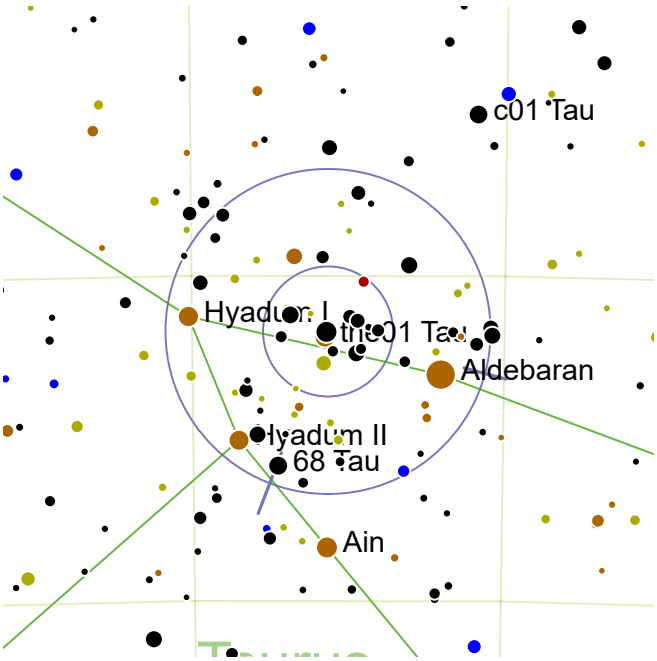
Position Angle: 0°

SAO 92681 | HIP 8832 | GDR2 367308544

An equal pair of icy blue stars with close separation.

The faint galaxy NGC 772 lies 1.5 degrees SEE of Gamma Ari in the finder view.

Robert Hooke discovered this double in 1664. Hooke is most famous for his microscope work, but made significant contributions in physics, geology, architecture and paleontology, as well as astronomy.



Theta Tau

RA: 67.18° | 4h 28.69' — DEC: 15.87° | 15° 52'

Magnitude: 3.4 | 3.9 | 12.0

Separation: 347.9" | 268.3"

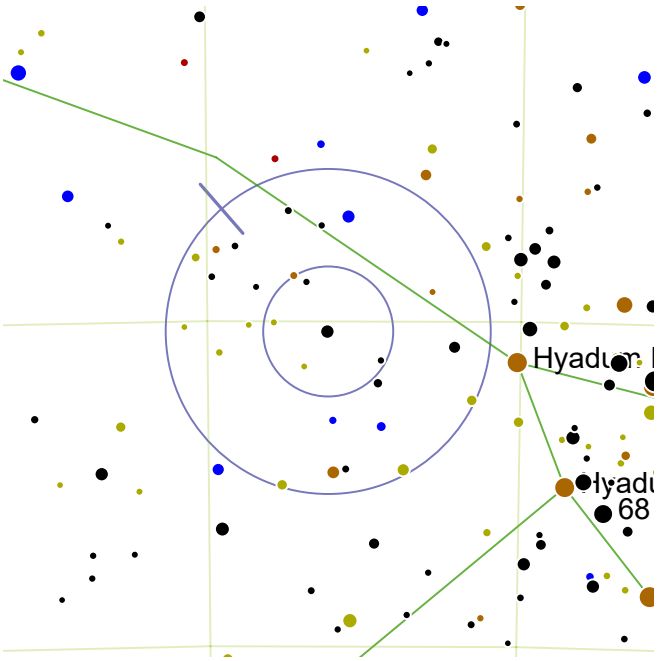
Position Angle: 339° | 75°

SAO 93957 | HIP 20894 | GDR2 19987686144

A balanced blue-yellow pair of stars, with a barely visible distant companion.

Theta Tau is a bright star in Taurus. One and a half degrees E from magnitude 3.86 Hyadum I.

Composed of Theta2 and Theta1 Tauri, with Theta2 being brighter, this system is in the heart of the Hyades cluster, the closest open cluster to the Sun. Theta1 and Theta2 are both impossibly tight doubles themselves.



Struve 495

RA: 61.93° | 4h 7.69' — DEC: 15.17° | 15° 10'

Magnitude: 6.0 | 8.8

Separation: 3.8"

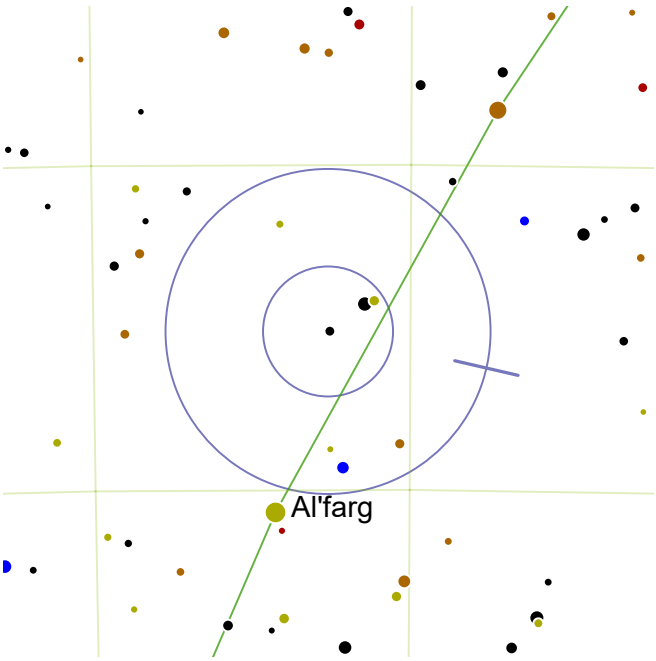
Position Angle: 221°

SAO 93775 | HIP 19261 | GDR2 521351552

A close pair of yellow stars. The primary is almost three magnitudes brighter than the secondary, meaning it is roughly 15 times brighter.

One and a half finder circles west of Aldebaran.

This binary lies 5 degrees to the west of the Hyades, the nearest star cluster to the Earth, only 153 light-years distant.



100 Psc

RA: 23.7° | 1h 34.79' — DEC: 12.57° | 12° 34'

Magnitude: 7.3 | 8.3

Separation: 15.7"

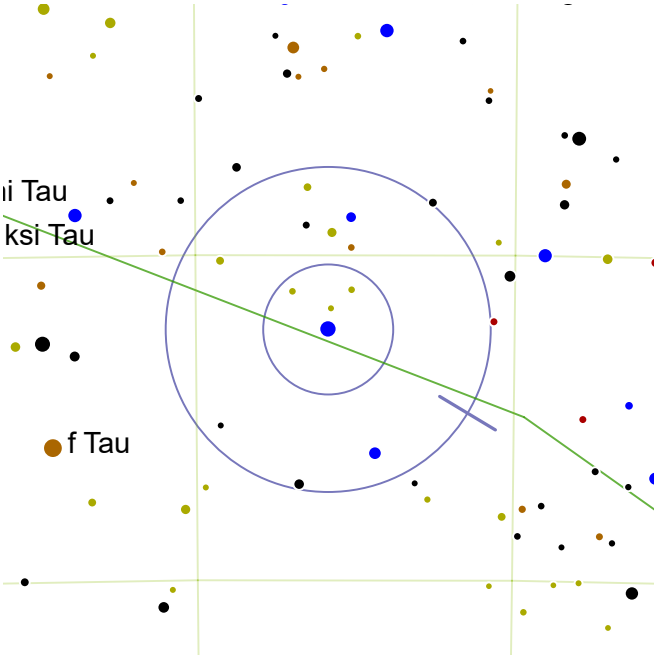
Position Angle: 77°

SAO 92521 | HIP 7364 | GDR2 88972205696

A comfortably separated pair of white stars.

From magnitude 2.6 Sheratan in Aries, hop two finder circles south west.

With this double centered, faint galaxy NGC 660 lies on the north-eastern edge of the finder circle.



30 Tau

RA: 57.08° | 3h 48.3' — DEC: 11.15° | 11° 9'

Magnitude: 5.1 | 10.2

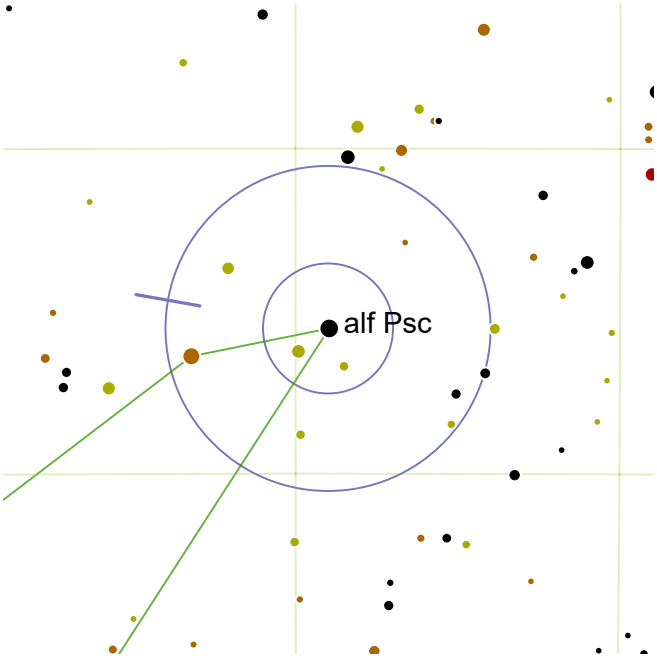
Separation: 9"

Position Angle: 59°

SAO 93611 | HIP 17771 | GDR2 767519232

An unusual blue-red color combination, with reasonable separation, but the faint red companion needs a larger telescope to bring out its color.

One finder circle NEE from magnitude 3.75 ksi Tau. One finder circle NEE from magnitude 3.8 omi Tau.



Alrisha

RA: 30.5° | 2h 2.0' — DEC: 2.77° | 2° 46'

Magnitude: 4.1 | 5.2

Separation: 1.8"

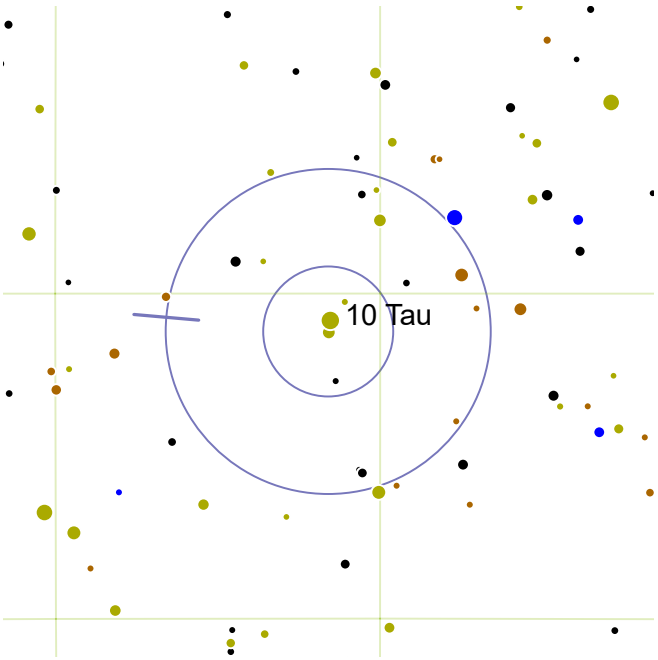
Position Angle: 260°

SAO 110291 | HIP 9487 | GDR2 2517584007848935808

An extremely tight pair of bright, white stars.

Aside from the infrequently visible Mira, no bright star is near Alrisha. Look for a fourth magnitude star 14 degrees west of magnitude 2.5 Menkar.

Although classified as Alpha Piscium, Alrisha (or Alrescha) is only the third brightest star in the dim constellation of Pisces.



Struve 422

RA: 54.2° | 3h 36.8' — DEC: 0.58° | 0° 35'

Magnitude: 5.9 | 8.8

Separation: 6.6"

Position Angle: 265°

SAO 111291 | HIP 16846 | GDR2 92671872384

A bright yellow primary close to a relatively faint orange companion.

Start at magnitude 2.5 Alpha Ceti (Menkar) and move two and a bit finder circles SEE. Struve 422 lies a fifth of a degree north of the slightly brighter 10 Taurus.

The system is an RS Cvn-type variable system, where an evolved G-class star with a spectroscopic companion has significant starspots that rotate in and out of view.

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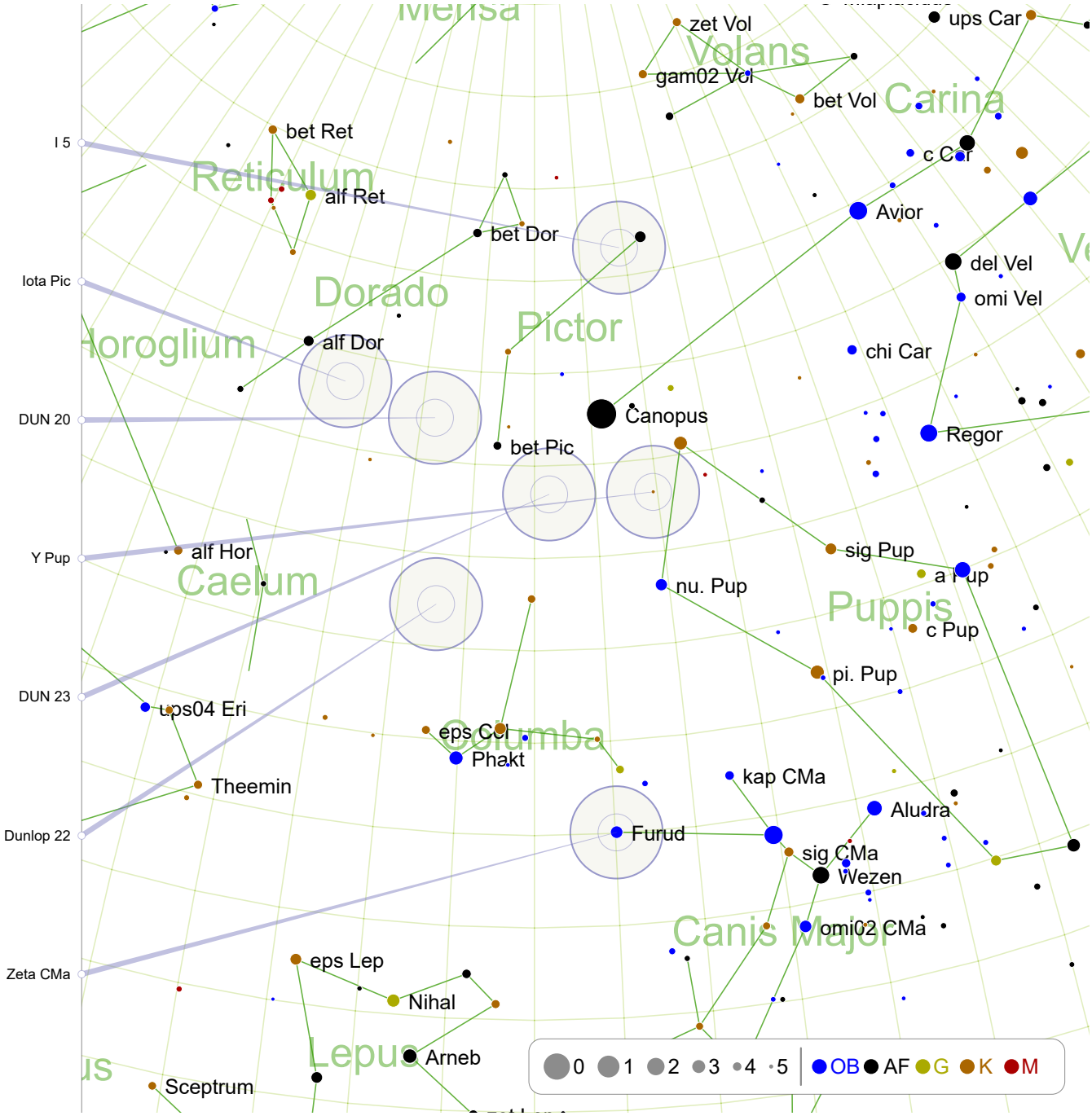
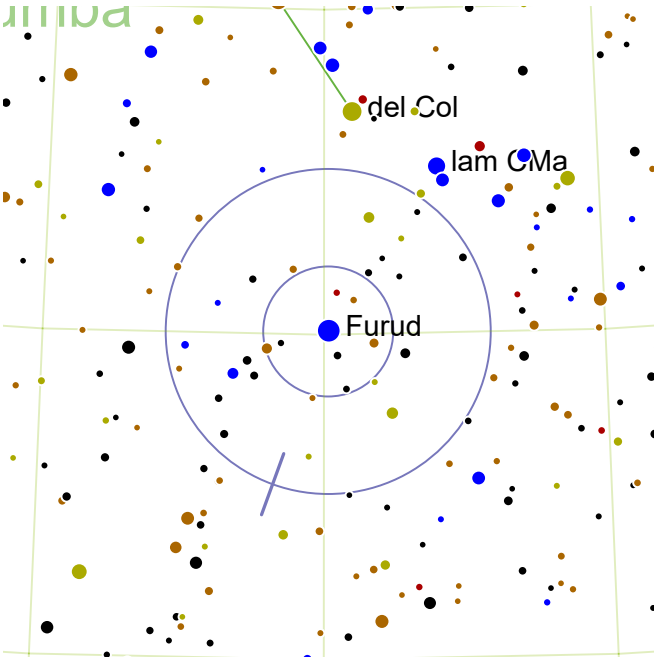
Early Summer - Looking South



Zeta CMa: page 88 | Dunlop 22: page 88 | DUN 23: page 89 | Y Pup: page 89

DUN 20: page 90 | Iota Pic: page 90 | I 5: page 91



Zeta CMa

RA: 95.08° | 6h 20.3' — DEC: -30.05° | -30° 2'

Magnitude: 3.0 | 7.7

Separation: 169.6"

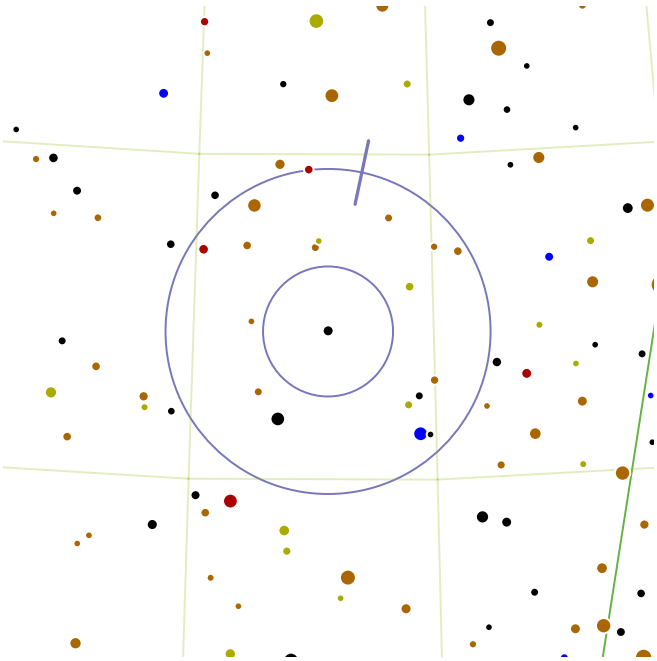
Position Angle: 340°

SAO 196698 | HIP 30122

A brilliant bluish primary distantly separated from a fairly apparent orange secondary.

Zeta CMa is a bright star in Canis Major. One finder circle NWW from magnitude 3.78 kap CMa.

Also known as Furud. Arabic astronomers gave the name Furud ("the solitary ones") to many otherwise anonymous stars, but the name has been officially granted to Zeta CMa by the IAU.



Dunlop 22

RA: 82.8° | 5h 31.19' — DEC: -42.3° | -42° 17'

Magnitude: 7.2 | 7.8

Separation: 7.3"

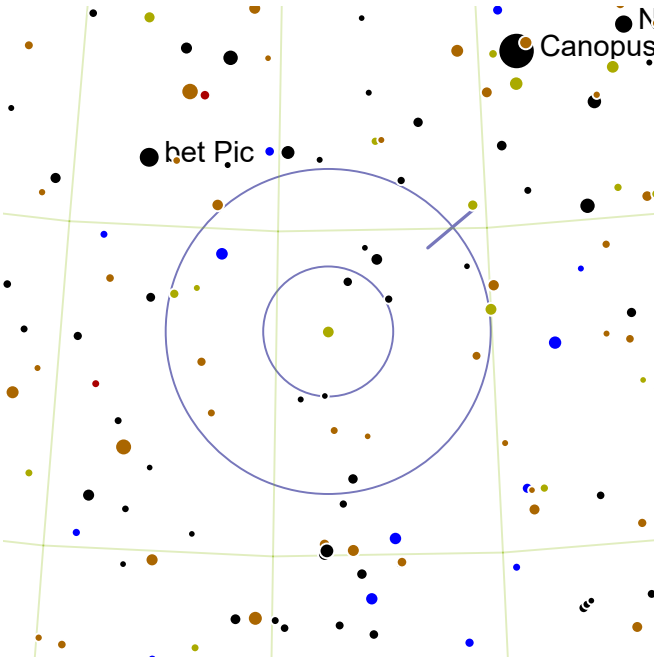
Position Angle: 168°

SAO 217374 | HIP 25856 | GDR2 76992118784

A close and balanced pair with a white primary.

One finder circle S from magnitude 3.92 eps Col.

Caldwell 73, a magnitude 7.2 globular cluster, is one finder circle to the north west.



DUN 23

RA: 91.2° | 6h 4.8' — DEC: -48.47° | -48° 27'

Magnitude: 7.3 | 7.7

Separation: 2.6"

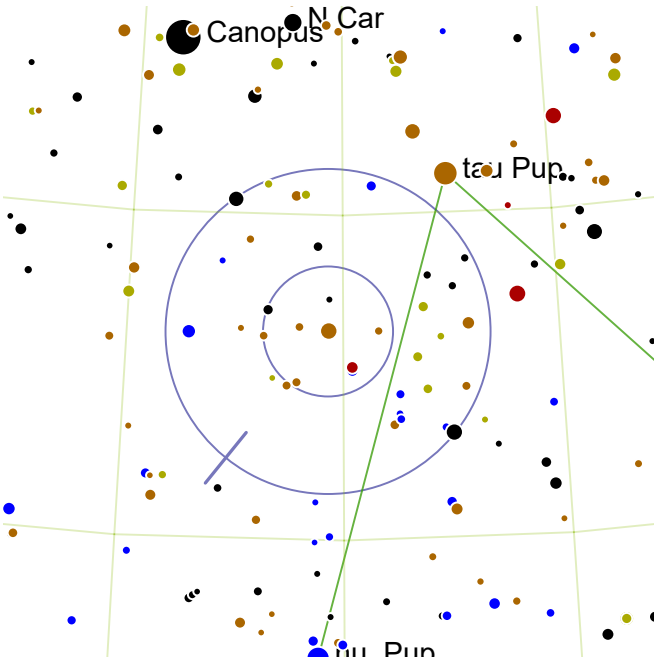
Position Angle: 130°

SAO 217708 | HIP 28796 | GDR2 85020871424

An equal pair of yellow stars, very closely separated.

Half a finder circle NE from magnitude 3.94 bet Pic. Two and a half finder circles SSE from magnitude 3.92 eps Col.

The binary system is only 98 light-years from Earth. The primary is an eruptive variable star designated as V575 Pup.



Y Pup

RA: 99.65° | 6h 38.6' — DEC: -48.22° | -48° 12'

Magnitude: 5.1 | 7.4

Separation: 12.9"

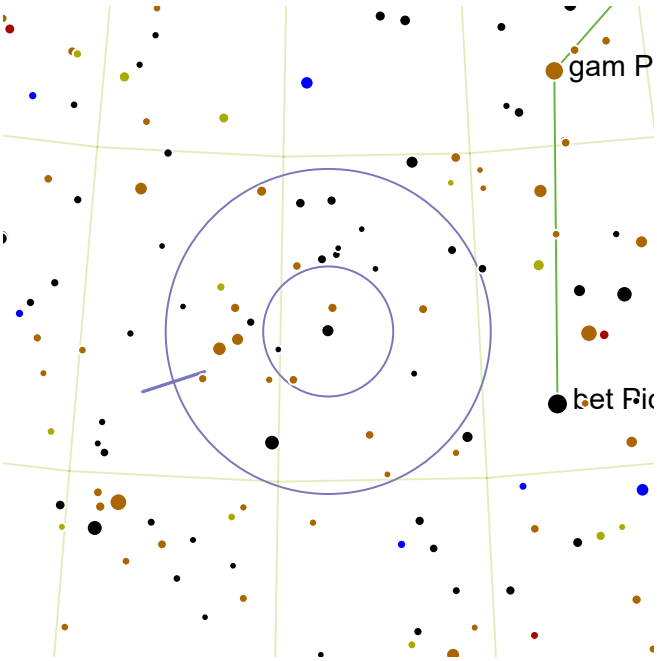
Position Angle: 321°

SAO 218093 | HIP 31765 | GDR2 86235237248

A bright yellow-orange primary easily separated from a very slightly bluish secondary.

Half a finder circle NW from magnitude 2.83 tau Pup. One and a half finder circles NEE from magnitude 3.94 bet Pic.

Half a degree to the north east, HIP 31966 (mag. 6.7) and HIP 31962 (mag 6.7) form a lovely very wide but equal orange and blue pairing (192" separation),



DUN 20

RA: 81.2° | 5h 24.8' — DEC: -52.32° | -52° 18'

Magnitude: 6.2 | 6.7

Separation: 38.3"

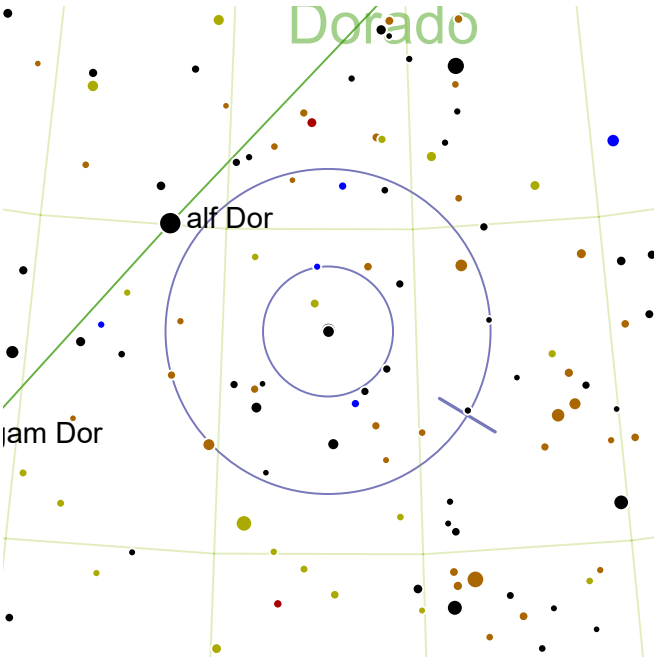
Position Angle: 288°

SAO 233965 | HIP 25303 | GDR2 29385988992

A balanced and widely separated pair of fairly bright, white stars.

Half a finder circle SWW from magnitude 3.94 bet Pic. Two finder circles N from magnitude 3.81 bet Dor.

The primary is also double, being a balanced pair of stars separated by a mere 0.4".



Iota Pic

RA: 72.72° | 4h 50.89' — DEC: -53.45° | -53° 26'

Magnitude: 5.6 | 6.2

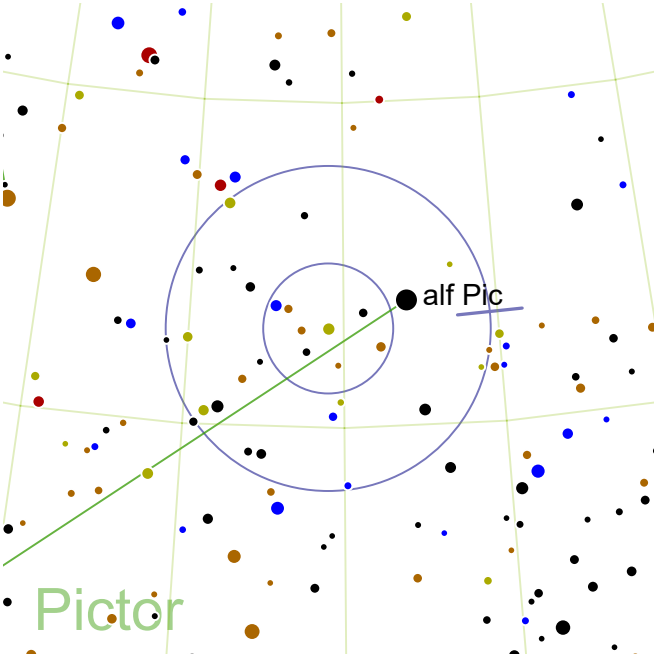
Separation: 12.8"

Position Angle: 59°

SAO 233709 | HIP 22531 | GDR2 72882315648

An easily separated, balanced pair of bright yellowish stars.

Half a finder circle NEE from magnitude 3.47 alf Dor. One and a half finder circles SWW from magnitude 3.94 bet Pic.



I 5

RA: 99.5° | 6h 38.0' — DEC: -61.53° | -61° 31'

Magnitude: 6.3 | 8.8

Separation: 1.0"

Position Angle: 96°

SAO 249604 | HIP 31711 | GDR2 65278589568

An extremely tight pair dominated by a fairly bright, yellow primary.

One degree NWW from magnitude 3.3 alf Pic. One and a half finder circles E from magnitude 3.81 bet Dor.

The primary is slightly variable, designated as AK Pictoris.

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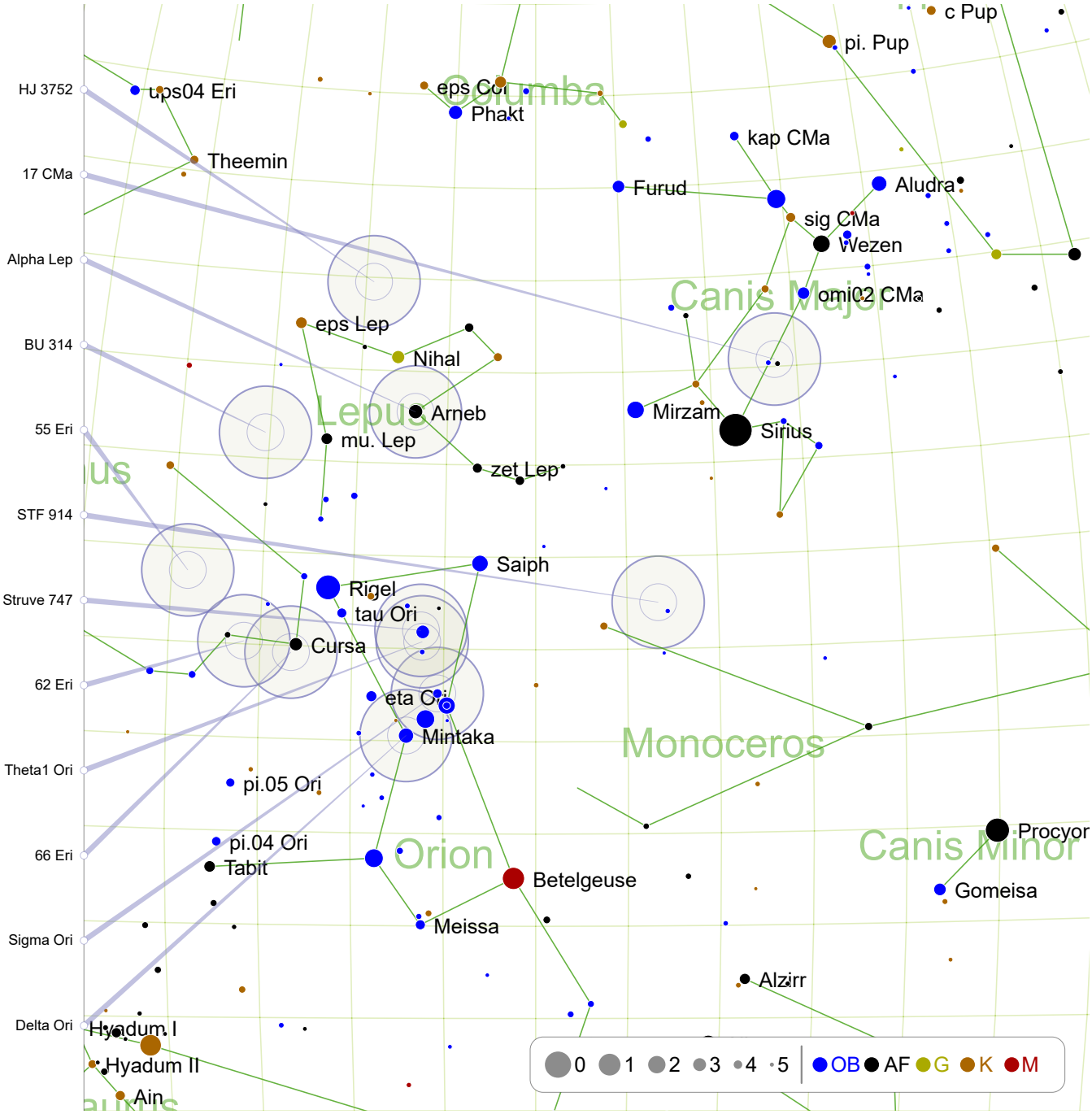
Early Summer - Looking North (1)



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Sigma Ori: page 95
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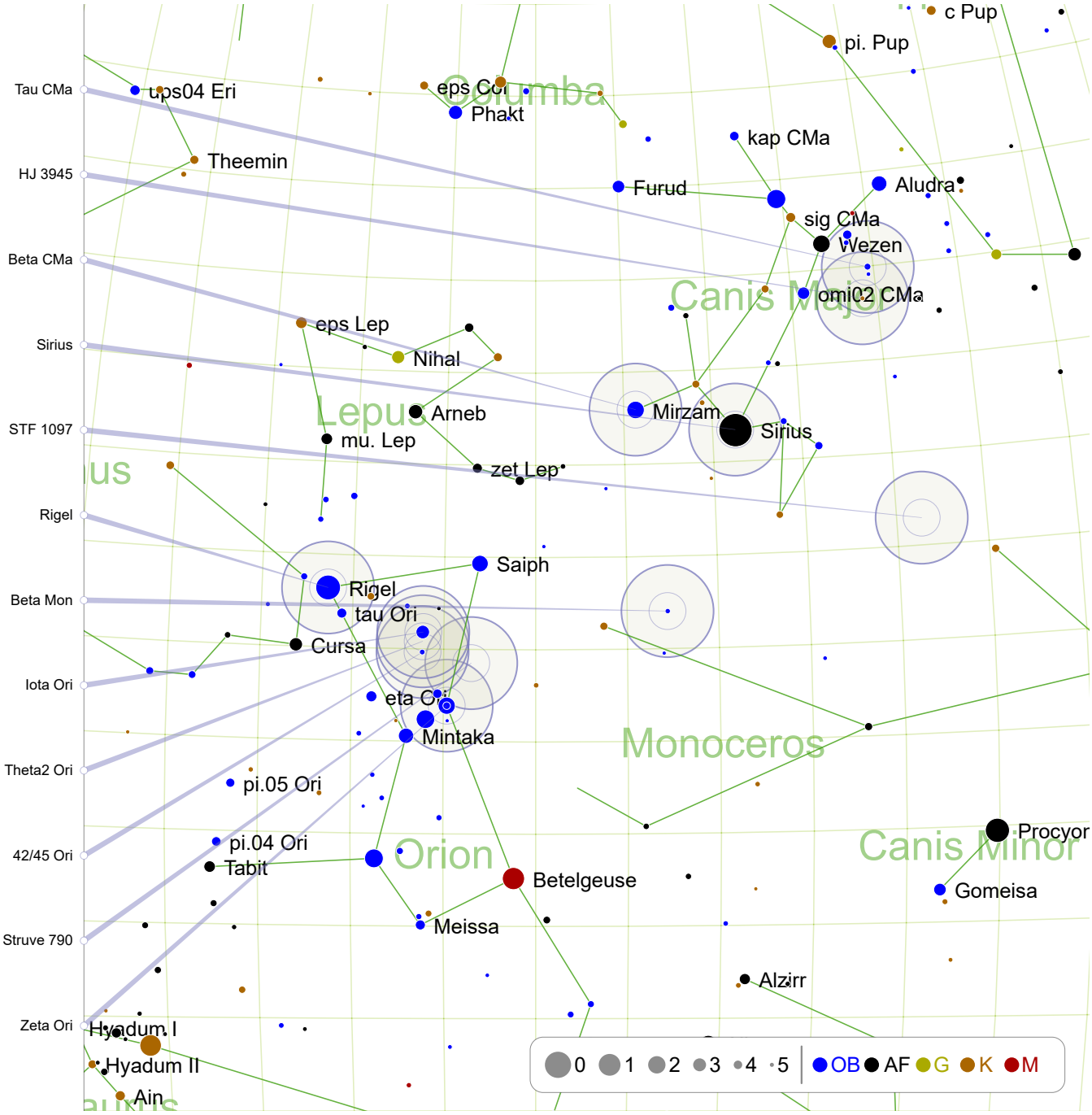
Theta1 Ori: page 96
62 Eri: page 97
Struve 747: page 97
STF 914: page 98
55 Eri: page 98
BU 314: page 99
Alpha Lep: page 99
17 CMa: page 100
HJ 3752: page 100

Early Summer - Looking North (2)



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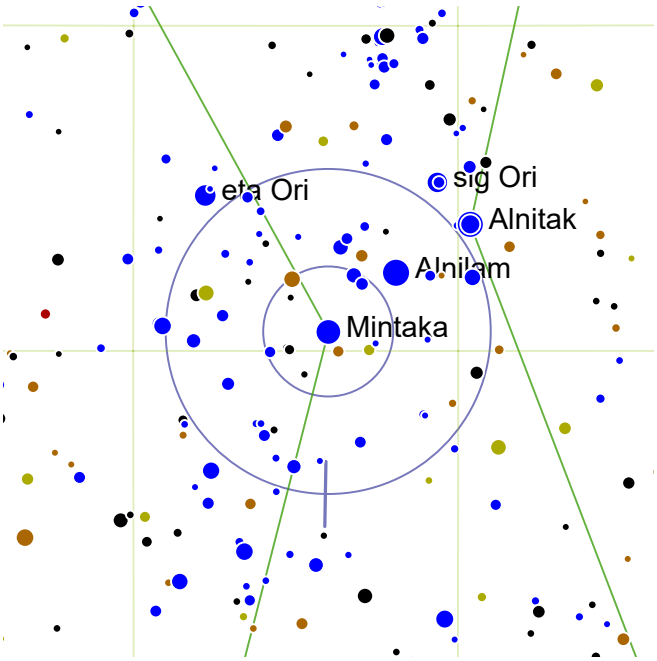
Beta Mon: page 103
Rigel: page 104
STF 1097: page 104
Sirius: page 105
Beta CMa: page 105
HJ 3945: page 106
Tau CMa: page 106



Delta Ori

RA: 83.0° | 5h 32.0' — DEC: -0.3° | 0° 17'

Magnitude: 2.2 | 6.3

Separation: 52.6"

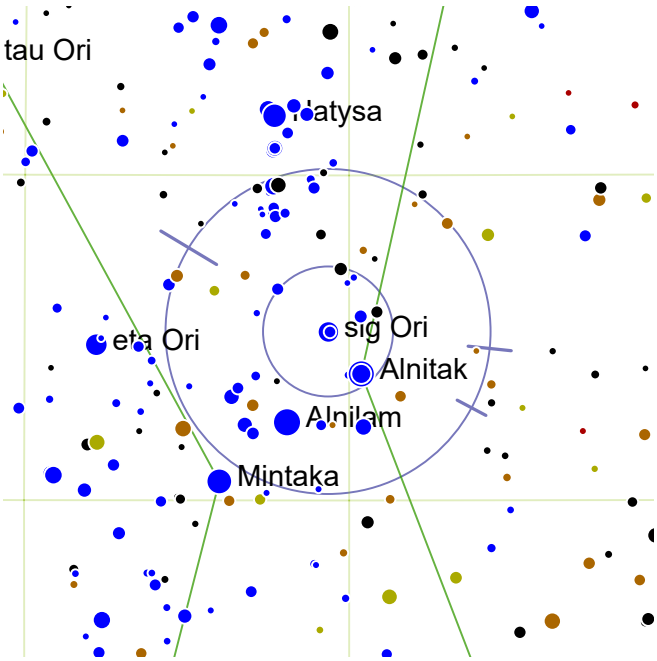
Position Angle: 359°

SAO 132220 | HIP 25930 | HD 36486

A very wide pair consisting of a brilliant primary and significantly fainter blue secondary.

Delta Orionis, better known as Mintaka, is the westernmost star of Orion's belt.

The secondary only appears faint in contrast with the bright primary; in its own right it is a reasonably bright star that that would be visible without a telescope in a dark location.



Sigma Ori

RA: 84.68° | 5h 38.69' — DEC: -2.6° | -2° 35'

Magnitude: 3.8 | 8.8 | 6.6 | 6.3

Separation: 11.4" | 12.9" | 41.4"

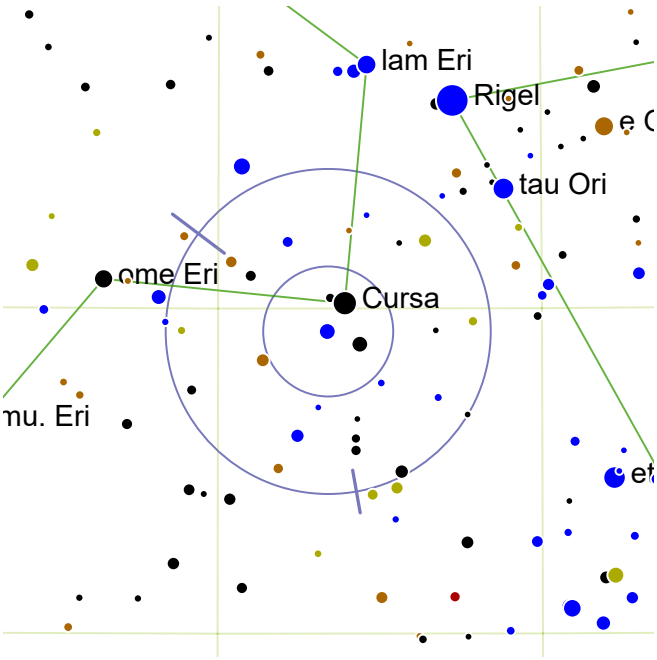
Position Angle: 239° | 84° | 62°

SAO 132406 | HIP 26549 | GDR2 39446556544

A blue primary, flanked by one fainter star to the west, and two relatively bright white stars to the east, all easily separated from the primary.

Sigma Orionis is a degree south-west of Alnitak.

A complex star system, The primary is a very tight pair separated by only 0.3". This can only be split in extremely large telescopes, leaving four easily seen components. A further tiny component lies close to the primary (mag. 12, p.a. 20°, 3.2").



66 Eri

RA: 76.7° | 5h 6.8' — DEC: -4.65° | -4° 38'

Magnitude: 5.1 | 9.4 | 10.8

Separation: 1.6" | 52.2"

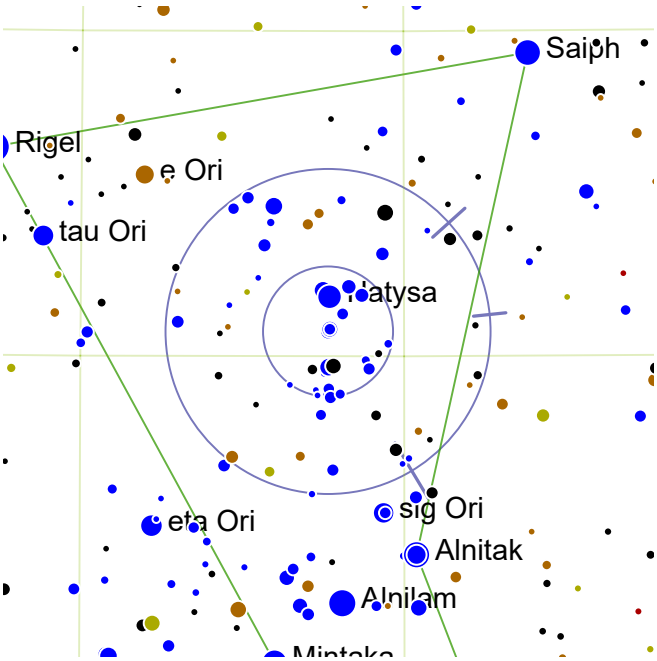
Position Angle: 233° | 10°

SAO 131777 | HIP 23794 | GDR2 15193261568

A bright, bluish primary with an extremely close faint secondary; a further faint, white C component lies at some distance from A and B.

Less than half a degree NNW from magnitude 2.92 Cursa. One finder circle W from magnitude 2.87 Hatysa.

With 66 Eri centered, the famous Witch Head reflection nebula is in the southern quarter of the finder.



Theta1 Ori

RA: 83.83° | 5h 35.3' — DEC: -5.38° | -5° 22'

Magnitude: 6.7 | 7.9 | 5.1 | 6.7

Separation: 8.8" | 13" | 21.5"

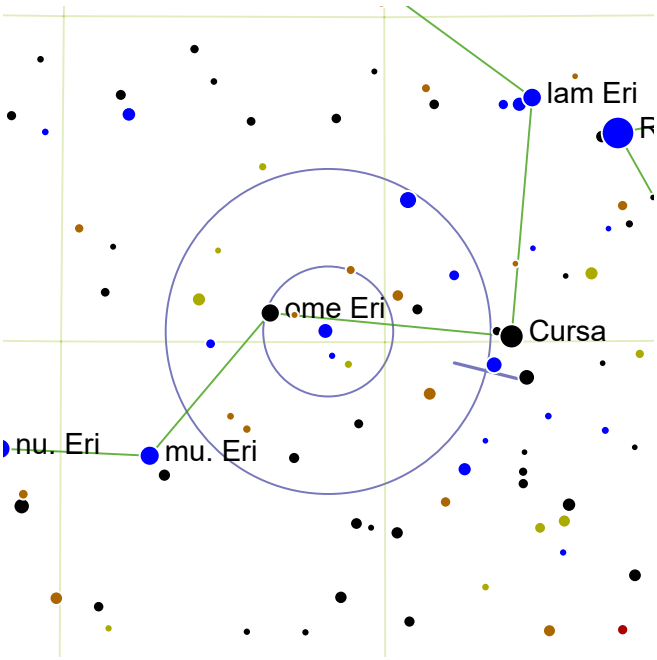
Position Angle: 31° | 132° | 96°

SAO 132314 | HIP 26220 | GDR2 32050194688

Better known as the Trapezium, this multiple star system pushes the boundaries between a multiple star system and a star cluster. The 4 brightest components form a trapezium, but fainter components can also be picked out.

The members of the Trapezium are cosmic babies, less than 100,000 years old. Galileo first sketched the A, C and D components, although he failed to record the bright nebula around the stars!

A 100 mm telescope can see four stars in the Trapezium, while a 150 mm telescope can resolve six.



62 Eri

RA: 74.13° | 4h 56.5' — DEC: -5.17° | -5° 9'

Magnitude: 5.5 | 8.9

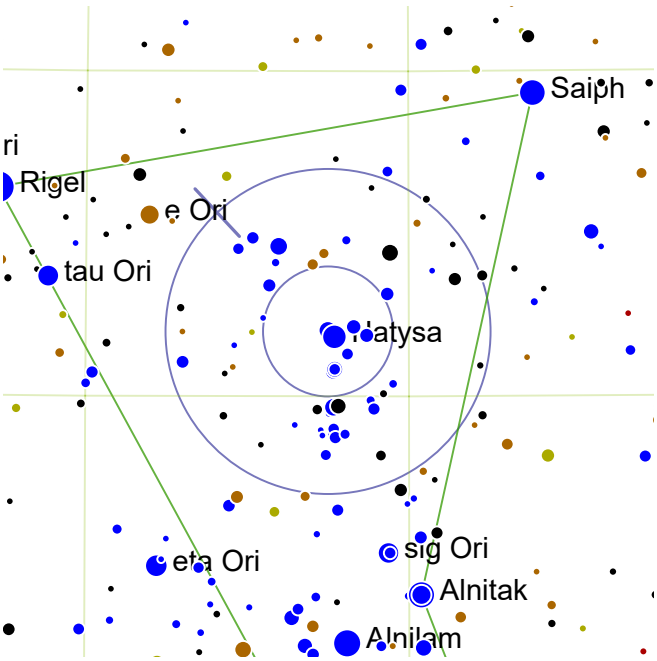
Separation: 66.1"

Position Angle: 76°

SAO 131614 | HIP 22958 | GDR2 89532331904

A distantly separated pair, with a bright, blue primary and a significantly fainter secondary.

Half a finder circle W from magnitude 2.92 Cursa. One and a half finder circles S from magnitude 3.87 pi.05 Ori.



Struve 747

RA: 83.75° | 5h 35.0' — DEC: -6.0° | -6° 0'

Magnitude: 4.8 | 5.7

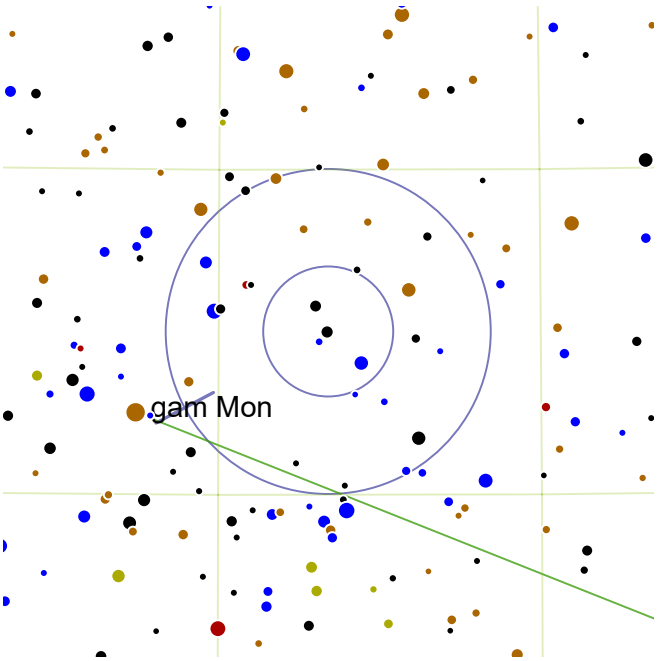
Separation: 35.7"

Position Angle: 223°

SAO 132301 | HIP 26199 | GDR2 66581304832

A very wide pair of well matched and bright white stars.

Right next to Hatysa (Iota Orionis), the bright star at the end of Orion's sword.



STF 914

RA: 96.7° | 6h 26.8' — DEC: -7.52° | -7° 30'

Magnitude: 6.3 | 8.7

Separation: 21.1"

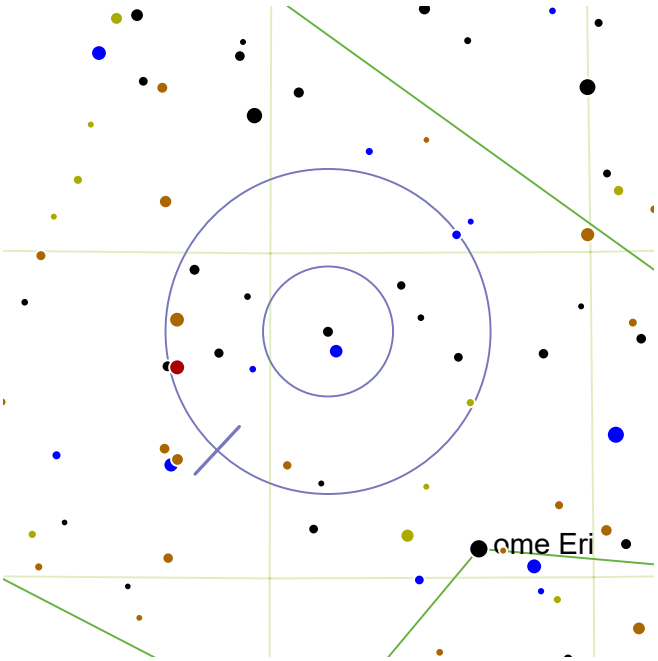
Position Angle: 298°

SAO 133263 | HIP 30675 | GDR2 21199006720

A fairly bright white primary widely separated from a faint secondary.

One and a half finder circles NEE from magnitude 2.2 Saiph. Two finder circles NE from magnitude 3.67 zet Lep.

The bright open star cluster NGC 2232 is three degrees north of STF 914.



55 Eri

RA: 70.9° | 4h 43.6' — DEC: -8.8° | -8° 47'

Magnitude: 6.7 | 6.8

Separation: 9.2"

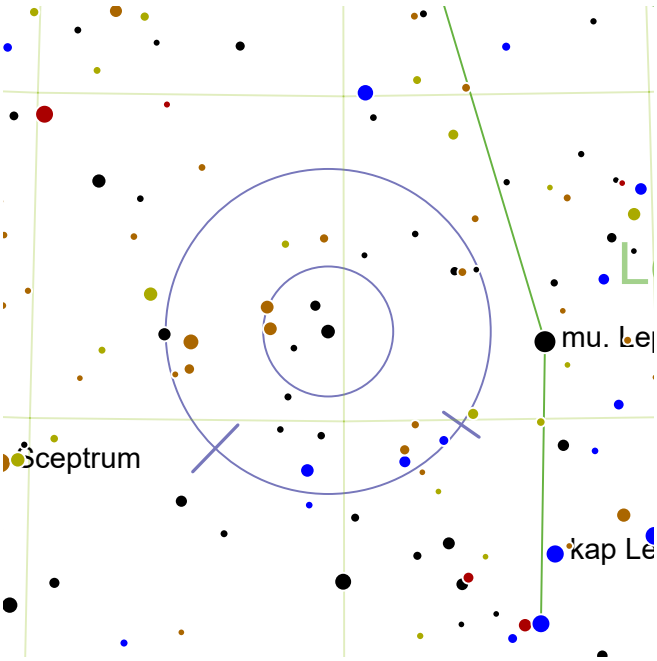
Position Angle: 317°

SAO 131442 | HIP 21986 | GDR2 19107361024

An equal pair of quite close, moderately bright, yellow stars.

One and a half finder circles west and slightly south of Cursa.

According to the Hipparchos satellite, 55 Eridani is 2132 light-years from the Sun.



BU 314

RA: 74.75° | 4h 59.0' — DEC: -16.38° | -16° 22'

Magnitude: 5.9 | 7.5 | 10.4

Separation: 0.8" | 53"

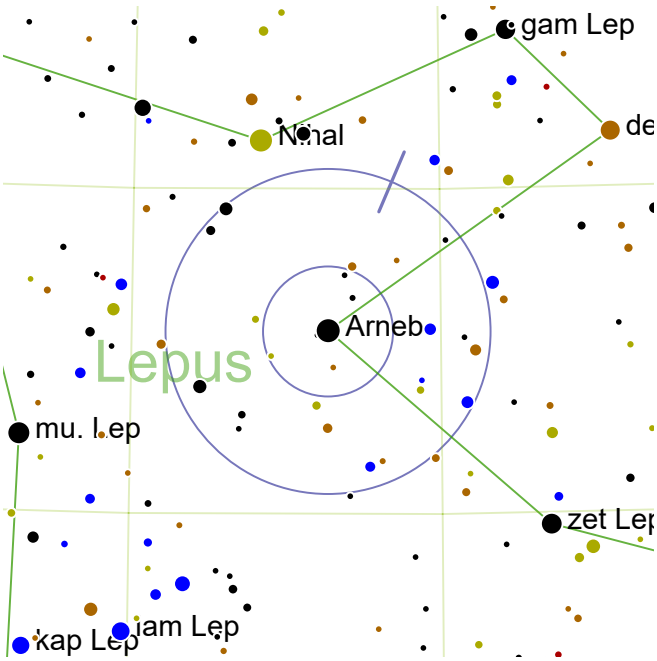
Position Angle: 316° | 55°

SAO 150052 | HIP 23166 | GDR2 39399498240

An extremely tight pair of yellowish stars, with a faint, distant third companion.

Half a finder circle W from magnitude 3.3 mu. Lep. One finder circle SEE from magnitude 3.98 Sceptrum.

This pair of F-type dwarfs is 132 light-years from Earth.



Alpha Lep

RA: 83.18° | 5h 32.69' — DEC: -17.82° | -17° 48'

Magnitude: 2.6 | 11.2

Separation: 35.4"

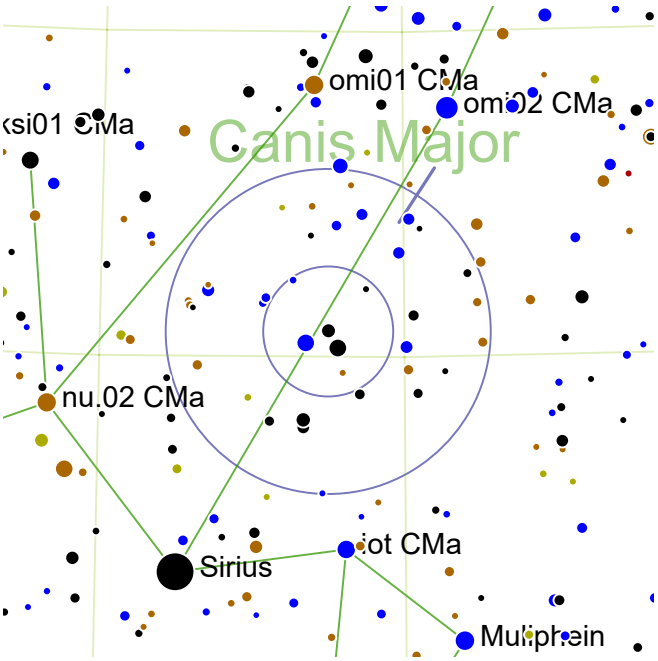
Position Angle: 157°

SAO 150547 | HIP 25985 |GDR2 10610441856

A brilliant yellowish primary widely separated from a very faint companion.

Alpha Lep is a bright star in Lepus.

Also known as Arneb, the primary is an impressive supergiant 2200 light-years from Earth.



17 CMa

RA: 103.75° | 6h 55.0' — DEC: -20.4° | -20° 23'

Magnitude: 5.8 | 8.7

Separation: 42.9"

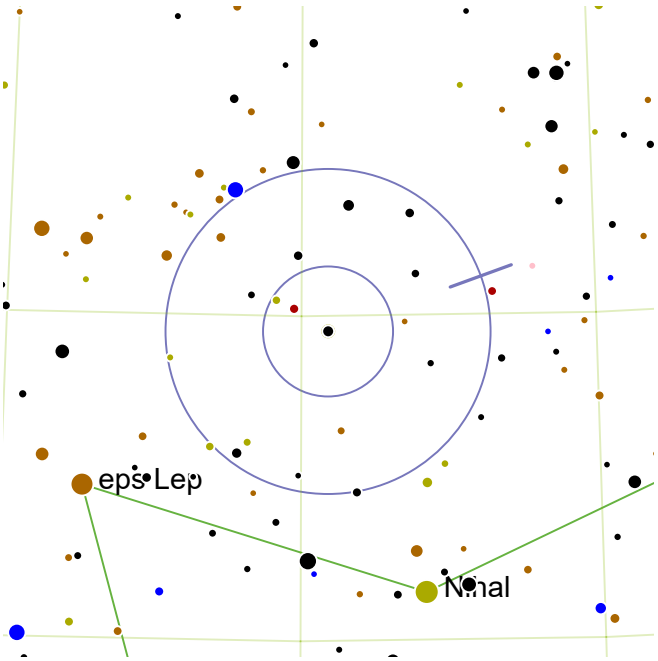
Position Angle: 147°

SAO 172569 | HIP 33248 | GDR2 10610225408

A bright white primary widely separated from a moderately fainter secondary.

Half a finder circle NNW from magnitude 3.12 omi02 CMa. One and a half finder circles NNW from magnitude 3.68 sig CMa.

With this double centered, bright open cluster M41 (mag. 4.5) lies on the western edge of the finder circle.



HJ 3752

RA: 80.45° | 5h 21.8' — DEC: -24.77° | -24° 45'

Magnitude: 5.4 | 6.6

Separation: 3.5"

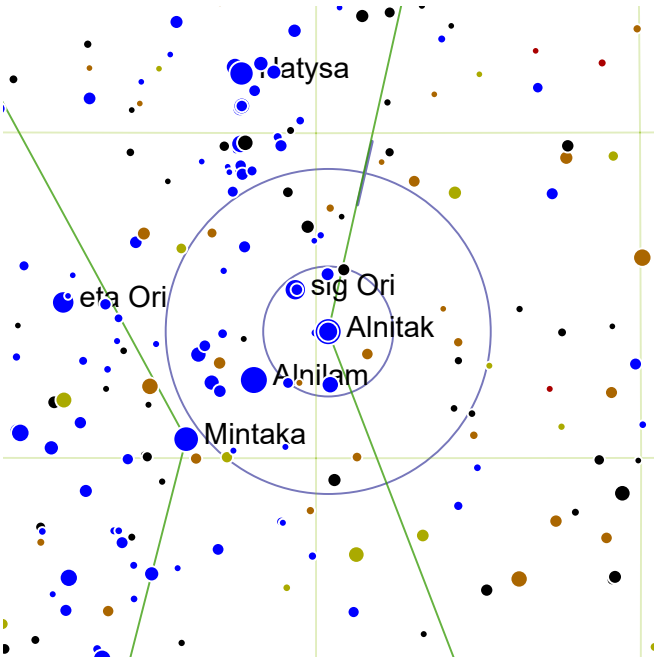
Position Angle: 110°

SAO 170351 | HIP 25045 | GDR2 91568577536

A bright yellow primary with a fairly bright and very close secondary.

Half a finder circle SSW from magnitude 2.96 Nihal. Half a finder circle SEE from magnitude 3.29 eps Lep.

Messier 79, a magnitude 8.6 globular cluster) is less than a degree to the north east.



Zeta Ori

RA: 85.19° | 5h 40.75' — DEC: -1.95° | -1° 56'

Magnitude: 1.88 | 3.70 | 9.55

Separation: 2.17" | 58.5"

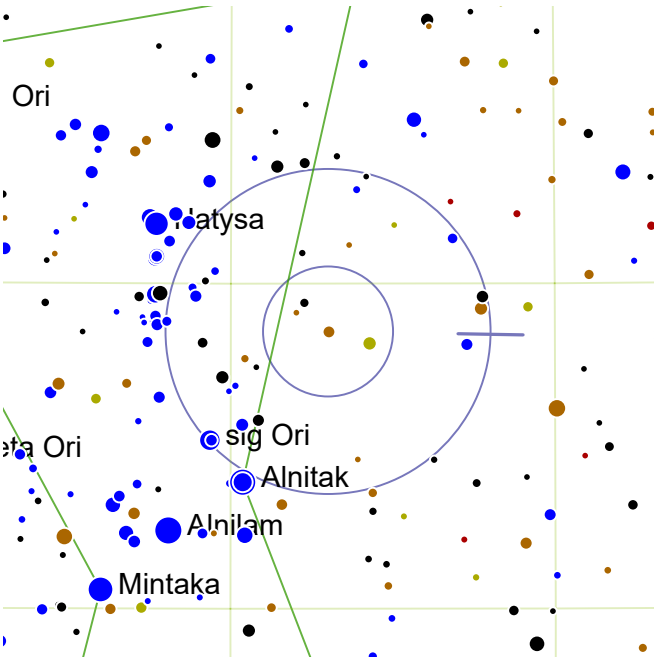
Position Angle: 167°

SAO 132444 | HIP 26727 | GDR2 28221605248

A fiercely brilliant close blue-blue pairing, made difficult by the brightness of the primary.

The eastern star of Orion's belt.

Zeta Orionis, or Alnitak, is the astrophotographer's devil as it overwhelms pictures of the Flame and Horsehead nebulae. In addition it is the brightest O-class star in Earth's sky, which makes it very blue, which is a difficult star color to control in astrophotographs.



Struve 790

RA: 86.5° | 5h 46.0' — DEC: -4.27° | -4° 15'

Magnitude: 6.4 | 8.7

Separation: 6.9"

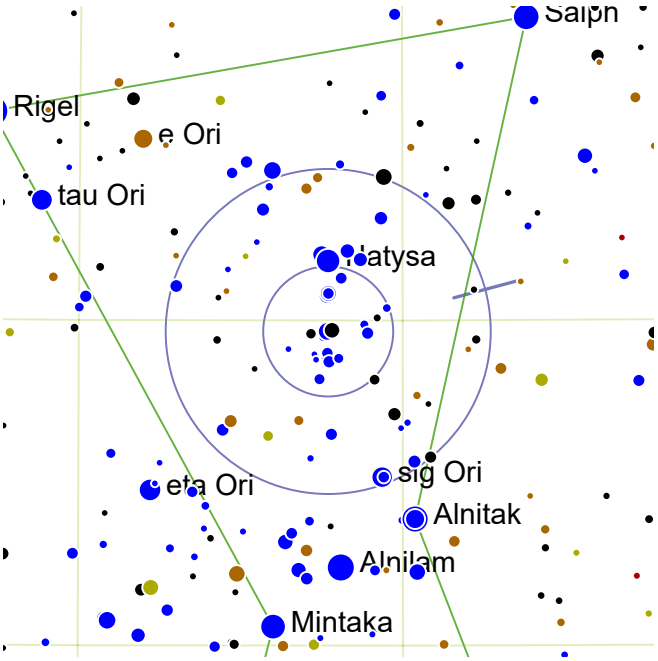
Position Angle: 89°

SAO 132515 | HIP 27212 | GDR2 54756157184

A close blue-yellow pair roughly a degree north-east of the Orion Nebula.

Position Alnitak near the north-western edge of the finder; Struve 790 is near the center of the view.

With Alnitak centered in the finder, both the Flame Nebula and the dark Horsehead Nebula will be in the view, but very difficult to detect from a light polluted location.



42/45 Ori

RA: 83.85° | 5h 35.39' — DEC: -4.83° | -4° 49'

Magnitude: 4.7 | 5.3

Separation: 252"

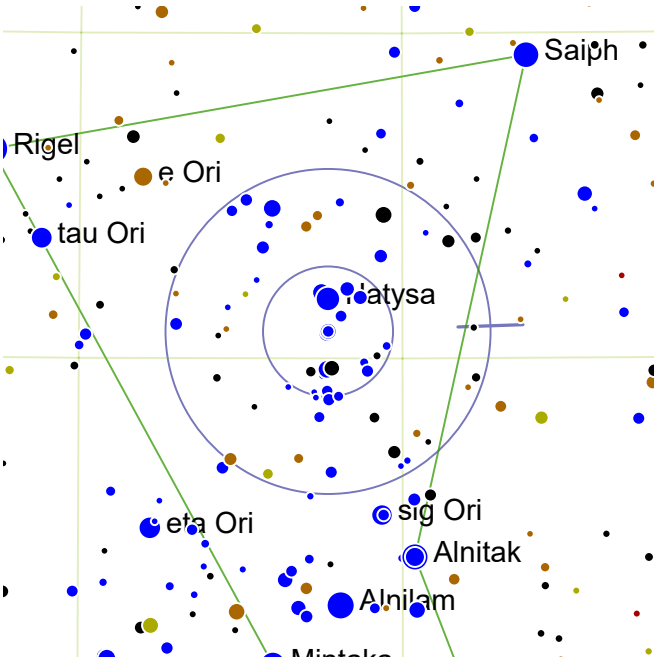
Position Angle: 105°

SAO 132320 | HIP 26237 | GDR2 52067563392

A very wide and bright binocular pair, the brighter star (42 Ori) being bluish and the other white.

Half a degree N from magnitude 2.87 Hatysa. Half a finder circle S from magnitude 2.48 Mintaka.

There is a third magnitude 7.1 star between 42 and 45 Orionis. This optical double is shrouded in the nebulosity of M43 (De Mairan's Nebula).



Theta2 Ori

RA: 83.85° | 5h 35.39' — DEC: -5.42° | -5° 24'

Magnitude: 5.2 | 6.5

Separation: 52"

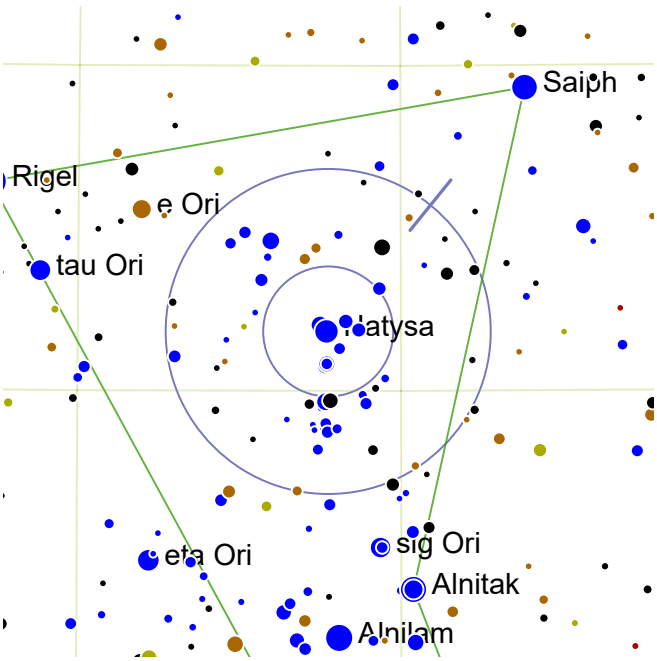
Position Angle: 92°

SAO 132321 | HIP 26235

A very wide line of three bright white stars, often overlooked as it is on the border of the spectacular Orion Nebula.

Half a a degree (one Moon diameter) north of Hatsya.

Best viewed at lower magnifications.



Iota Ori

RA: 83.88° | 5h 35.5' — DEC: -5.92° | -5° 54'

Magnitude: 2.8 | 6.9

Separation: 11.3"

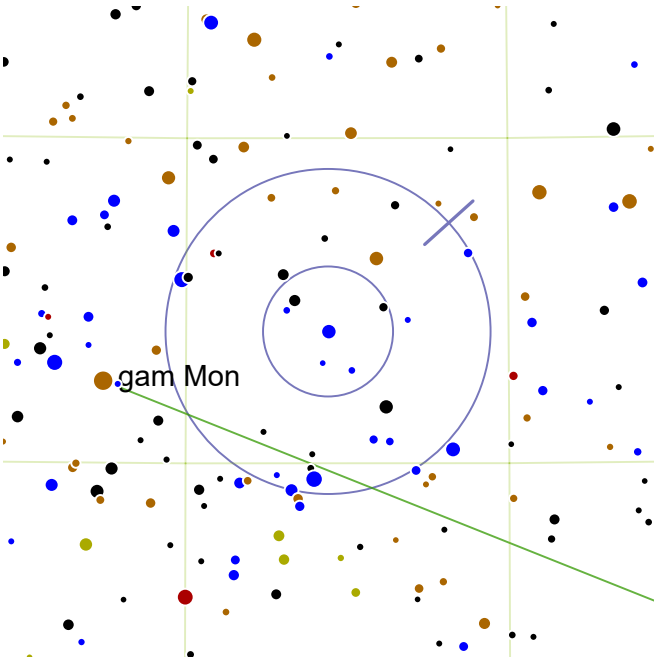
Position Angle: 141°

SAO 132323 | HIP 26241 | GDR2 46640875904

In the same field as Struve 747, Iota Orionis is a brilliant white star with an easily separated and reasonably bright blue companion.

Iota is the southernmost star of Orion's sword.

Iota Orionis is one the brightest member of loose star cluster NGC 1980. NGC 1980 is regarded as a slightly older version of the Trapezium cluster that illuminates the Orion Nebula, but how two similar clusters can form so closely together is a subject of further study.



Beta Mon

RA: 97.2° | 6h 28.8' — DEC: -7.03° | -7° 1'

Magnitude: 4.7 | 5.2

Separation: 7.3"

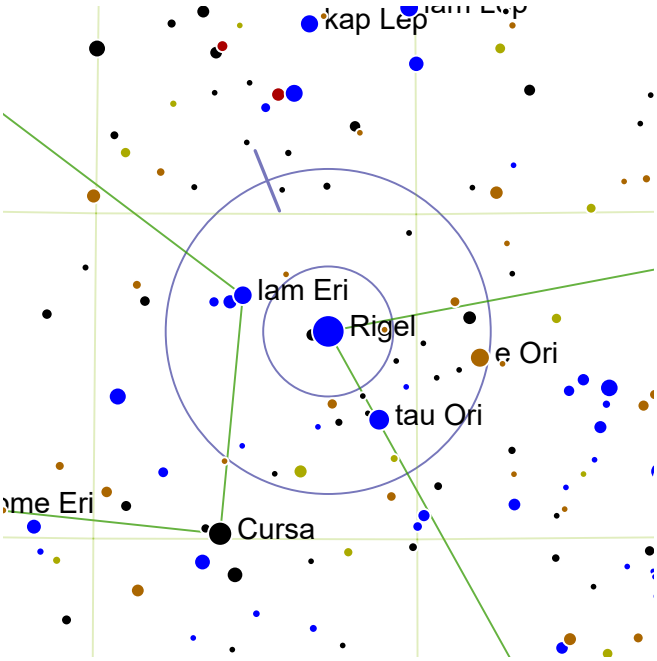
Position Angle: 132°

SAO 133316 | HIP 30867 | GDR2 65675574272

A wonderful triple showing a brilliant bluish primary closely separated from a tight pair of bluish stars.

Locate fourth magnitude Gamma Monocerotis and track east by one-and-a-half finder circles.

Situated in the inky void between Orion and Sirius, this is a hard to find compared to other nearby doubles.



Rigel

RA: 78.63° | 5h 14.5' — DEC: -8.2° | -8° 11'

Magnitude: 0.3 | 6.8

Separation: 9.7"

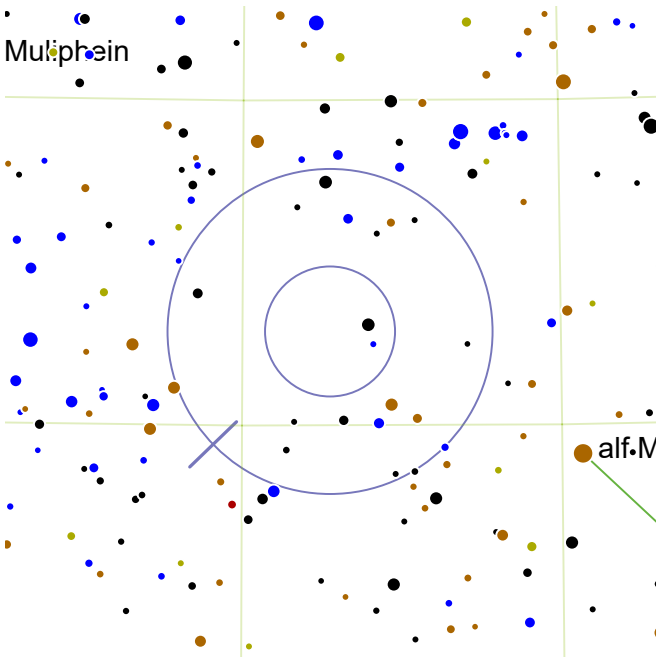
Position Angle: 202°

SAO 131907 | HIP 24436 | HD 34085

Rigel, one of the brightest stars in the sky, has a moderately bright companion that seems very faint in the glare of its primary. The separation is reasonable and the white secondary contrasts nicely with the blue primary.

Rigel is the bright blue star in the south-western corner of the square of Orion.

The secondary is actually a close double but the separation is only 0.1".



STF 1097

RA: 111.38° | 7h 25.5' — DEC: -11.45° | -11° 26'

Magnitude: 5.5 | 8.5

Separation: 20"

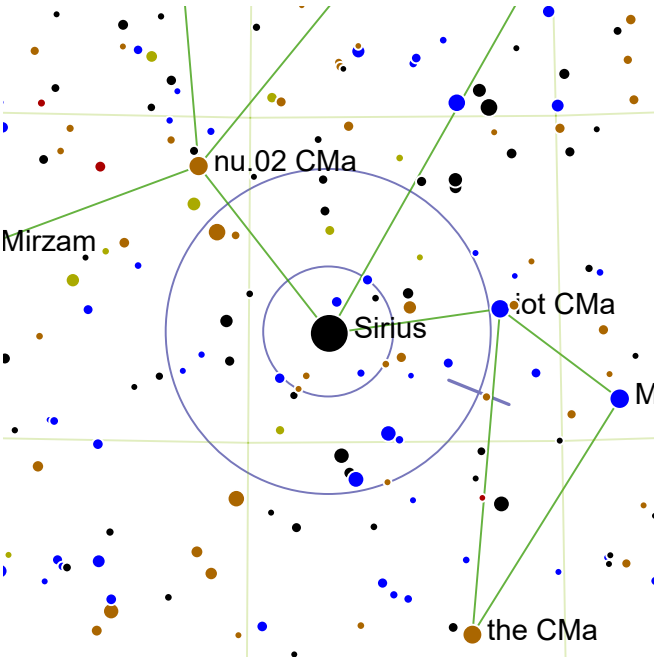
Position Angle: 314°

SAO 152909 | HIP 36251 | GDR2 64130366336

A fairly bright yellow primary with an easily separated and relatively faint companion.

Two finder circles NEE from magnitude -1.58 Sirius. Two and a half finder circles NNE from magnitude 3.12 omi02 CMa.

The double lies on the northern edge of the open star cluster NGC 2396 (magnitude 7.4).



Sirius

RA: 101.28° | 6h 45.1' — DEC: -16.72° | -16° 42'

Magnitude: -1.47 | 8.44

Separation: 11.2"

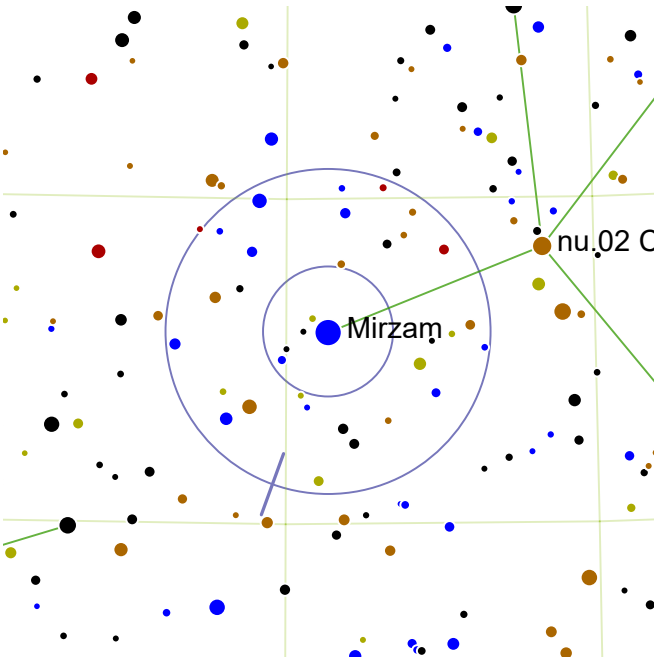
Position Angle: 68°

SAO 151881 | HIP 32349 | HD 48915

A ferociously brilliant white primary moderately separated from a relatively dim white dwarf companion.

Sirius the brightest star in Earth's sky, south-east of Orion.

The secondary is a tiny Earth-sized white dwarf, among the smallest deep sky objects visible in an amateur telescope. The little companion, known affectionately as the "Pup", is lost in the glare of the primary, but standing alone would be an easy binocular target. To tame Sirius, try spotting the Pup in twilight.



Beta CMa

RA: 95.68° | 6h 22.69' — DEC: -17.97° | -17° 57'

Magnitude: 1.9 | 10.5

Separation: 186.1"

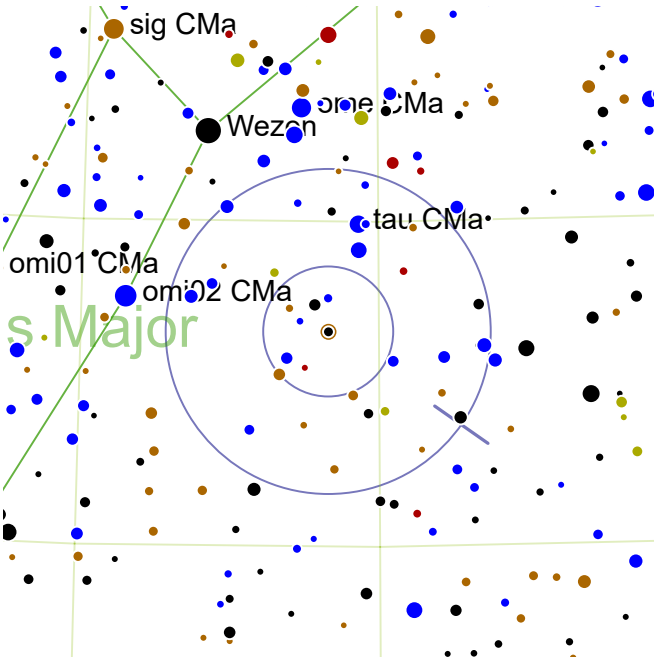
Position Angle: 340°

SAO 151428 | HIP 30324 | GDR2 66754014976

A fiercely brilliant blue primary with a distant very faint companion.

Beta CMa is a bright star in Canis Major. One finder circle SEE from magnitude 3.77 eta Lep.

Also known as Mirzam, 2 CMa, and BUP 88.



HJ 3945

RA: 109.15° | 7h 16.6' — DEC: -23.32° | -23° 18'

Magnitude: 4.8 | 6.8

Separation: 26.6"

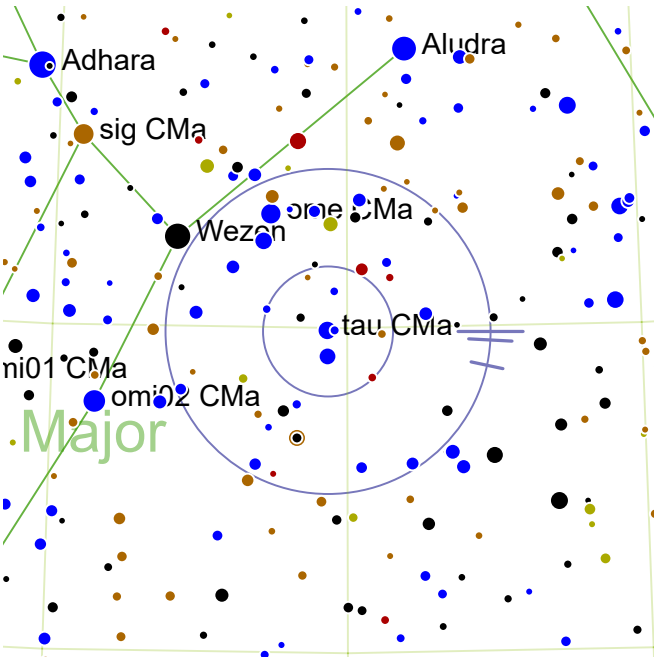
Position Angle: 55°

SAO 173349 | HIP 35210 | GDR2 60635836928

A bright, wide and balanced pair of stars, the primary being orange, and the secondary pale yellow.

Half a finder circle E from magnitude 3.12 omi02 CMa. One finder circle NE from magnitude 3.68 sig CMa.

Open star cluster NGC 2367 (mag. 7.9) lies two degrees to the north east.



Tau CMa

RA: 109.68° | 7h 18.69' — DEC: -24.95° | -24° 56'

Magnitude: 4.4 | 10.2 | 11.2 | 8.2

Separation: 8.3" | 14.2" | 83.5"

Position Angle: 90° | 87° | 78°

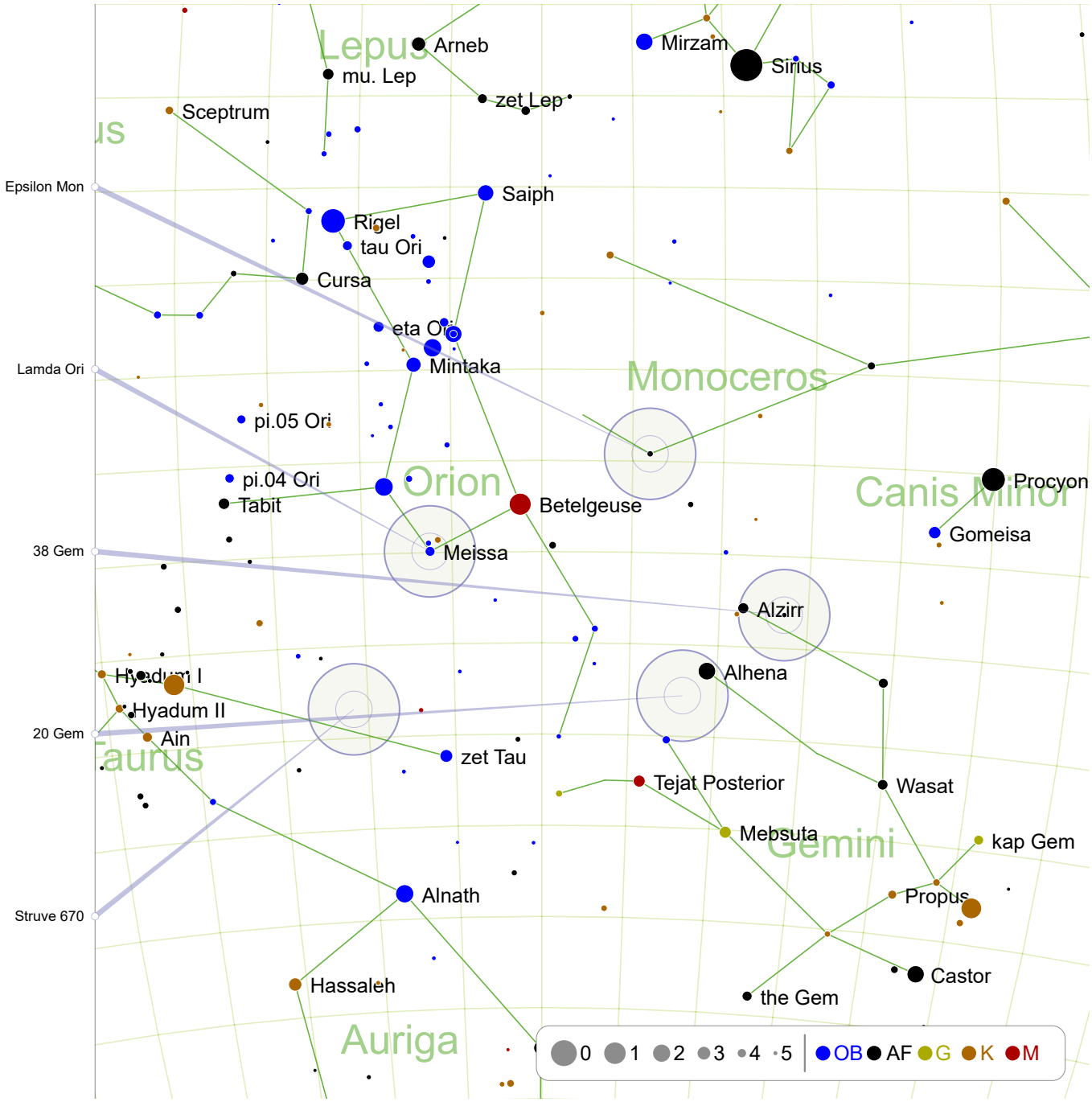
SAO 173446 | HIP 35415 | GDR2 13676667392

A brilliant blue primary with two faint stars close to the east, and a brighter component some distance beyond them.

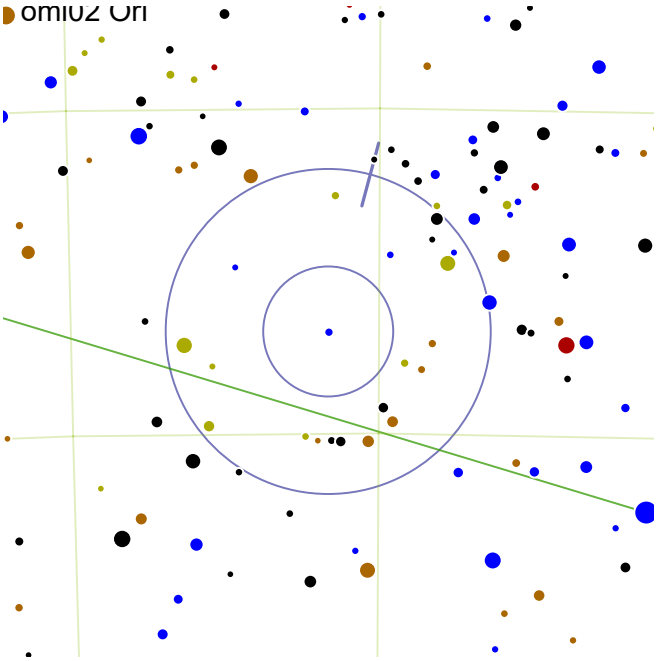
One and a half degrees NNE from magnitude 3.83 ome CMa. Half a finder circle NEE from magnitude 1.98 Wezen.

Tau CMa dominates open cluster Caldwell 64 (also known as the Tau CMa cluster.

Early Summer - Northern Horizon



Struve 670: page 108 20 Gem: page 108 38 Gem: page 109 Lamda Ori: page 109
Epsilon Mon: page 110



Struve 670

RA: 79.18° | 5h 16.69' — DEC: 18.43° | 18° 26'

Magnitude: 7.7 | 8.3

Separation: 2.6"

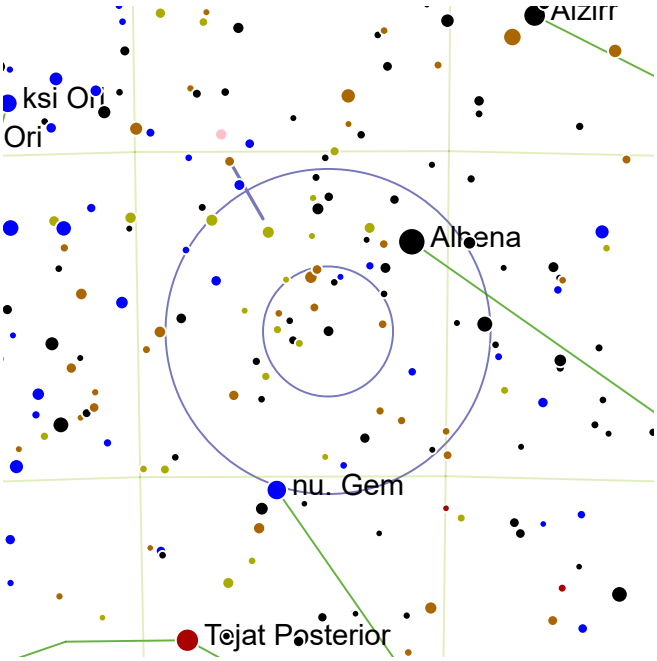
Position Angle: 165°

SAO 94431 | HIP 24612 | GDR2 31577483904

A balanced, very close pair; the primary is bluish.

One finder circle SWW from magnitude 3.0 zet Tau. One and a half finder circles NNW from magnitude 3.66 Meissa.

Open cluster NGC 1807 lies 2.5 degrees to the south west.



20 Gem

RA: 98.08° | 6h 32.3' — DEC: 17.78° | 17° 47'

Magnitude: 6.3 | 6.9

Separation: 20.0"

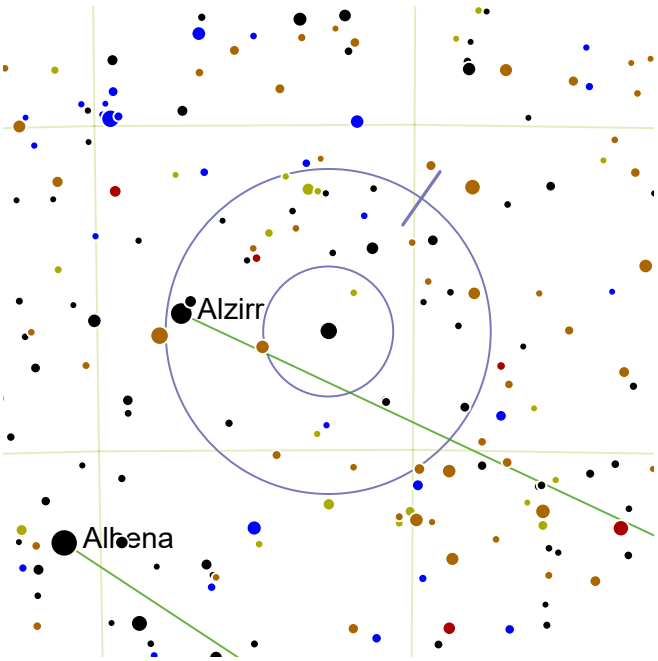
Position Angle: 210°

SAO 95795 | HIP 31158 | GDR2 88717092096

A widely separated but balanced yellow-white pair.

20 Geminorum lies exactly in the middle of the feet of Castor and Pollux.

The primary is a yellowish giant star 262 light-years away.



38 Gem

RA: 103.65° | 6h 54.6' — DEC: 13.18° | 13° 11'

Magnitude: 4.7 | 7.7

Separation: 7.1"

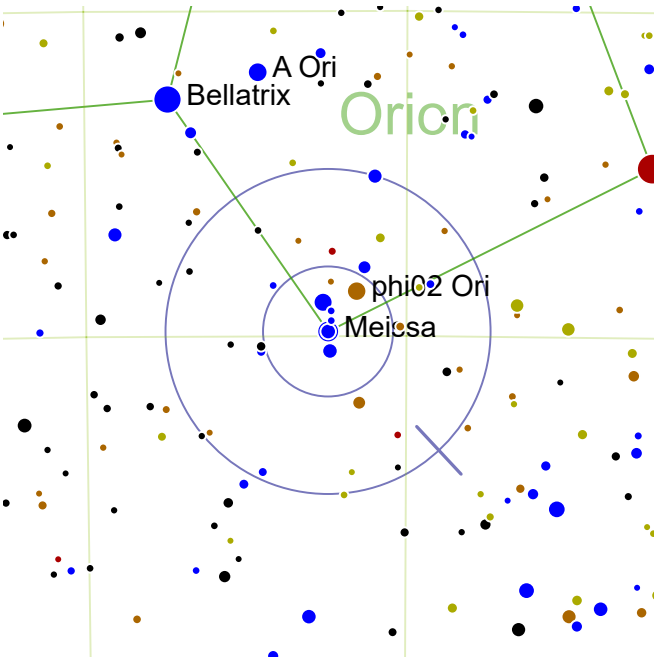
Position Angle: 145°

SAO 96265 | HIP 33202 | GDR2 95121612032

A brilliant white primary with close yellow companion.

About three degrees east of the most southerly foot (third magnitude Alzirr) of the Gemini twins.

Quite close to us, this system is only 98 light-years distant, and the components are separated by about 184 AU. The secondary is a G-class star similar to the Sun but somewhat fainter and yellower.



Lamda Ori

RA: 83.78° | 5h 35.1' — DEC: 9.93° | 9° 56'

Magnitude: 3.6 | 5.5

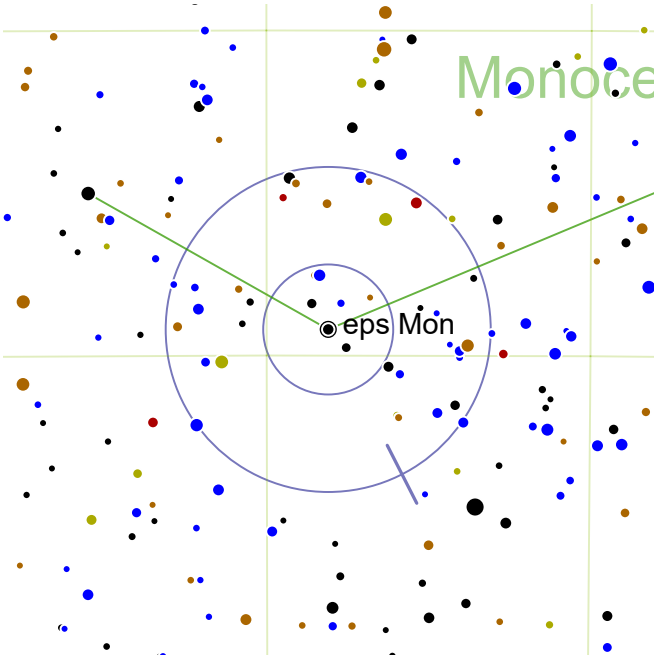
Separation: 4.4"

Position Angle: 43°

SAO 112921 | HIP 26207 | GDR2 83942617088

A close pair of white stars, with a brilliant primary and bright secondary.

Lamda Orionis is one of the three stars forming Orion's head, and is situated in the loose star cluster Collinder 69.



Epsilon Mon

RA: 95.95° | 6h 23.8' — DEC: 4.6° | 4° 36'

Magnitude: 4.5 | 6.5

Separation: 13.4"

Position Angle: 27°

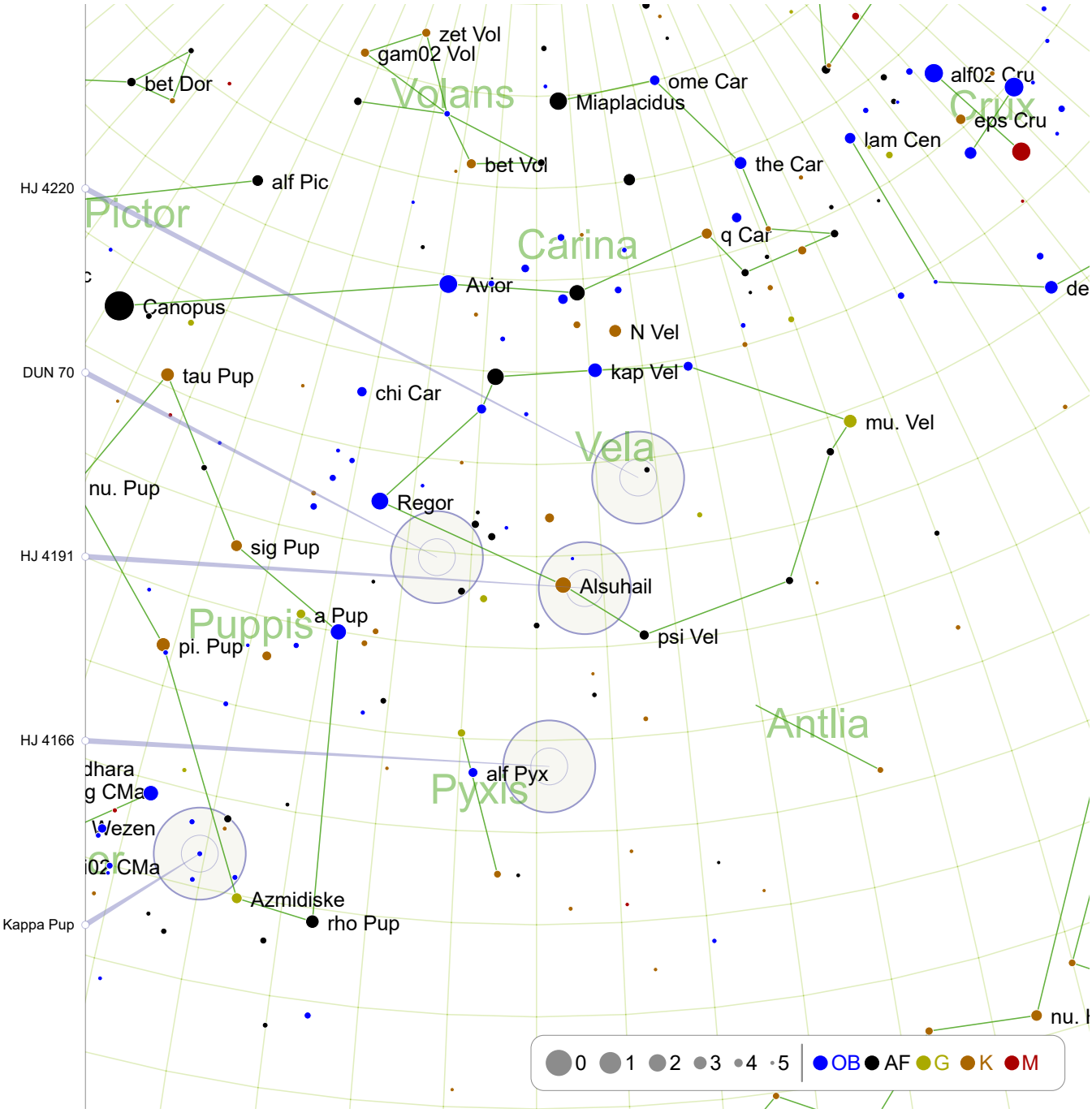
SAO 113810 | HIP 30419 | GDR2 81815810432

An unequal pair of bright yellow stars, easily separated.

Follow a line from the head of Orion through Betelgeuse and extend it an equal distance further east. This should bring you to the vicinity of an isolated fourth magnitude star which is Epsilon Monocerotis.

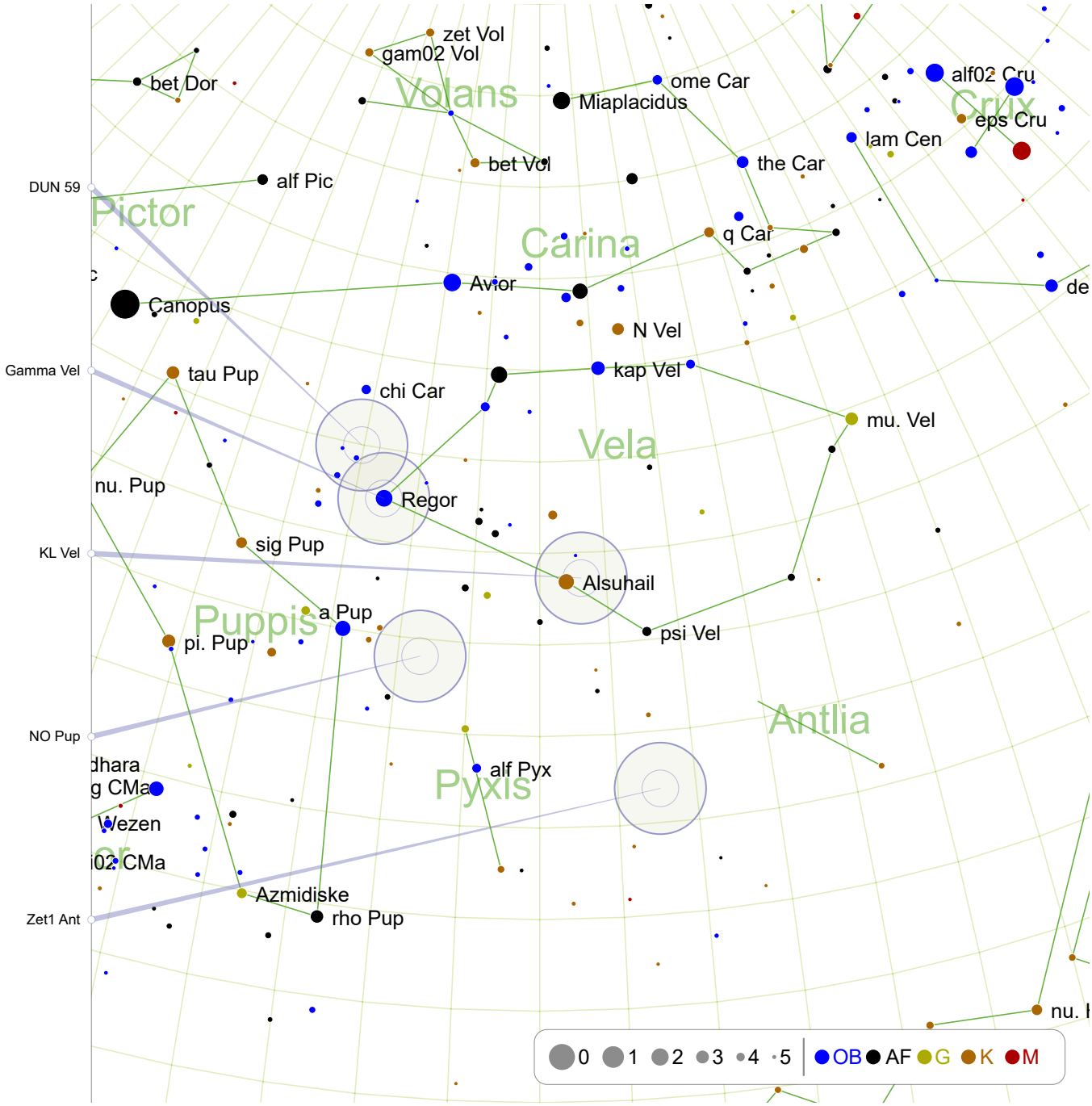
Only 121 light-years away, Epsilon Mon A is a subgiant star 25 times brighter than the Sun, while the B star is only twice as bright as the Sun.

Late Summer - Looking South (1)

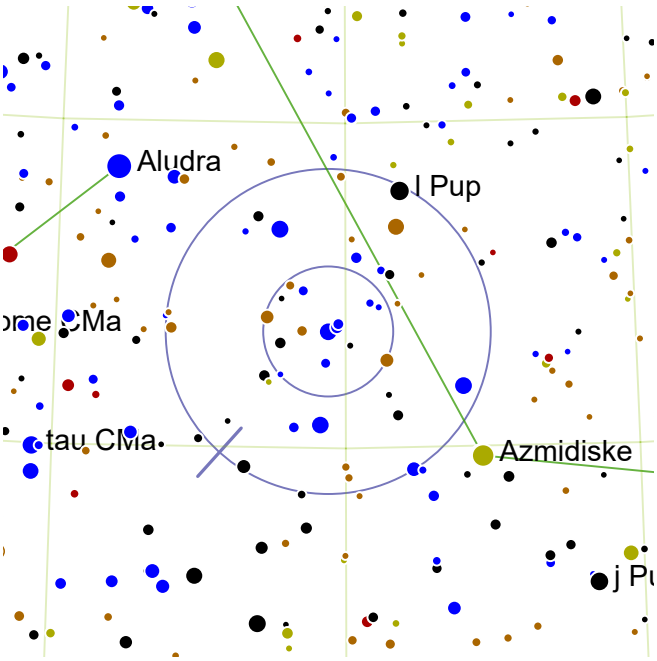


Kappa Pup: page 113 HJ 4166: page 113 HJ 4191: page 114 DUN 70: page 114
HJ 4220: page 115

Late Summer - Looking South (2)



Zet1 Ant: page 115 NO Pup: page 116 KL Vel: page 116 Gamma Vel: page 117
DUN 59: page 117



Kappa Pup

RA: 114.7° | 7h 38.8' — DEC: -26.8° | -26° 47'

Magnitude: 4.4 | 4.6

Separation: 9.9"

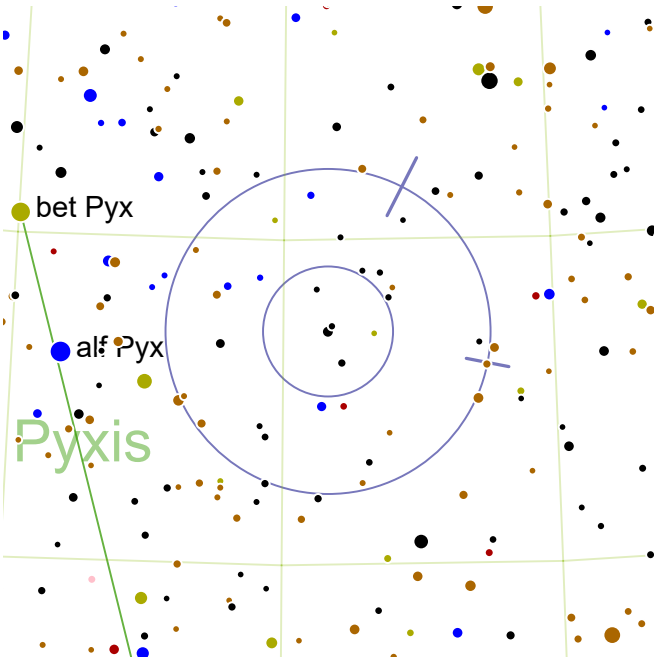
Position Angle: 318°

SAO 174199 | HIP 37229 | DGR2 14549657728

A close pair of brilliant, bluish stars.

Half a finder circle SW from magnitude 3.47 Azmidiske. Two finder circles N from magnitude 3.72 c Pup.

NGC 2453, a magnitude 8.3 open cluster, is in the eastern quarter of the finder view.



HJ 4166

RA: 135.82° | 9h 3.29' — DEC: -33.6° | -33° 35'

Magnitude: 7.1 | 8.0 | 11.2

Separation: 13.6" | 1.2"

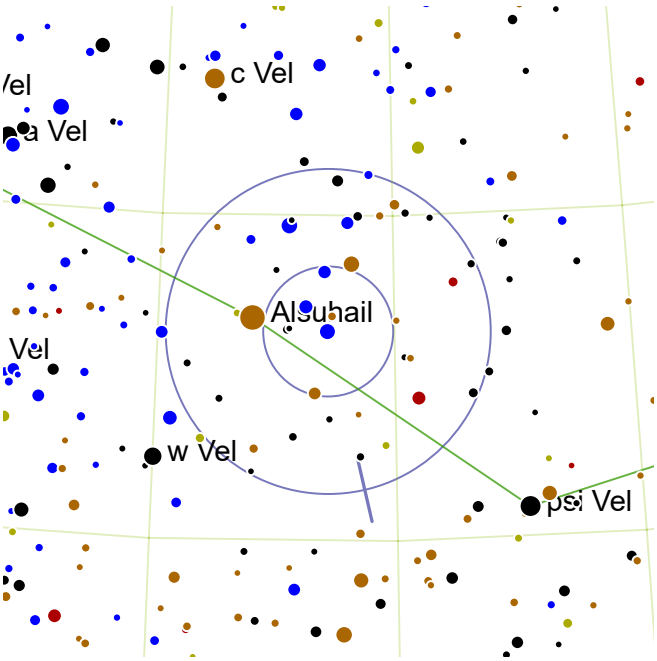
Position Angle: 153° | 79°

SAO 199924 | HIP 44442 | GDR2 58334382080

A white primary easily separated from a very tightly separated unequal pair.

Half a finder circle E from magnitude 3.7 alf Pyx. One and a half finder circles NW from magnitude 3.64 psi Vel.

One finder circle to the south east is planetary nebula NGC 2818 (magnitude 8.2).



HJ 4191

RA: 138.6° | 9h 14.39' — DEC: -43.23° | -43° 13'

Magnitude: 5.2 | 9.2

Separation: 5.9"

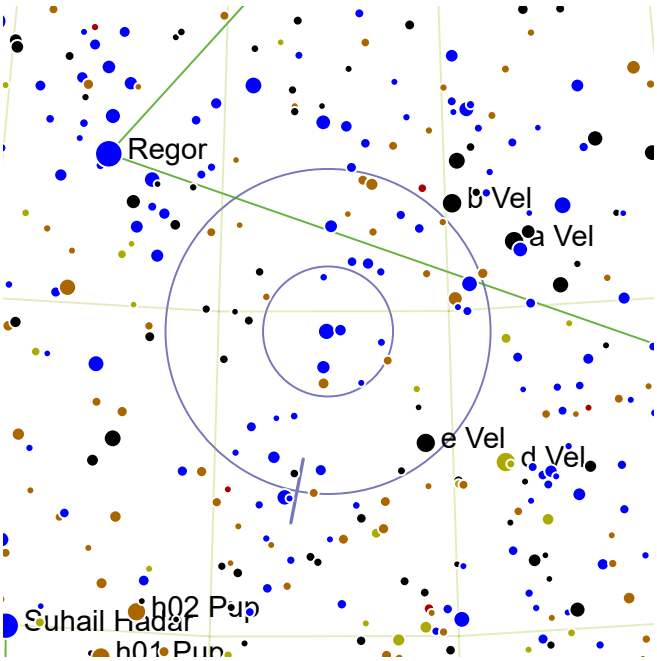
Position Angle: 13°

SAO 220978 | HIP 45344 | GDR2 76191999616

A bright, bluish primary with a close faint companion.

Half a degree E from magnitude 2.22 Alsuhail. Half a finder circle NNE from magnitude 3.69 c Vel.

Less than a degree north east of the double KL Vel.



DUN 70

RA: 127.38° | 8h 29.5' — DEC: -44.72° | -44° 42'

Magnitude: 5.2 | 7.0

Separation: 4.3"

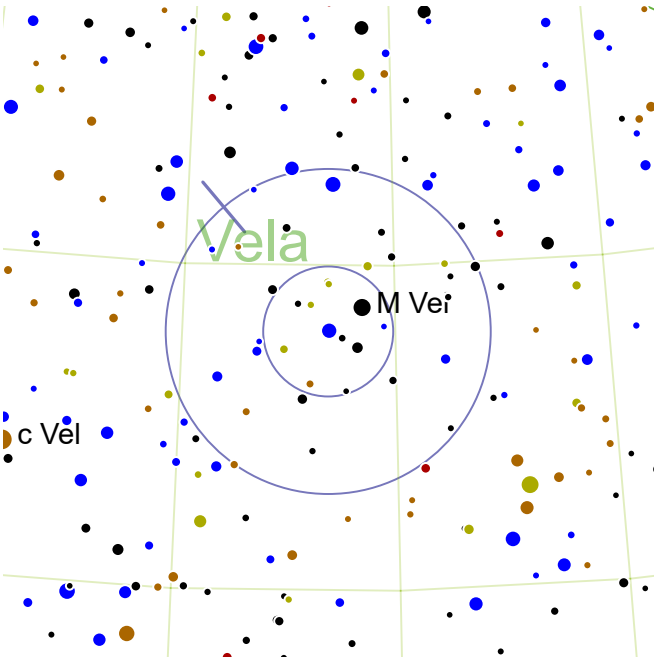
Position Angle: 349°

SAO 219996 | HIP 41639

A bright blue primary with a very close and fairly bright secondary.

Half a finder circle NE from magnitude 1.92 Regor. One finder circle NWW from magnitude 3.69 c Vel.

The double is situated in a wide region of diffuse nebulosity cataloged as Ced 106a/e.



HJ 4220

RA: 143.43° | 9h 33.7' — DEC: -49.0° | -49° 0'

Magnitude: 5.5 | 6.2

Separation: 2"

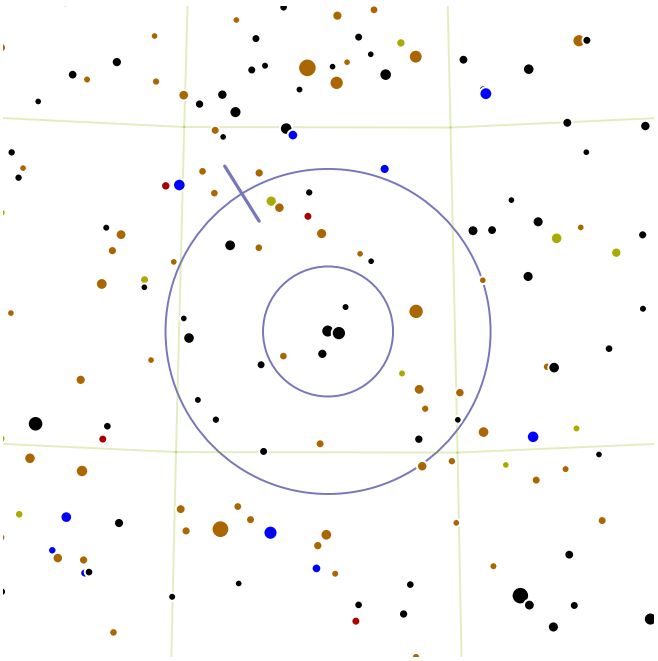
Position Angle: 220°

SAO 221288 | HIP 46914 | GDR2 60957618560

A well-balanced pair, with a bright bluish primary and a tightly bound, fairly bright companion.

One finder circle SEE from magnitude 3.69 c Vel. Two and a half finder circles NNE from magnitude 3.98 c Car.

Open cluster NGC 2972 (magnitude 9.9) is two degrees to the south east.



Zet1 Ant

RA: 142.7° | 9h 30.79' — DEC: -31.88° | -31° 52'

Magnitude: 6.2 | 6.8

Separation: 8.3"

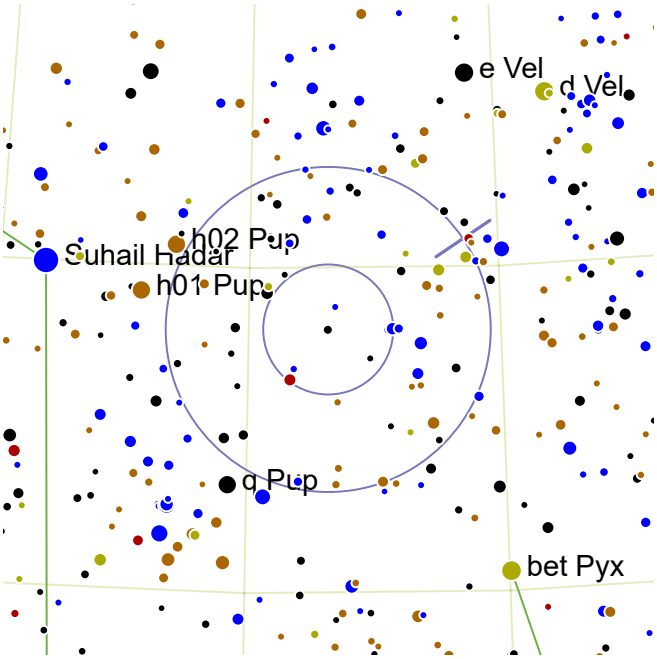
Position Angle: 212°

SAO 200445 | HIP 46657 | GDR2 76500794496

A close, bright pair of white stars.

One and a half finder circles N from magnitude 3.64 psi Vel. Two finder circles NNE from magnitude 2.22 Alsuhail.

Zet1 Ant forms a pretty binocular or finderscope double with Zet2 Ant, which lies 0.2 degrees to the east.



NO Pup

RA: 126.58° | 8h 26.3' — DEC: -39.07° | -39° 3'

Magnitude: 6.5 | 7.1

Separation: 8.1"

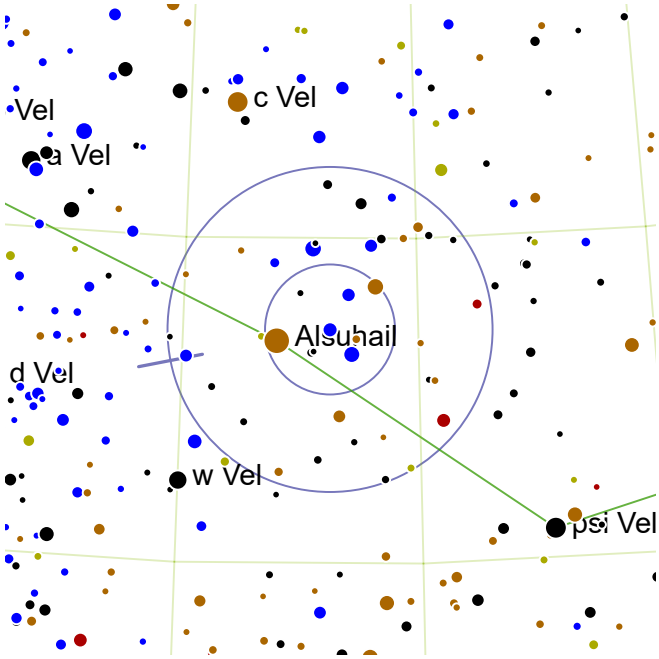
Position Angle: 124°

SAO 199222 | HIP 41361 | GDR2 99779517568

A balanced pair or fairly bright stars, the brighter being bluish and the companion white.

Half a finder circle E from magnitude 2.27 Suhail Hadar. One finder circle E from magnitude 3.76 a Pup.

Located in a rich field, V436 Pup (mag. 6.3) stands out as a bright red star two degrees to the north west. NO Pup is a variable with a Δ mag. of 0.5. There are two comparison stars in the finder, HIP 40947 to the south east (mag. 6.15) and HIP 41806 to the west (mag. 6.45).



KL Vel

RA: 138.13° | 9h 12.5' — DEC: -43.62° | -43° 36'

Magnitude: 6.0 | 6.8

Separation: 2.9"

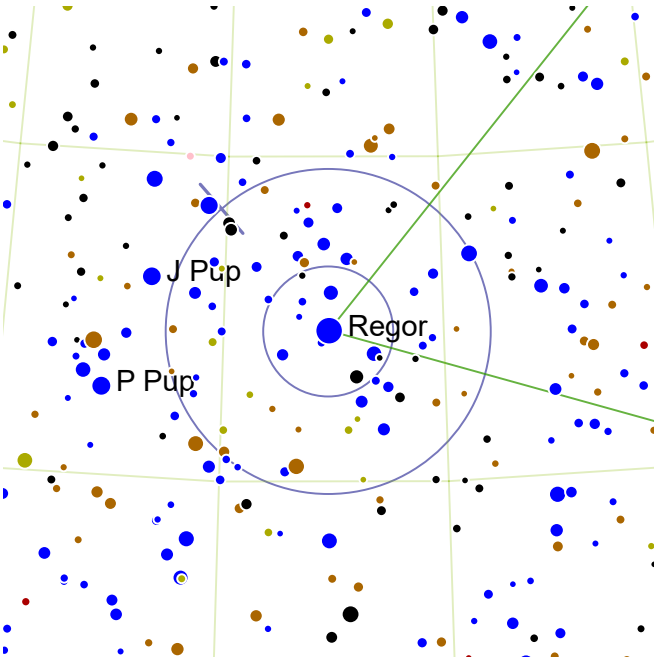
Position Angle: 281°

SAO 220952 | HIP 45189 | GDR2 29650918528

A bright bluish star with a fairly bright and very close companion.

Half a degree SEE from magnitude 2.22 Alsuhail. Half a finder circle NNE from magnitude 3.69 c Vel.

The planetary nebula NGC 2792 (magnitude 11.8) is one degree north of this double.



Gamma Vel

RA: 122.38° | 8h 9.5' — DEC: -47.33° | -47° 19'

Magnitude: 1.8 | 4.1

Separation: 41.2"

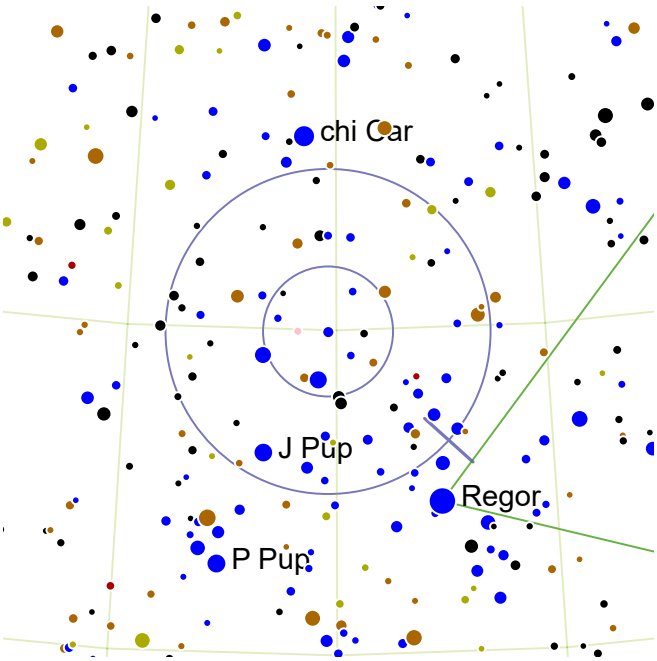
Position Angle: 221°

SAO 219504 | HIP 39953

An extremely brilliant blue primary widely separated from a brilliant blue companion.

Gamma Vel is a bright star in Vela. One finder circle NNE from magnitude 3.6 chi Car.

The primary is a Wolf-Rayet star, an unstable monster with a titanic stellar wind driven by the extreme surface temperature of the star.



DUN 59

RA: 119.8° | 7h 59.19' — DEC: -49.98° | -49° 58'

Magnitude: 6.2 | 6.2

Separation: 16.3"

Position Angle: 48°

SAO 219249 | HIP 39035 | GDR2 00016110976

An easily separated pair of fairly bright, blue stars.

Half a finder circle N from magnitude 3.6 chi Car. One and a half finder circles S from magnitude 3.76 a Pup.

The finder view is richly decorated with bright stars. The north-eastern quarter of the finder view contains the bright open cluster NGC 2547 (magnitude 4.7).

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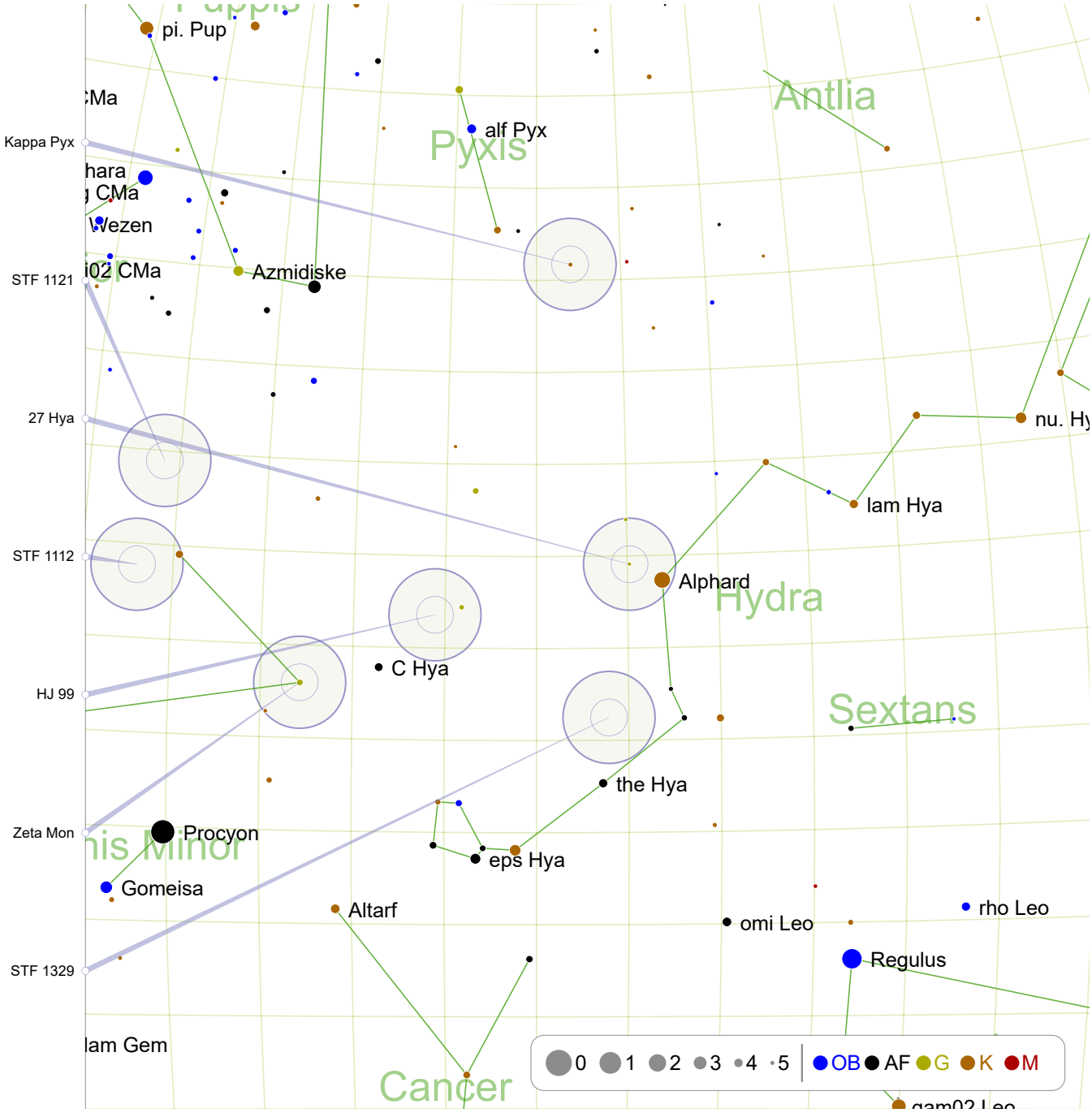
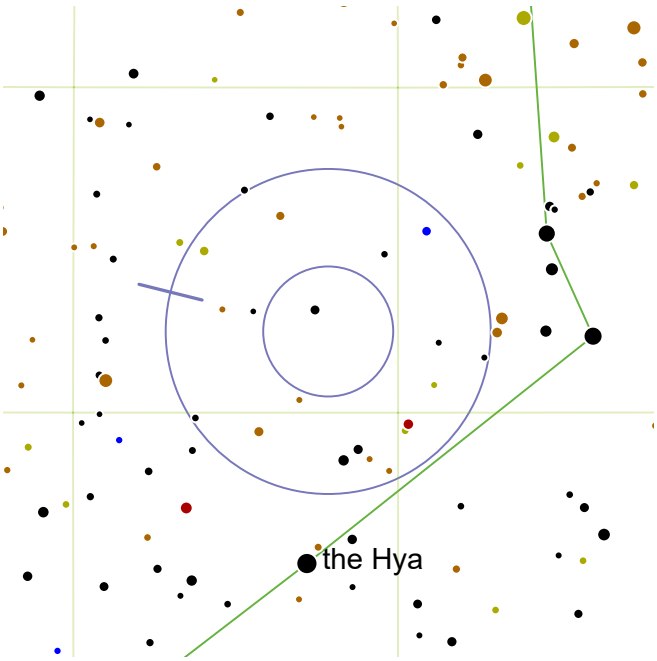
Late Summer - Looking North



STF 1329: page 120 | Zeta Mon: page 120 | HJ 99: page 121 | STF 1112: page 121
27 Hya: page 122 | STF 1121: page 122 | Kappa Pyx: page 123



STF 1329

RA: 138.93° | 9h 15.7' — DEC: -1.25° | -1° 14'

Magnitude: 8.7 | 8.7

Separation: 13.1"

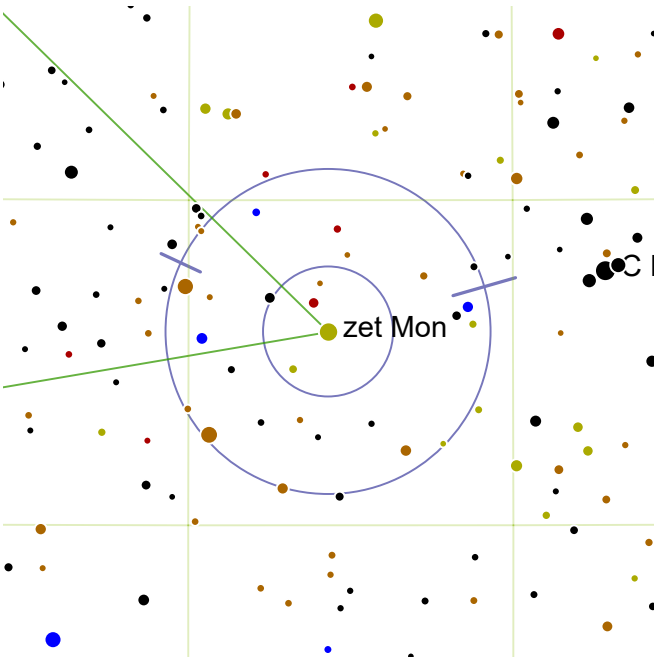
Position Angle: 256°

SAO 136705 | GDR2 3841759877320639360

A close and equal yellow pairing.

Half a finder circle S from magnitude 3.84 the Hya. One and a half finder circles SE from magnitude 3.3 zet Hya.

This double is a line of sight pairing. The components are not gravitationally bound.



Zeta Mon

RA: 122.15° | 8h 8.6' — DEC: -2.98° | -2° 58'

Magnitude: 4.5 | 10.3 | 9.7

Separation: 33" | 67"

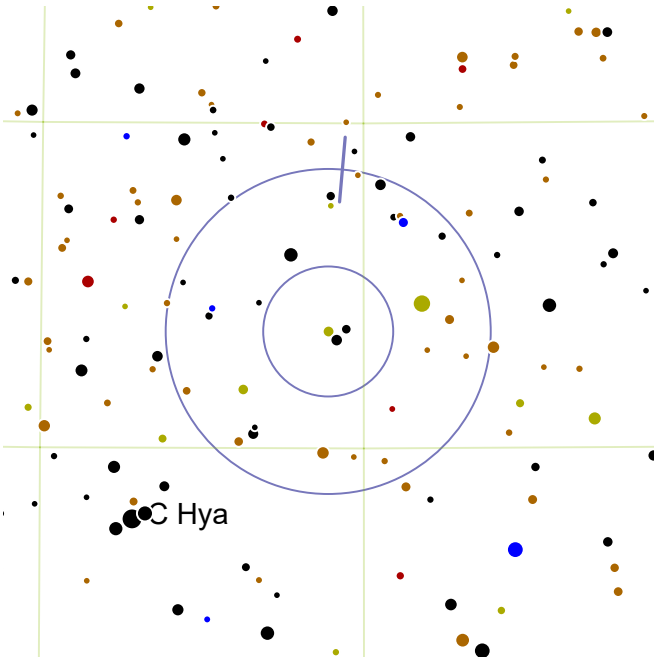
Position Angle: 106° | 245°

SAO 135551 | HIP 39863

A widely separated triple system with two brighter yellow components and a fainter orange companion.

Two finder circles south east of Procyon.

The main component is yellow supergiant six times the mass of the Sun with 2,200 times the luminosity.



HJ 99

RA: 129.45° | 8h 37.79' — DEC: -6.8° | -6° 47'

Magnitude: 6.8 | 8.3

Separation: 60.5"

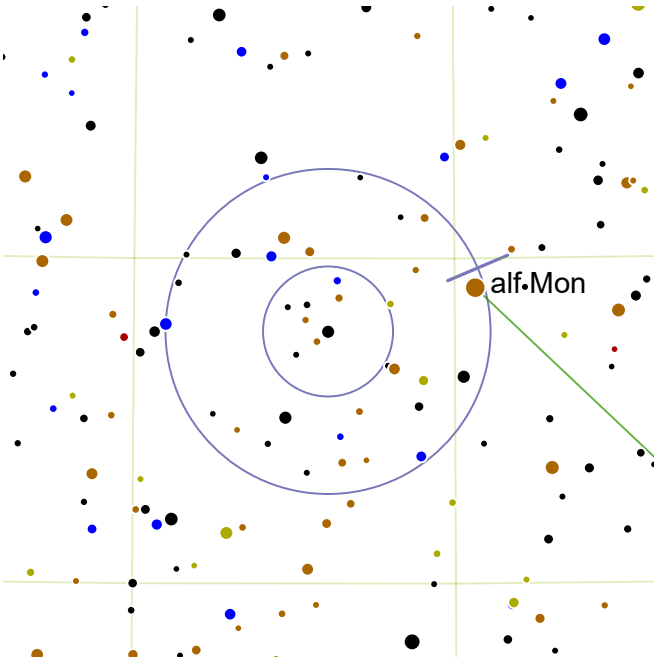
Position Angle: 175°

SAO 136111 | HIP 42333 | GDR2 87956174720

A yellow primary with a reasonably balanced secondary, distantly separated.

Half a finder circle SE from magnitude 3.95 C Hya. Two finder circles W from magnitude 2.16 Alphard.

The primary is also a variable designated V401 Hya (Δ magnitude 0.05).



STF 1112

RA: 113.03° | 7h 32.1' — DEC: -8.88° | -8° 52'

Magnitude: 6.0 | 8.7

Separation: 23.9"

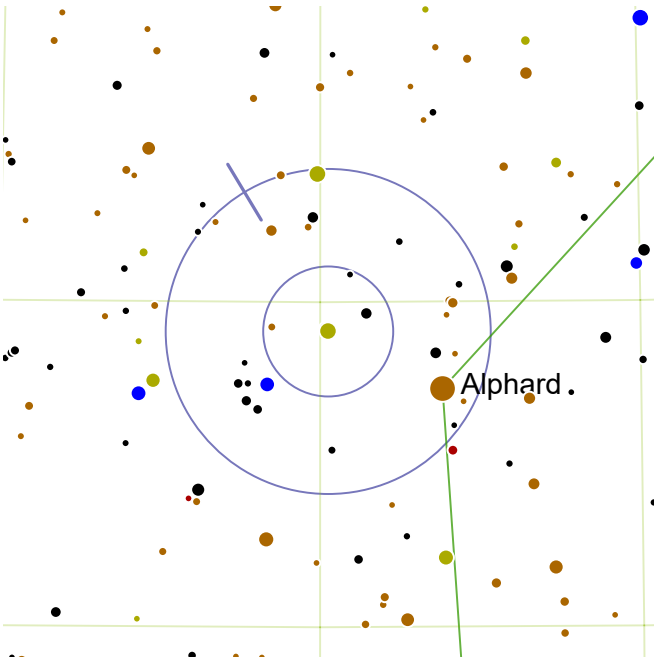
Position Angle: 113°

SAO 134806 | HIP 36640 | GDR2 81541641600

A yellow primary widely separated from a somewhat fainter white secondary.

Two and a half finder circles NEE from magnitude -1.58 Sirius. Two and a half finder circles SWW from magnitude 3.95 C Hya.

The binary system is only 91 light-years from Earth. Open star cluster NGC 2396 (mag. 7.4) lies just beyond the southern edge of the finder circle.



27 Hya

RA: 140.13° | 9h 20.5' — DEC: -9.55° | -9° 32'

Magnitude: 4.8 | 6.9

Separation: 229"

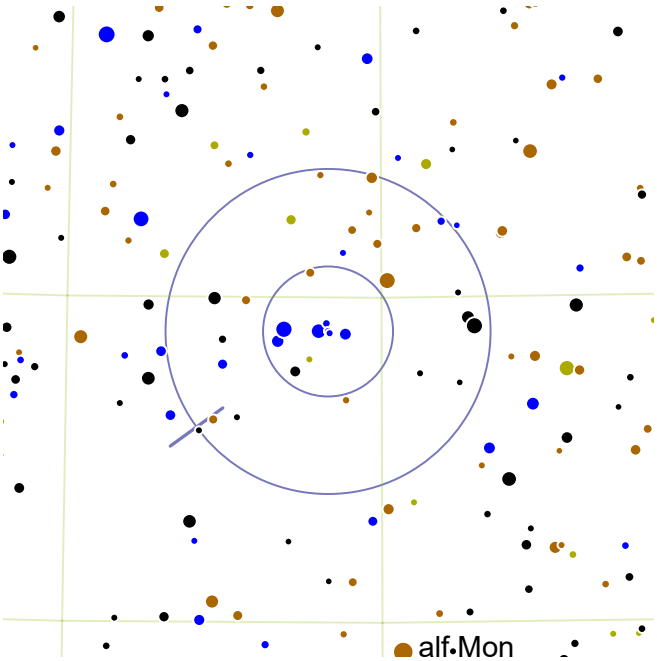
Position Angle: 211°

SAO 136768 | HIP 45811 | GDR2 62061629056

A brilliant orange-yellow primary with a pale yellow secondary, distantly separated.

One degree SWW from magnitude 2.16 Alphard. Two finder circles S from magnitude 3.84 the Hya.

The primary is twice the Sun's mass and roughly 1.9 billion years old, shining with 57.5 the luminosity of the Sun.



STF 1121

RA: 114.15° | 7h 36.6' — DEC: -14.48° | -14° 28'

Magnitude: 6.9 | 7.3

Separation: 7.4"

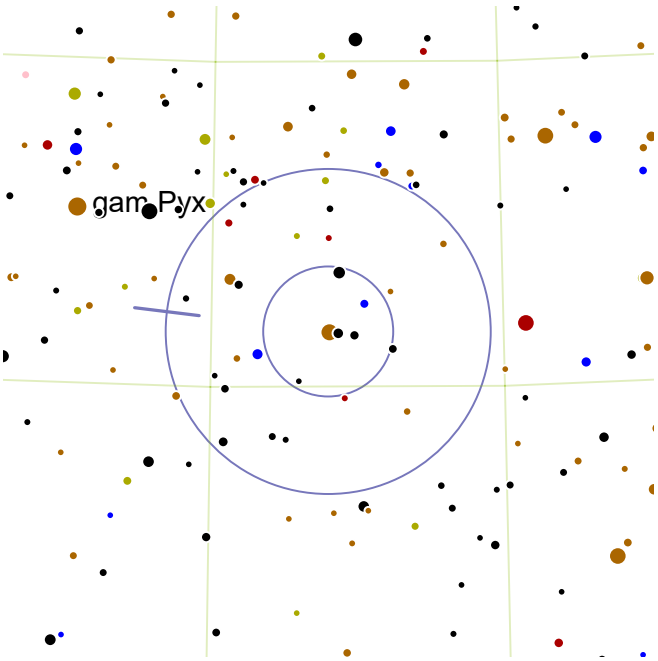
Position Angle: 306°

SAO 153143 | GDR2 88012822272

A close and equal pair of bluish stars.

Two finder circles NNW from magnitude 3.47 Azmidiske.

With the double centered in the finder, there are three open clusters in view - M46 to the east, NGC 2423 to the north, and M47 in the center.



Kappa Pyx

RA: 137.0° | 9h 8.0' — DEC: -25.87° | -25° 51'

Magnitude: 4.6 | 10.1

Separation: 2.1"

Position Angle: 263°

SAO 177002 | HIP 44824 | GDR2 95271628928

A brilliant orange primary with a tightly bound very faint companion.

One and a half finder circles NE from magnitude 3.7 alf Pyx. Two and a half finder circles E from magnitude 2.88 rho Pup.

Magnitude 10.1 galaxy NGC 2784 is in the northern quarter of the finder view.

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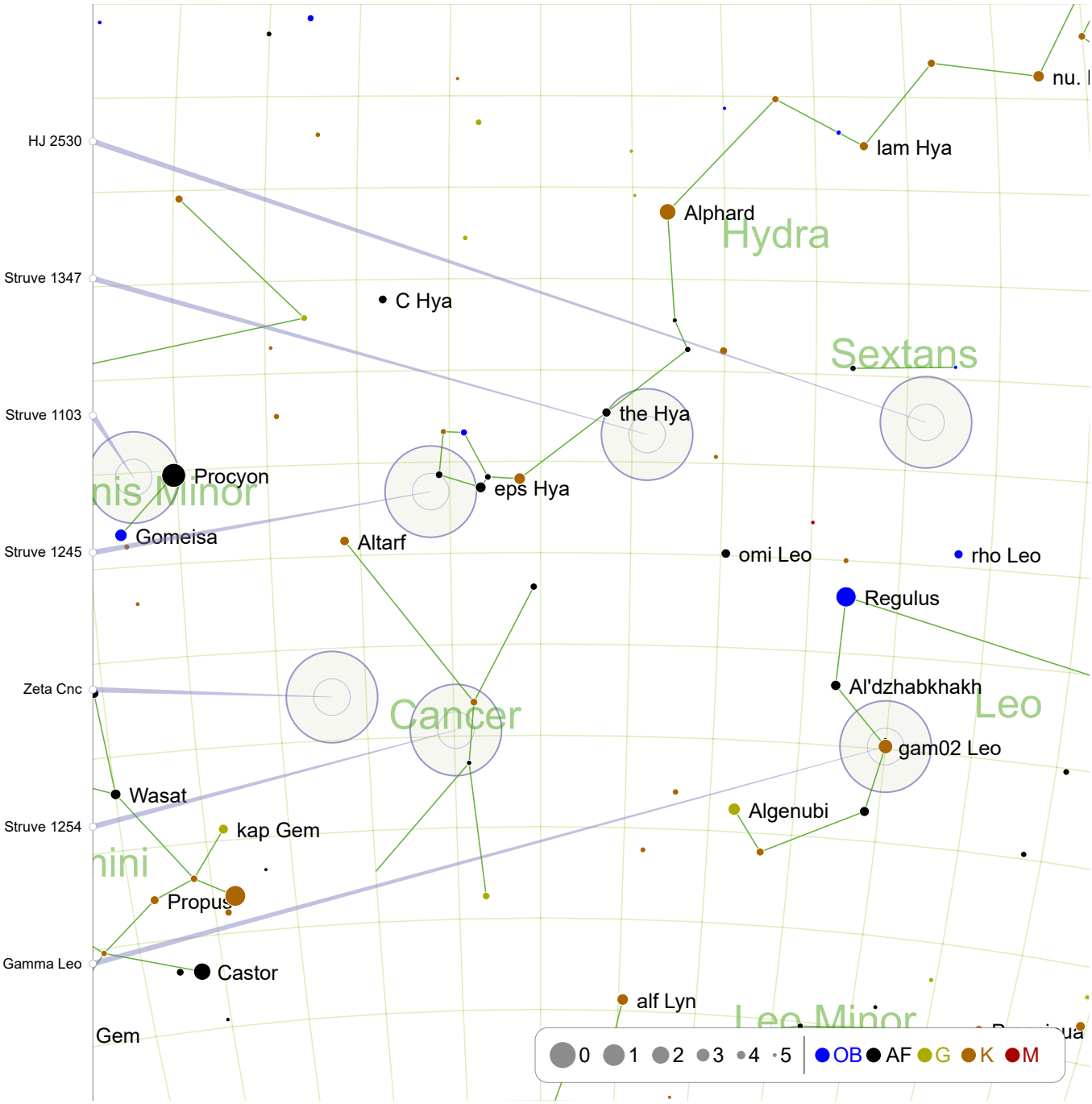
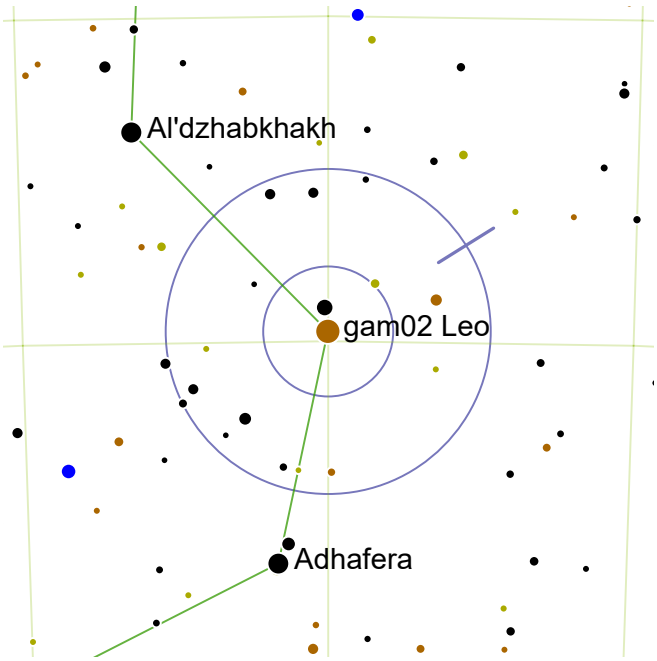
Late Summer - Northern Horizon



Gamma Leo: page 126
Struve 1254: page 126
Zeta Cnc: page 127
Struve 1245: page 127
Struve 1103: page 128
Struve 1347: page 128
HJ 2530: page 129



Gamma Leo

RA: 155.0° | 10h 20.0' — DEC: 19.85° | 19° 51'

Magnitude: 2.2 | 3.5

Separation: 4.4"

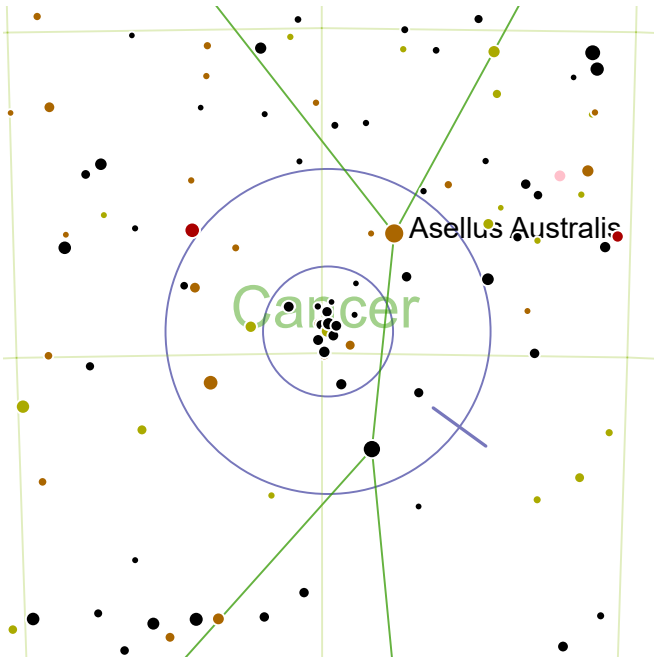
Position Angle: 122°

SAO 81298 | HIP 50583

Known variously as Gamma Leonis or Algeiba, this is one of the finest yellow-yellow doubles, being both bright, fairly balanced and tightly bound.

Unmissable as the bright star at the base of Leo's head.

The components are at least 170 astronomical units apart and orbit each other in roughly 500 years. The A component has at least one exoplanet.



Struve 1254

RA: 130.1° | 8h 40.39' — DEC: 19.67° | 19° 40'

Magnitude: 6.4 | 10.4

Separation: 20"

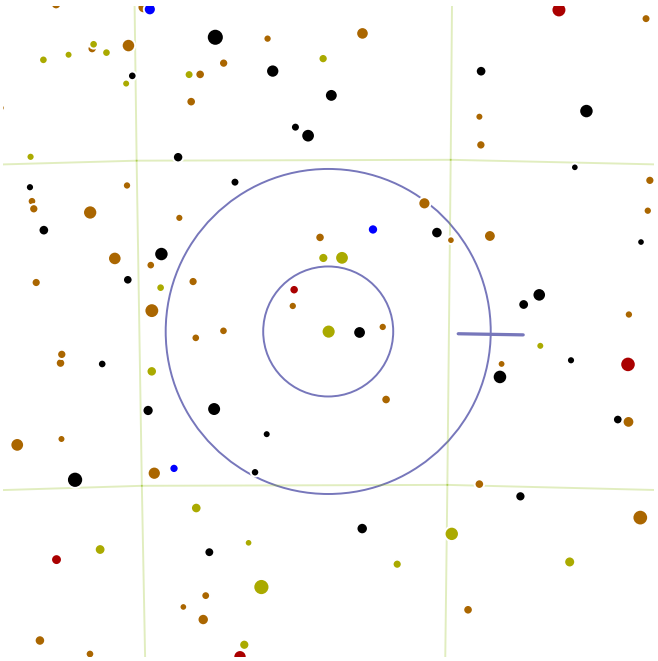
Position Angle: 54°

SAO 98021 | HIP 42549 | GDR2 0936069632

A wide yellow-blue pairing, but the small blue component is very faint.

Found at the very center of the Praesepe cluster.

The primary is a K-class giant 712 light-years from the Sun. It is not clear if the companion is gravitationally bound to the primary, or if this is just a line-of-sight pairing.



Zeta Cnc

RA: 123.05° | 8h 12.19' — DEC: 17.65° | 17° 39'

Magnitude: 5.6 | 6.0

Separation: 5.9"

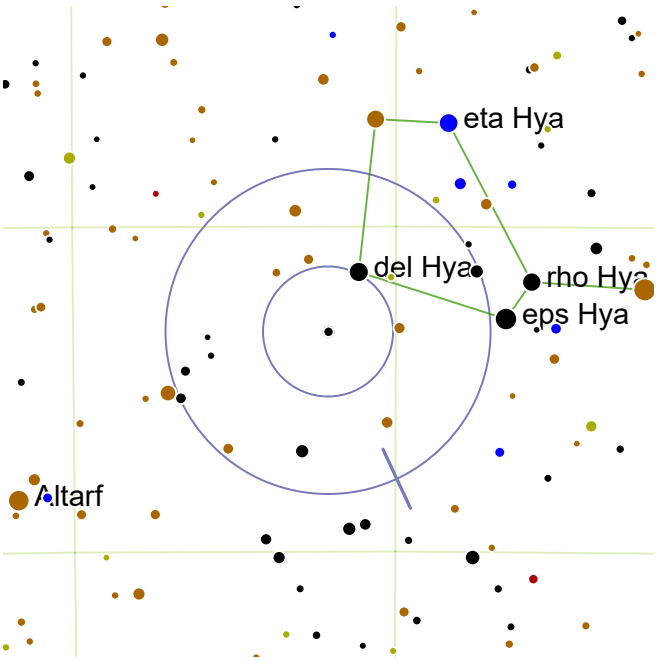
Position Angle: 89°

SAO 97646 | HIP 40167 | GDR2 1593509376

An equal pair of closely bound and bright yellow stars.

Castor and Pollux point south to this double. Follow the imaginary line south-east for three times the separation of Castor and Pollux.

One and a half finder circles NEE is the wonderful Beehive Cluster. Under dark skies this cluster rivals the Pleiades as a naked-eye sight!



Struve 1245

RA: 128.95° | 8h 35.79' — DEC: 6.62° | 6° 37'

Magnitude: 6.0 | 7.2

Separation: 10.3"

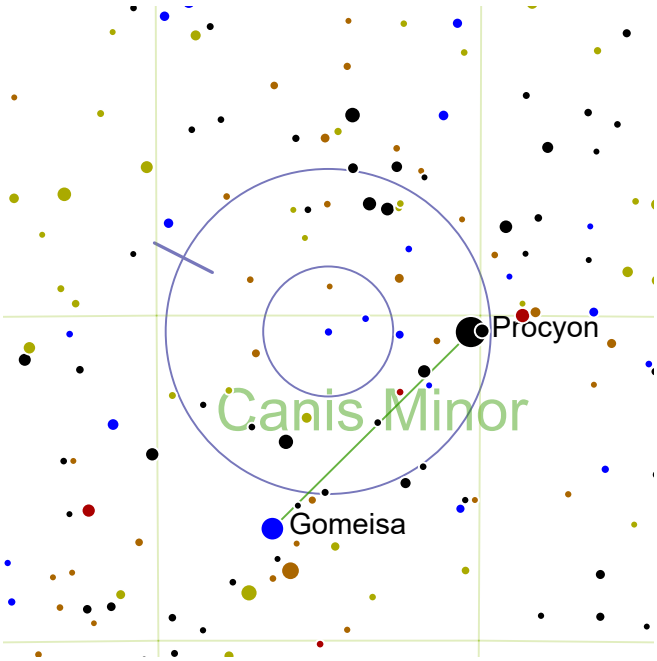
Position Angle: 25°

SAO 116929 | HIP 42172 | GDR2 8593414016

A well matched white-yellow pair, easily separated.

A degree north west of dim Delta Hydra, Struve 1245 might be found more easily by tracking west from Procyon for three finder circles.

Struve 1245 is only 82 light-years from the Sun. The secondary star is similar to the Sun, but slightly cooler.



Struve 1103

RA: 112.65° | 7h 30.6' — DEC: 5.25° | 5° 15'

Magnitude: 7.7 | 9.2

Separation: 4.4"

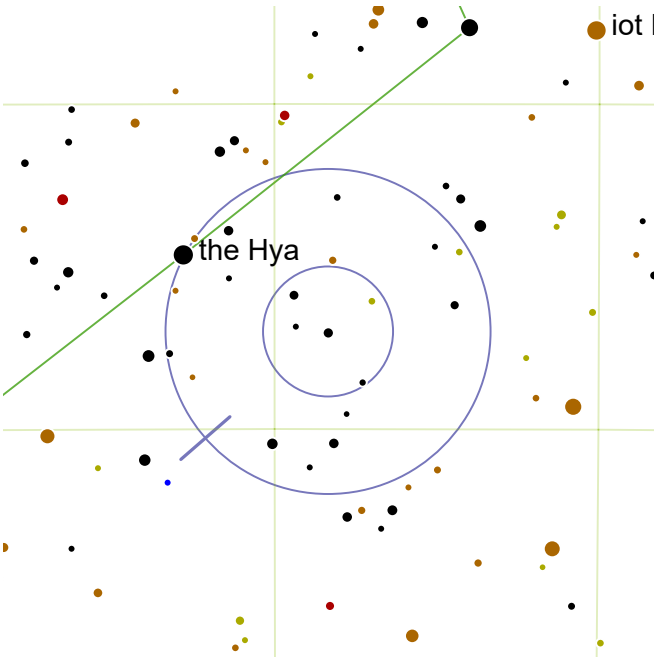
Position Angle: 243°

SAO 115532 | HIP 36499 | GDR2 3141290328124151680

A close but relatively faint yellow-blue pairing.

Position brilliant Procyon on the eastern edge of the finder; Struve 1103 should be in the center.

Procyon is a fine and extremely challenging double star, similar to but harder than Sirius as it is a bright nearby star and its companion is a dim white dwarf (magnitude difference 10.34, position angle 328°, separation 4.8").



Struve 1347

RA: 140.82° | 9h 23.29' — DEC: 3.5° | 3° 30'

Magnitude: 7.3 | 8.6

Separation: 21.2"

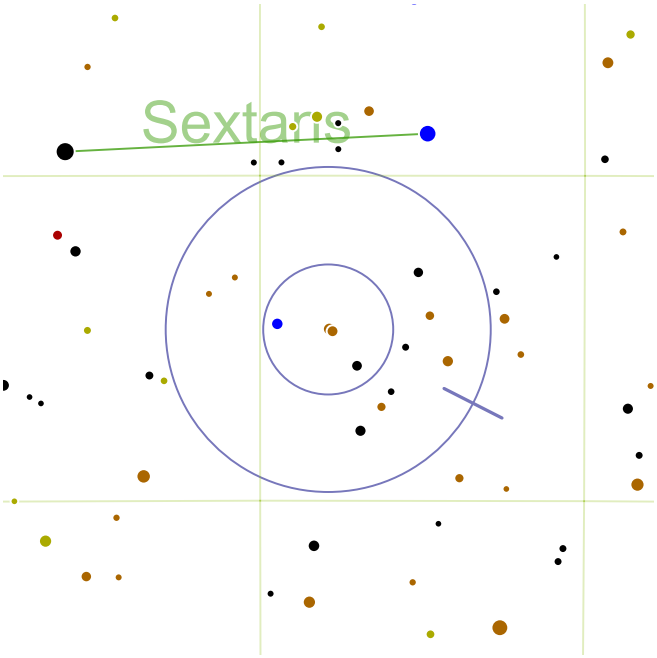
Position Angle: 311°

SAO 117641 | HIP 46029

A wide pair of slightly yellowish stars.

Three finder circles south west of Regulus. Position magnitude 3.85 Theta Hydra on the south western edge of the finder and Struve 1347 should be in the center.

This pair of main-sequence stars is only 109 light-years from the Sun.



HJ 2530

RA: 156.05° | 10h 24.2' — DEC: 2.37° | 2° 22'

Magnitude: 6.4 | 6.7

Separation: 201.6"

Position Angle: 63°

SAO 118278 | HIP 50939 | GDR2 23812160640

An bright equal pair, extremely widely separated. Best enjoyed in the finder scope!

One finder circle SSW from magnitude 3.85 rho Leo.

The primary is a nearby yellow star slightly cooler than our Sun, and is only 307 light-years away. The secondary component is not gravitationally bound.

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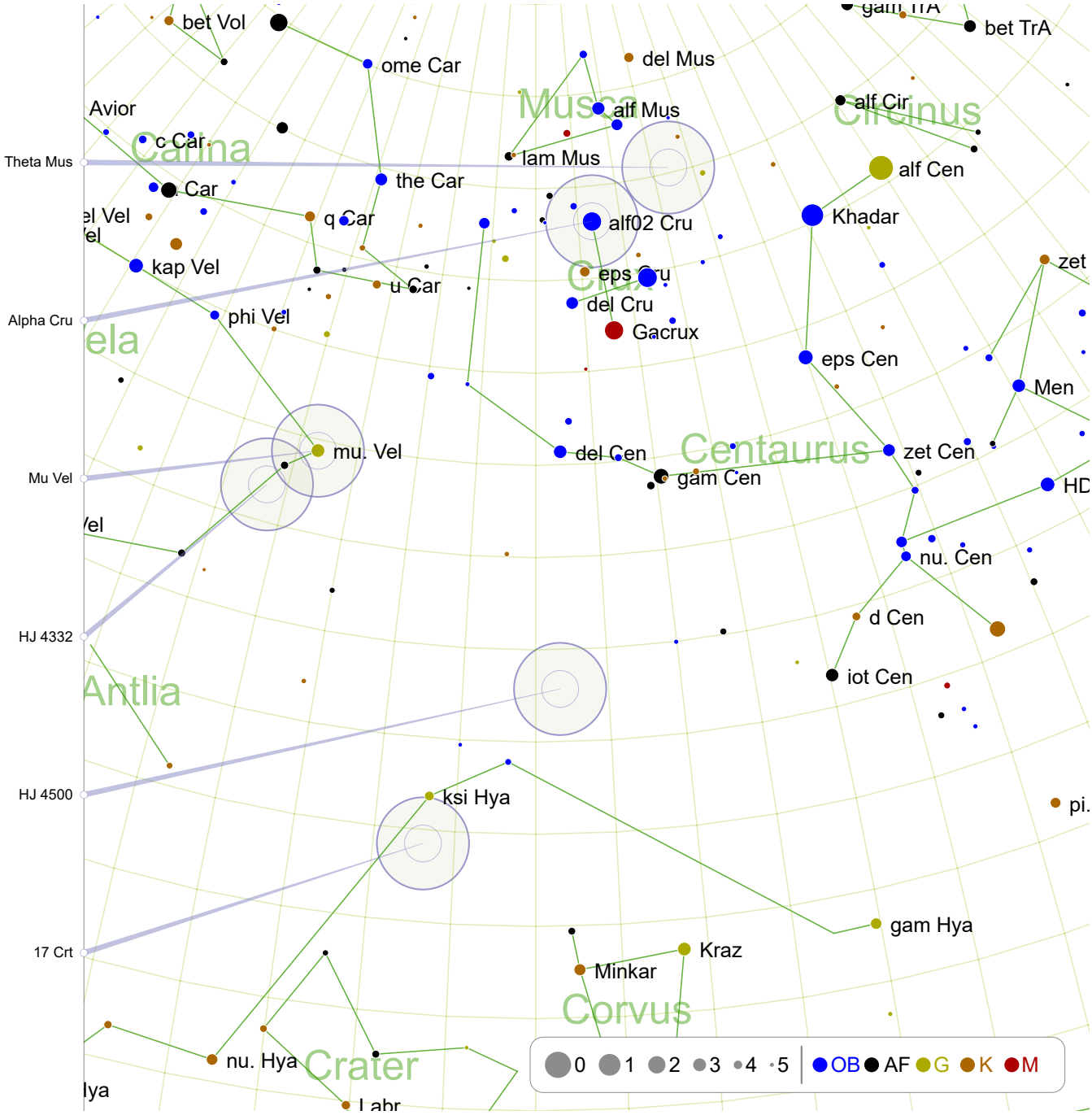
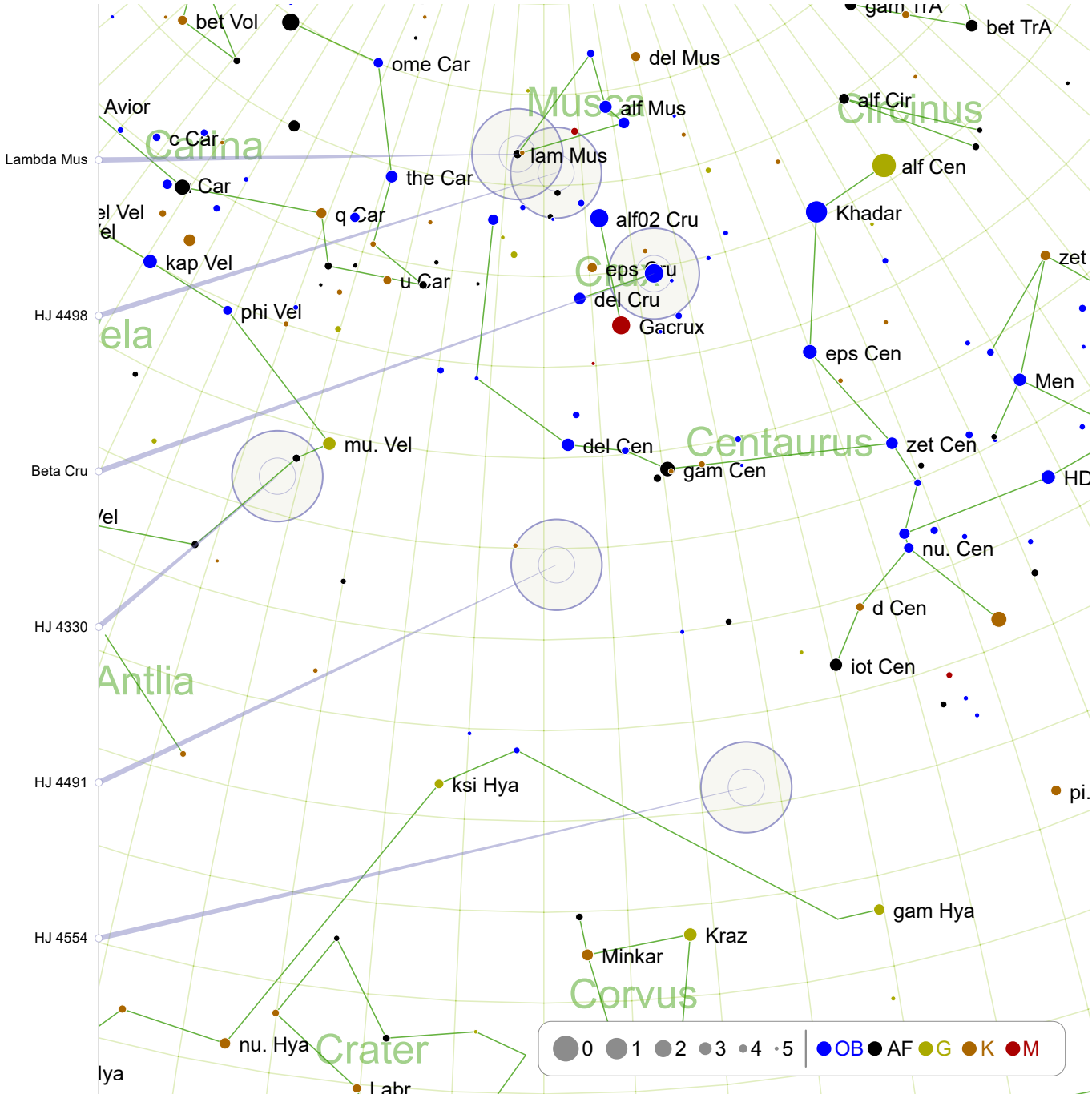
Early Autumn - Looking South (1)

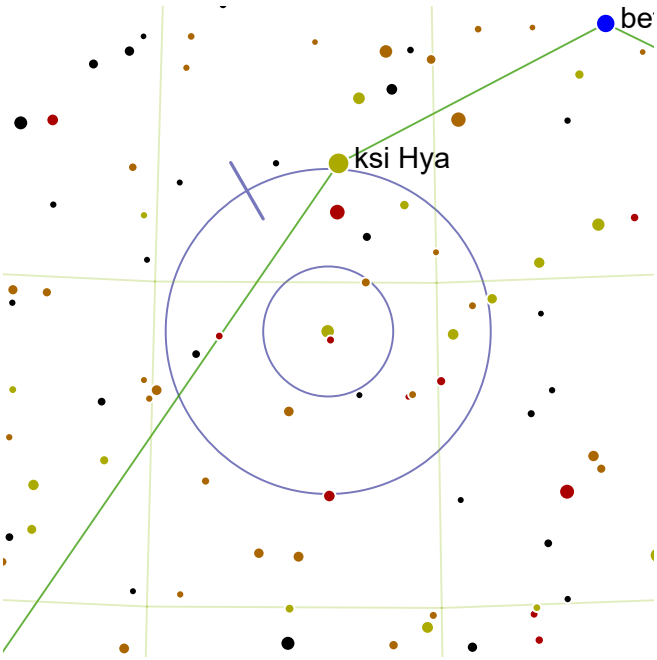


17 Crt: page 133 HJ 4500: page 133 HJ 4332: page 134 Mu Vel: page 134
Alpha Cru: page 135 Theta Mus: page 135

Early Autumn - Looking South (2)



HJ 4554: page 136 HJ 4491: page 136 HJ 4330: page 137 Beta Cru: page 137
HJ 4498: page 138 Lambda Mus: page 138



17 Crt

RA: 173.08° | 11h 32.29' — DEC: -29.27° | -29° 15'

Magnitude: 5.6 | 5.7

Separation: 9.6"

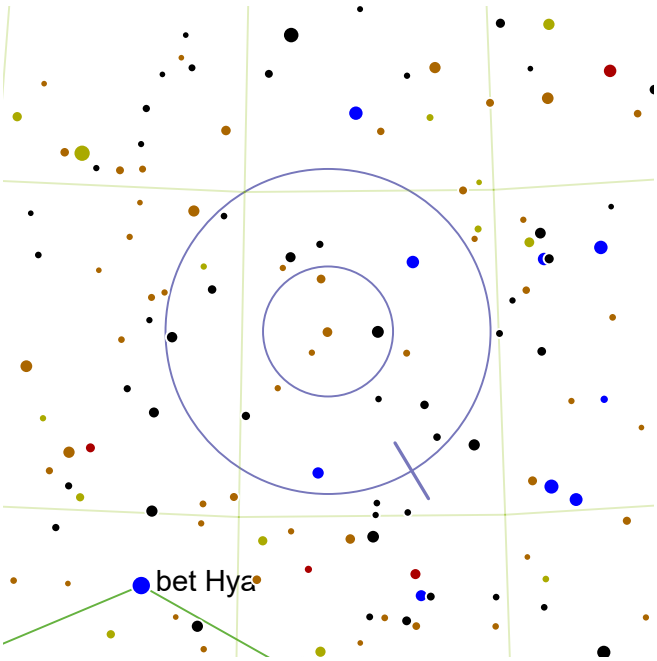
Position Angle: 210°

SAO 179968 | HIP 56280 | GDR2 08703712896

A close, equal pair of bright, somewhat yellow stars.

Half a finder circle N from magnitude 3.72 ksi Hya.

This physical binary system is one of our closest neighbors at a distance of only 26 light-years. The two components are separated by roughly 241 AU. Both components are about three times the brightness of the Sun.



HJ 4500

RA: 181.68° | 12h 6.7' — DEC: -37.87° | -37° 51'

Magnitude: 7 | 9

Separation: 50.3"

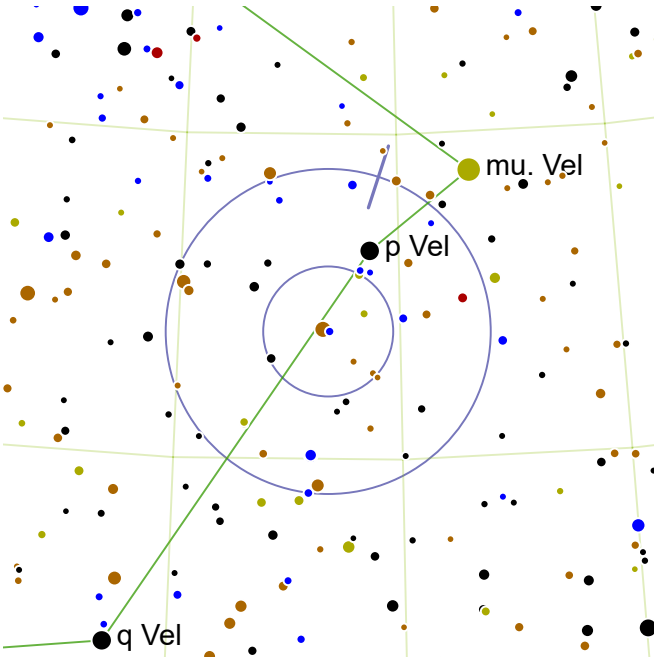
Position Angle: 31°

SAO 203137 | HIP 59055 | GDR2 86421605120

A fair bright orange primary distantly separated from a faint yellow secondary.

One and a half finder circles SE from magnitude 3.72 ksi Hya.

This gravitationally bound system lies 492 light-years from Earth.



HJ 4332

RA: 158.38° | 10h 33.5' — DEC: -46.98° | -46° 58'

Magnitude: 7.1 | 9.8

Separation: 28.4"

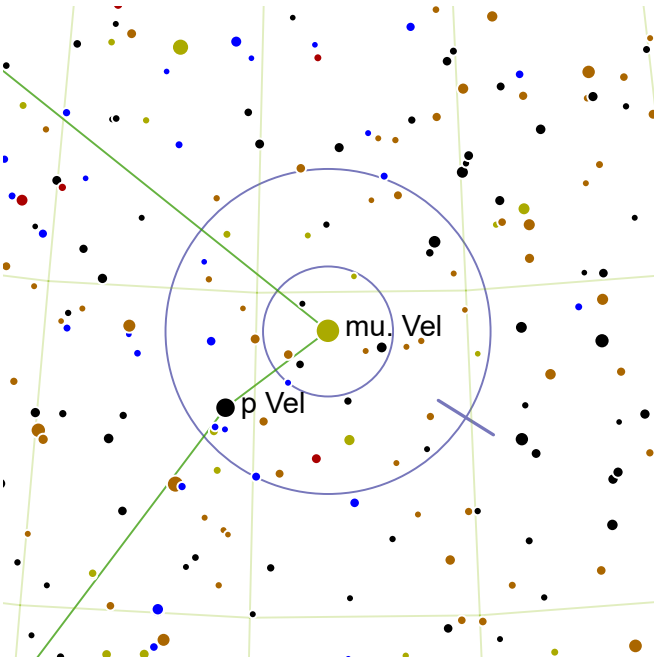
Position Angle: 162°

SAO 222145 | HIP 51688 | GDR2 82642742912

A white primary widely separated from a faint secondary.

Half a finder circle NW from magnitude 2.84 mu. Vel. Two and a half finder circles N from magnitude 3.58 p Car.

This pair is a gravitationally bound binary system.



Mu Vel

RA: 161.7° | 10h 46.79' — DEC: -49.42° | -49° 24'

Magnitude: 2.8 | 5.7

Separation: 2.3"

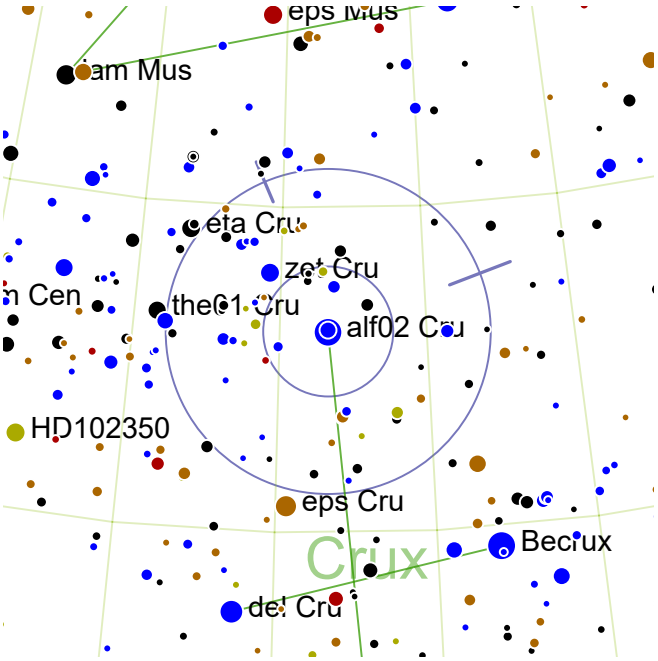
Position Angle: 58°

SAO 222321 | HIP 52727 | GDR2 34681413248

A very brilliant yellow primary with a bright yellow companion, very tightly separated.

Mu Vel is a bright star in Vela. Two finder circles N from magnitude 3.58 p Car.

This gravitationally bound binary system is only 117 light-years from Earth.



Alpha Cru

RA: 186.65° | 12h 26.6' — DEC: -63.1° | -63° 5'

Magnitude: 1.3 | 1.6 | 4.8

Separation: 3.5" | 89"

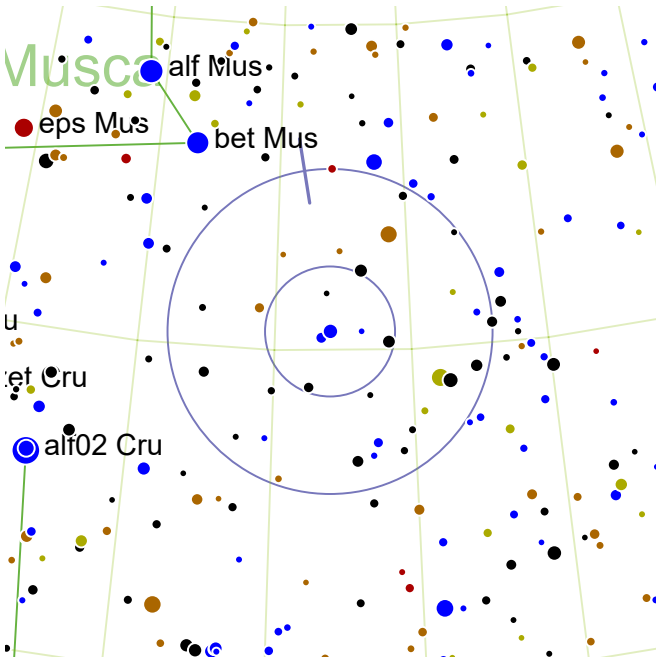
Position Angle: 111° | 203°

SAO 251904 | HIP 60718

Two extremely brilliant blue stars, very close together. A third very bright component lies distantly from them.

Alpha Cru is a bright star in Crux. Alpha Cru is a bright star in Crux.

The system is has 6 members, but only 3 can be resolved visually. The brightest component is fully 25,000 times brighter than the Sun.



Theta Mus

RA: 197.03° | 13h 8.1' — DEC: -65.3° | -65° 17'

Magnitude: 5.7 | 7.6

Separation: 5.5"

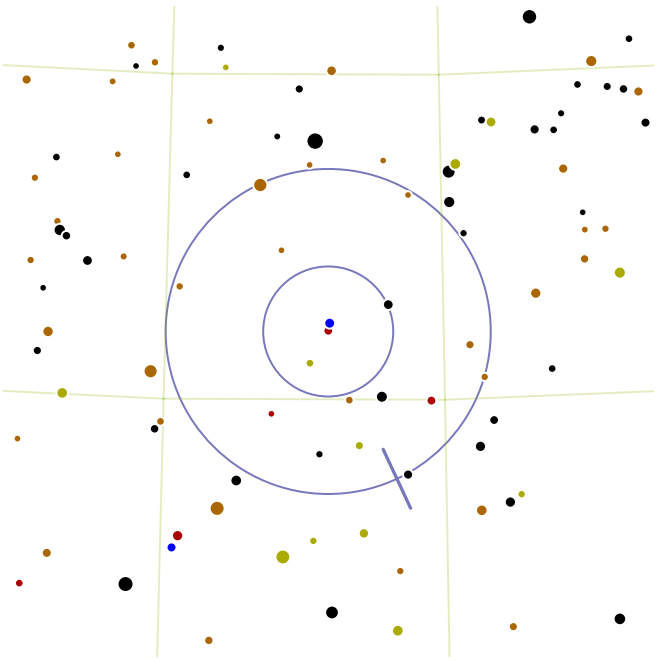
Position Angle: 189°

SAO 252162 | HIP 64094 | GDR2 66471945984

A close pair of blue stars with a bright primary and moderate secondary.

Half a finder circle NE from magnitude 3.26 bet Mus. Half a finder circle NE from magnitude 2.94 alf Mus.

The secondary in an intensely hot Wolf-Rayet star, boiling of its outer layers of gas in an intense stellar wind.



HJ 4554

RA: 192.93° | 12h 51.7' — DEC: -31.07° | -31° 3'

Magnitude: 7.3 | 11.8

Separation: 31.6"

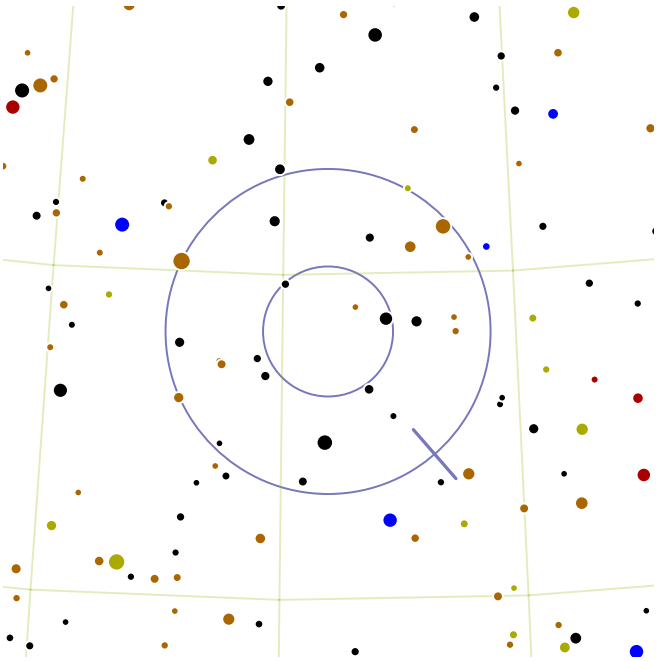
Position Angle: 25°

SAO 203877 | HIP 62767 | GDR2 93857676032

A very wide pair dominated by a fairly bright red primary accompanied by an extremely faint companion.

One and a half finder circles NW from magnitude 2.91 iot Cen. One and a half finder circles SW from magnitude 3.33 gam Hya.

The primary is a pulsating variable star (Δ mag. 0.34) identified as V942 Cen. Seven arc minutes to the south, blue V943 Cen forms a colorful optical binocular double with the primary.



HJ 4491

RA: 180.98° | 12h 3.89' — DEC: -44.13° | -44° 7'

Magnitude: 8.5 | 8.5

Separation: 23.4"

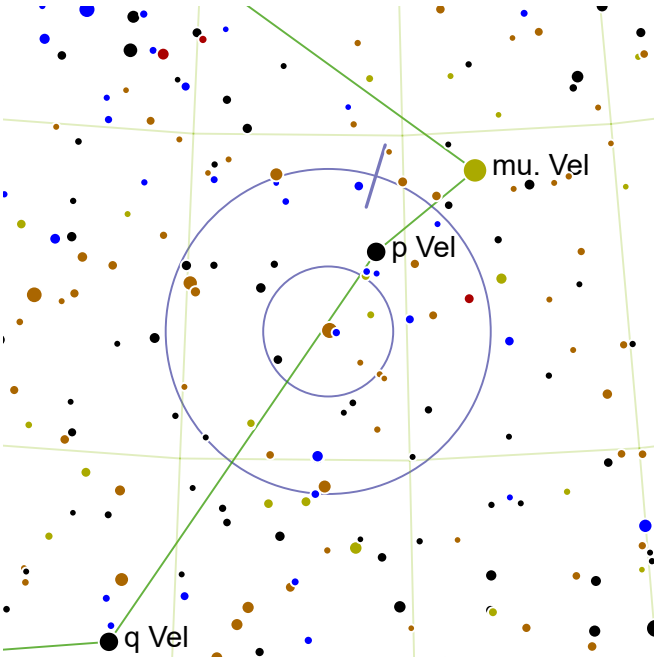
Position Angle: 41°

SAO 223195 | HIP 58813 | GDR2 37517738624

A widely separated, balanced pair with a yellowish primary and a somewhat yellower secondary.

One finder circle N from magnitude 2.88 del Cen. Two and a half finder circles SSE from magnitude 3.72 ksi Hya.

This gravitationally bound pair is 178 light-years from Earth.



HJ 4330

RA: 158.23° | 10h 32.89' — DEC: -47.0° | -47° 0'

Magnitude: 5.2 | 8.6

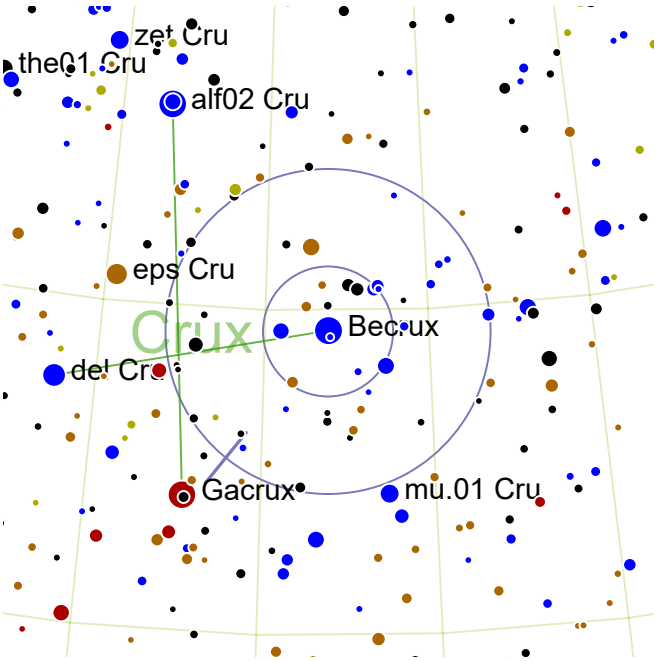
Separation: 40.3"

Position Angle: 163°

SAO 222136 | HIP 51635 | GDR2 06787969536

A bright orange primary widely separated from a fairly faint white secondary.

Half a finder circle NW from magnitude 2.84 mu. Vel. Two and a half finder circles N from magnitude 3.58 p Car.



Beta Cru

RA: 191.93° | 12h 47.7' — DEC: -59.68° | -59° 40'

Magnitude: 1.3 | 11.4

Separation: 44"

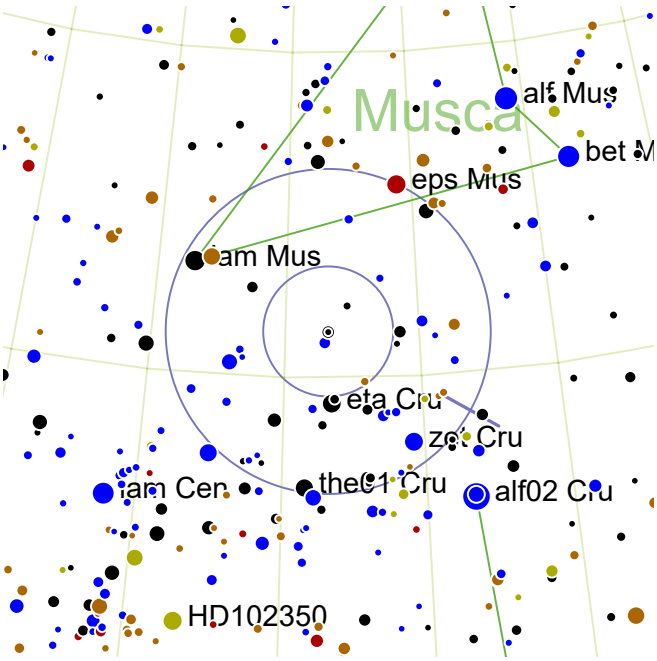
Position Angle: 321°

SAO 240259 | HIP 62434

A extremely brilliant blue primary very widely separated from a faint blue secondary.

Beta Cru is a bright star in Crux. Half a finder circle E from magnitude 3.57 eps Cru.

Aldo known as Mimosa, the primary component is 34,000 times brighter than the sun as well as being 16 times more massive. This monstrous star has exhausted its hydrogen fuel and is now burning (and producing) heavier elements. In a matter of millions of years, the star will end its life as a supernova.



HJ 4498

RA: 181.6° | 12h 6.39' — DEC: -65.72° | -65° 42'

Magnitude: 7 | 7.9

Separation: 8.7"

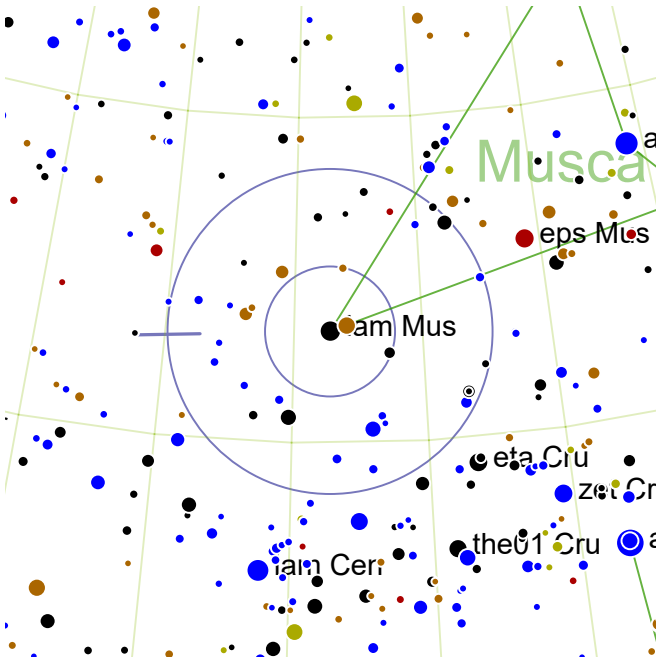
Position Angle: 61°

SAO 251738 | HIP 59050 | GDR2 30979343616

A fairly bright yellow primary with an orange companion close by.

One and a half degrees NEE from magnitude 3.8 lam Mus. Half a finder circle SE from magnitude 3.34 lam Cen.

NGC 4463 a magnitude 7.2 open star cluster, is on the eastern edge the finder view.



Lambda Mus

RA: 176.4° | 11h 45.6' — DEC: -66.72° | -66° 42'

Magnitude: 3.6 | 11.4

Separation: 31.9"

Position Angle: 271°

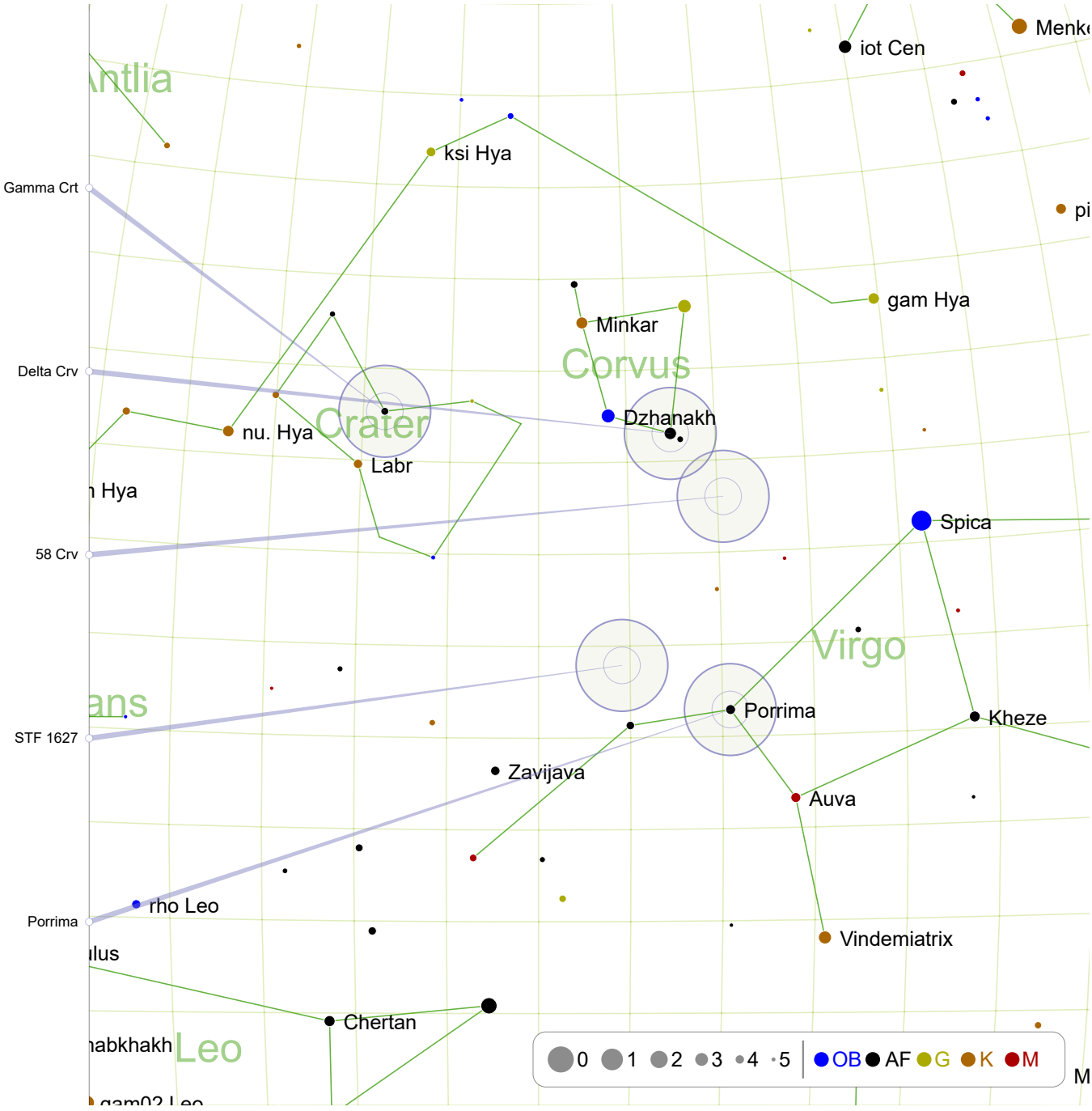
SAO 251575 | HIP 57363 | GDR2 71555481344

A very brilliant white primary widely separated from an extremely faint companion.

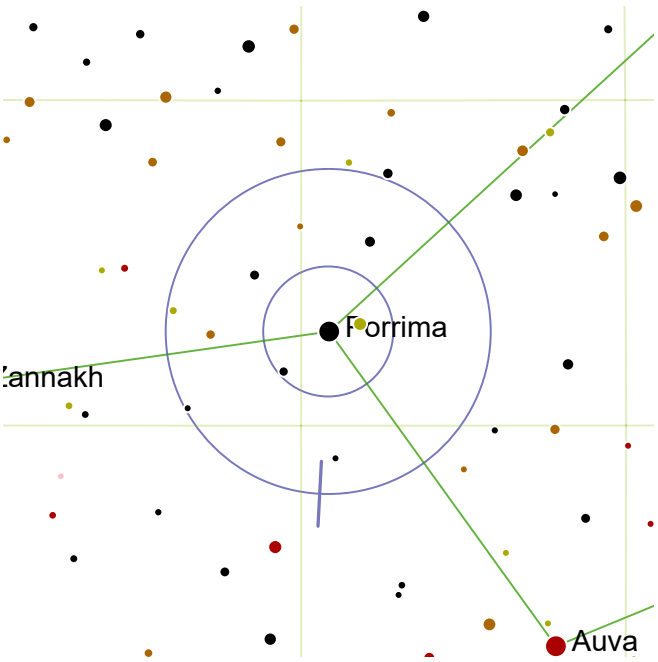
Lambda Mus is a bright star in Musca. Half a finder circle SSE from magnitude 3.34 lam Cen.

Forms a pleasing binocular double with brilliant Mu Muscae.

Early Autumn - Looking North



Porrima: page 140 STF 1627: page 140 58 Crv: page 141 Delta Crv: page 141
Gamma Crt: page 142



Porrima

RA: 190.42° | 12h 41.66' — DEC: -1.45° | -1° 26'

Magnitude: 3.48 | 3.53

Separation: 2.93"

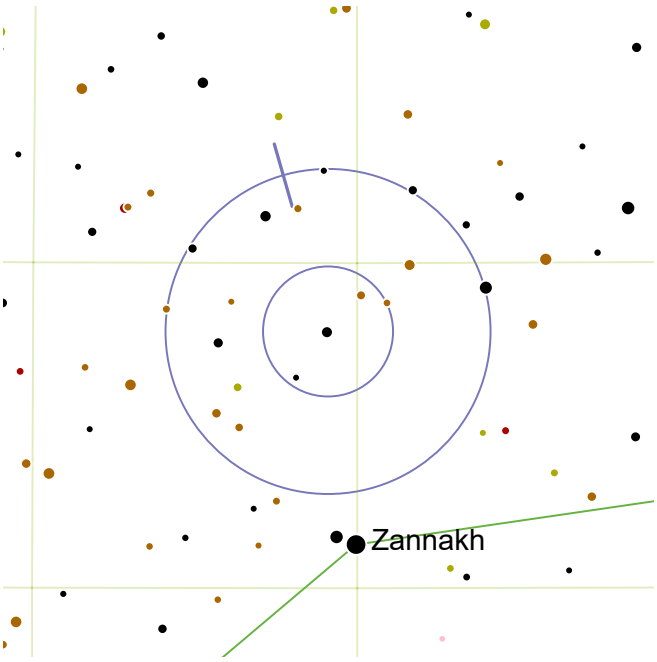
Position Angle: 357°

SAO 138917 | HIP 61941

An almost perfectly equal and very close pair of brilliant yellowish stars.

The bottom star of the "cup" of Virgo, Porrima lies on line between magnitude 0.95 Spica and magnitude 2.55 Zosma in Leo.

The galaxy NGC 4753 lies just beyond the eastern edge of the finder circle when this double is centered.



STF 1627

RA: 184.55° | 12h 18.2' — DEC: -3.95° | -3° 56'

Magnitude: 6.6 | 6.9

Separation: 20.1"

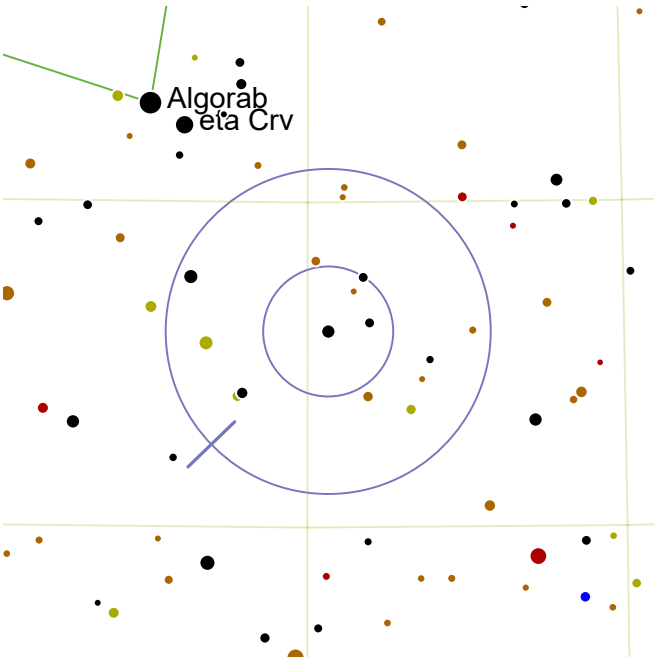
Position Angle: 196°

SAO 138704 | HIP 59984 | GDR2 78922038528

An equal and easily separated pair of fairly bright white stars.

One finder circle SWW from magnitude 3.68 gam Vir. One finder circle SWW from magnitude 3.65 Porrima.

This pair of F-class main sequence stars is only 172 light-years from Earth.



58 Crv

RA: 190.33° | 12h 41.29' — DEC: -13.02° | -13° 0'

Magnitude: 5.9 | 5.9

Separation: 5.3"

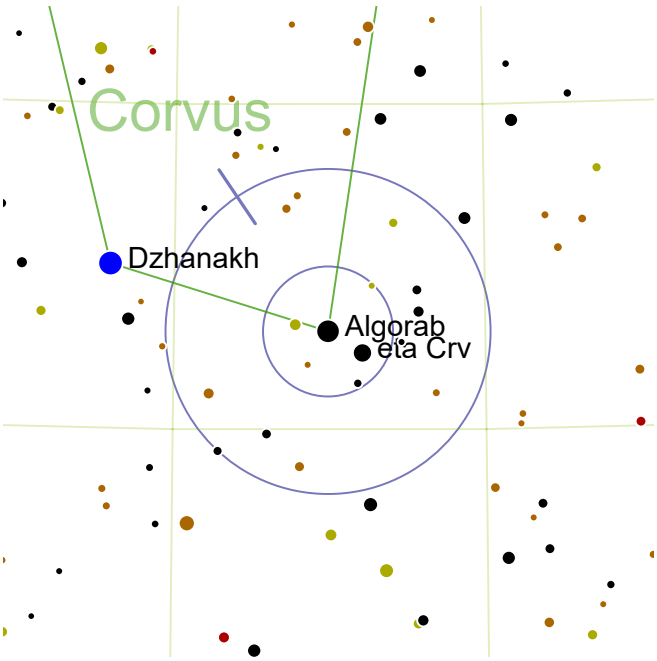
Position Angle: 314°

SAO 157448 | HIP 61910 | GDR2 41368899712

A close pair of bright, yellowish stars, with a third faint, widely separated component.

Half a finder circle NE from magnitude 3.11 Algorab. One and a half finder circles NE from magnitude 2.78 Dzhanakh.

With this double centered in the finder, the famous Sombrero Galaxy (M104, magnitude 8.0) is in the northern quarter of the finder circle.



Delta Crv

RA: 187.48° | 12h 29.89' — DEC: -16.52° | -16° 30'

Magnitude: 3 | 9.2

Separation: 24.2"

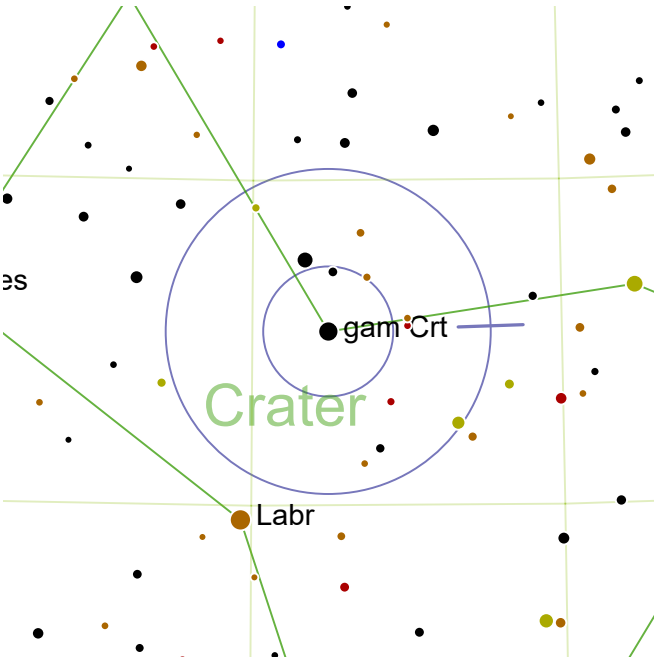
Position Angle: 214°

SAO 157323 | HIP 60965 | GDR2 71216143488

A brilliant bluish primary widely separated from a moderately faint companion.

Delta Crv is a bright star in Corvus. Half a finder circle NEE from magnitude 2.78 Dzhanakh.

This bright star, also known as Algorab, is a mere 87 light-years from Earth.



Gamma Crt

RA: 171.23° | 11h 24.89' — DEC: -17.68° | -17° 40'

Magnitude: 4.1 | 7.9

Separation: 4.4"

Position Angle: 92°

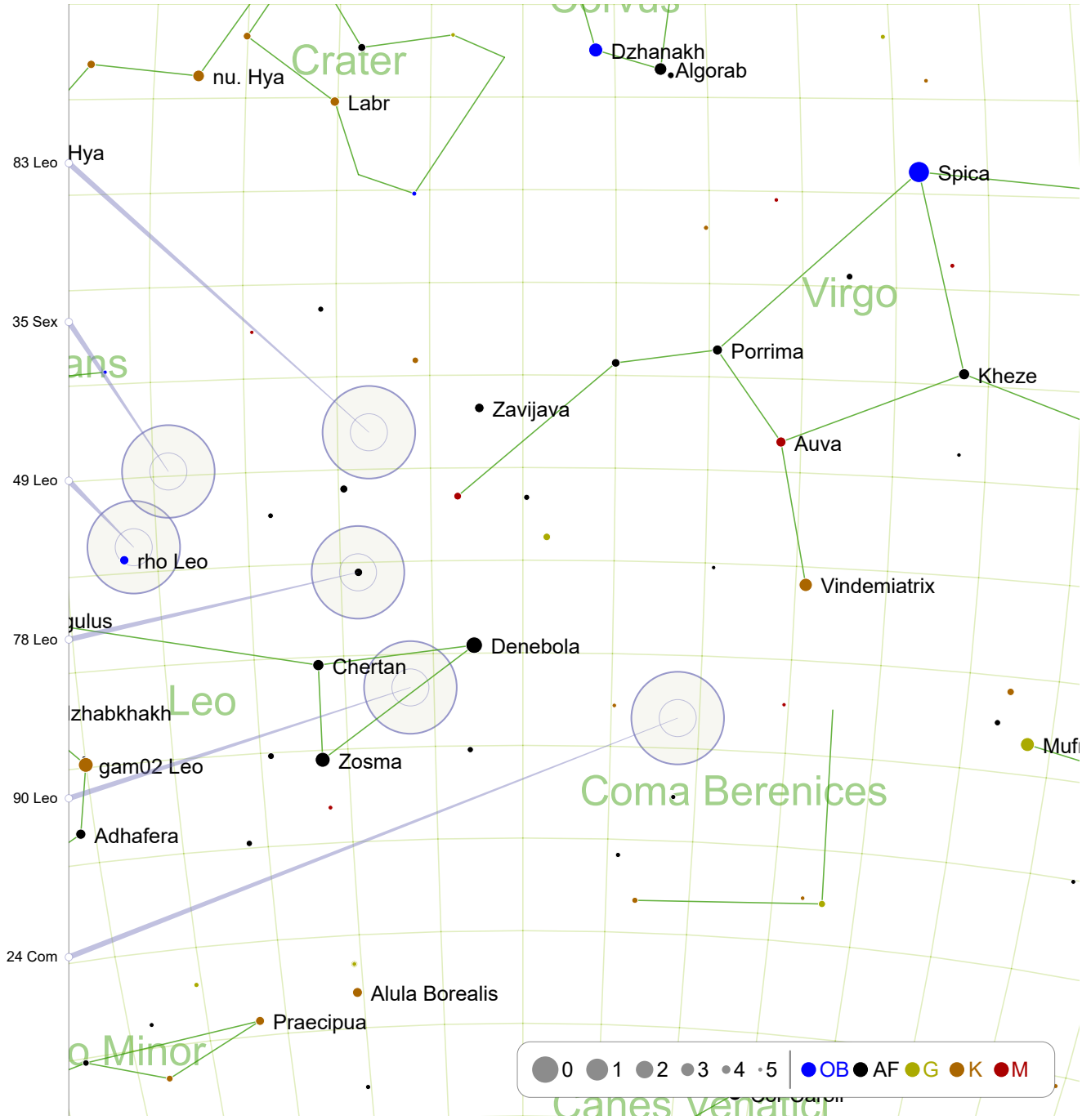
SAO 156661 | HIP 55705 | GDR2 85853638912

A close pair with a brilliant white primary somewhat fainter secondary.

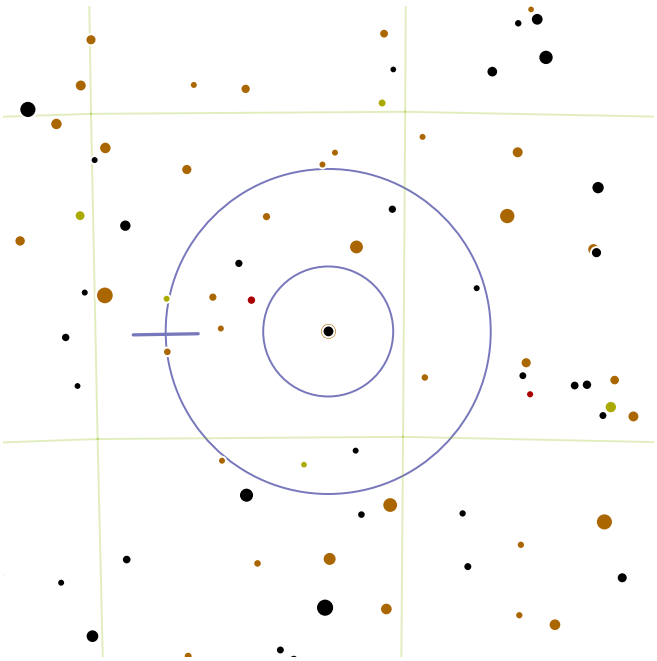
Half a finder circle SSE from magnitude 3.82 Labr. One and a half finder circles SEE from magnitude 3.32 nu. Hya.

Only 82 light-years away, the primary is an A-type main sequence dwarf.

Early Autumn - Northern Horizon



24 Com: page 144
90 Leo: page 144
78 Leo: page 145
49 Leo: page 145
35 Sex: page 146
83 Leo: page 146



24 Com

RA: 188.78° | 12h 35.1' — DEC: 18.38° | 18° 23'

Magnitude: 5.2 | 6.7

Separation: 20.3"

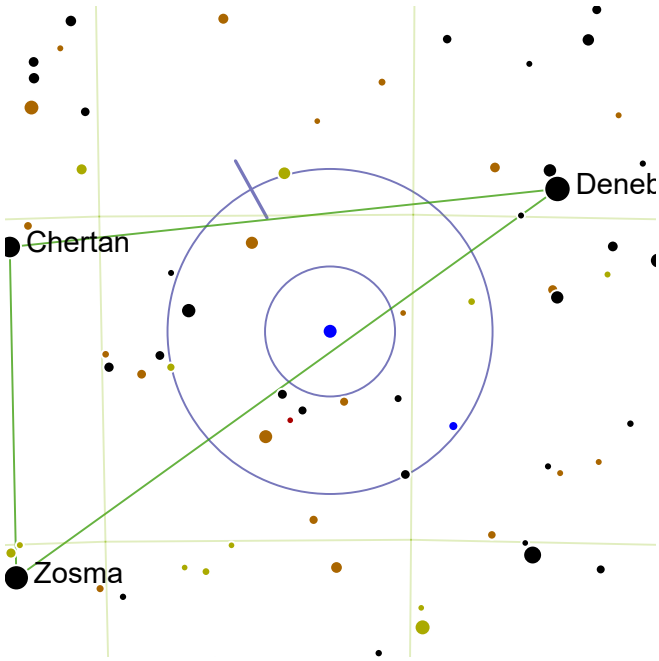
Position Angle: 271°

SAO 100160 | HIP 61418 | GDR2 69267207296

An orange-blue pair, with a reasonable bright secondary and easy separation.

Draw a line from Regulus to Chertan (the star of Leo's hind triangle closest to Regulus), and double it out to the east. This puts you in the neighborhood of 24 Com.

Track just over one finder south and your finder should be full of galaxies, light pollution permitting. Track two finders further East and your finder should show the globular clusters Messier 53 and NGC 5053.



90 Leo

RA: 173.68° | 11h 34.7' — DEC: 16.8° | 16° 48'

Magnitude: 6.3 | 7.3

Separation: 3.1"

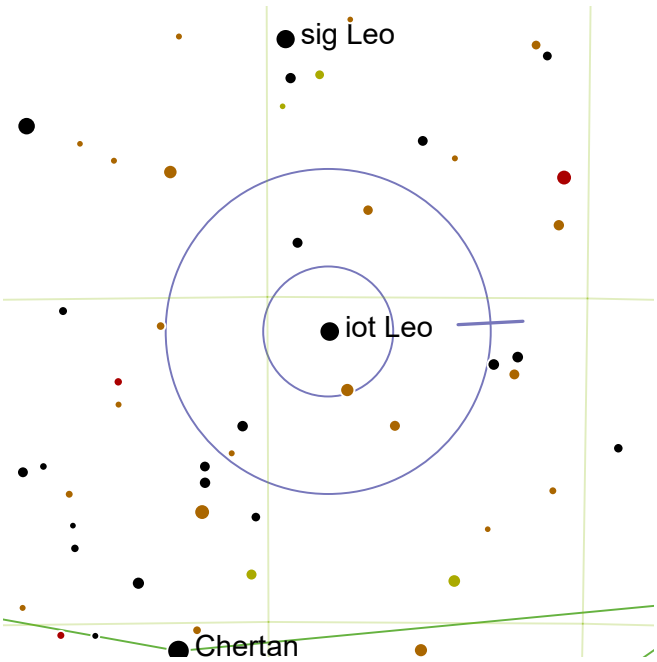
Position Angle: 209°

SAO 99673 | HIP 56473

A balanced pair of fairly bright bluish stars, very closely separated.

Half a finder circle NWW from magnitude 2.23 Denebola.

Three faint galaxies lie toward the western edge of the finder circle: NGC 3686, NGC 3684 and NGC 3681. This system is 1897 light-years from Earth.



78 Leo

RA: 170.95° | 11h 23.79' — DEC: 10.53° | 10° 32'

Magnitude: 4.06 | 6.71

Separation: 2.22"

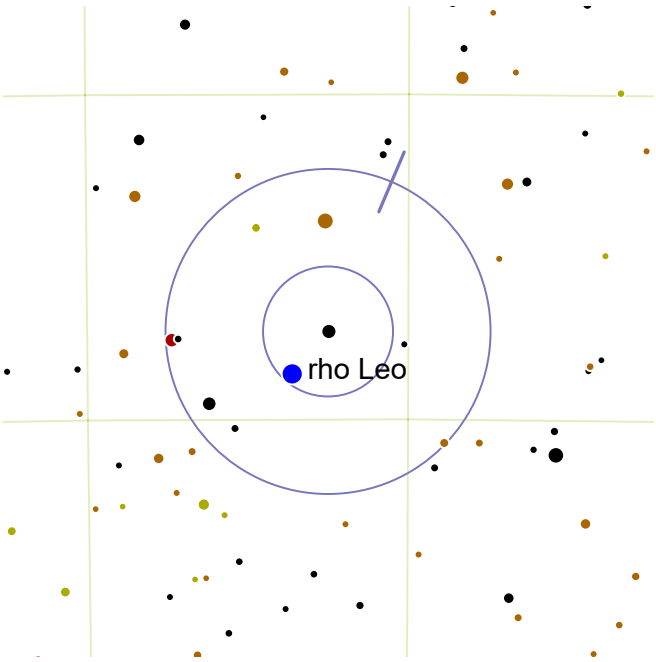
Position Angle: 93°

SAO 99587 | HIP 55642 | GDR2 30249291008

A tight white-yellow pair. The secondary is not too faint, but the primary shines brilliantly.

One and a half finder circles south west of bright Denebola (magnitude 2.10) at the rear of Leo.

The system lies only 78 light-years away. The yellow companion star is very similar to the Sun, with a mass approximately 8% greater. If you place 78 Leonis nn the south eastern edge of a finder, the famous Leo Triplet of galaxies fills the opposite quadrant.



49 Leo

RA: 158.75° | 10h 35.0' — DEC: 8.65° | 8° 39'

Magnitude: 5.8 | 7.9

Separation: 2.0"

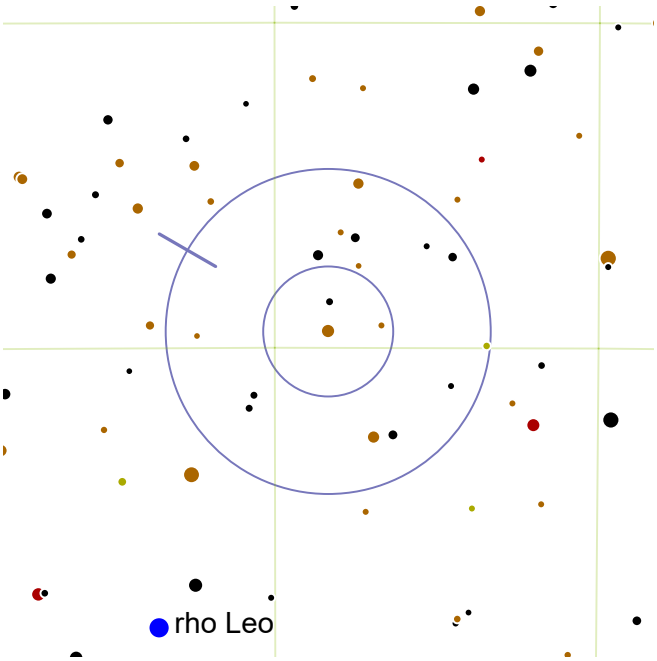
Position Angle: 157°

SAO 118380 | HIP 51802 | GDR2 97365638528

A bright white primary with an extremely close, reasonably apparent companion.

Half a degree SE from magnitude 3.85 rho Leo.

One finder circle to the north east, the finder view is full of galaxies, including M95, M96, M105, NGC 3384, NGC 3412, NGC 3377, and NGC 3367. The brightest is M96 at magnitude 9.25.



35 Sex

RA: 160.82° | 10h 43.29' — DEC: 4.75° | 4° 45'

Magnitude: 6.3 | 7.4

Separation: 6.8"

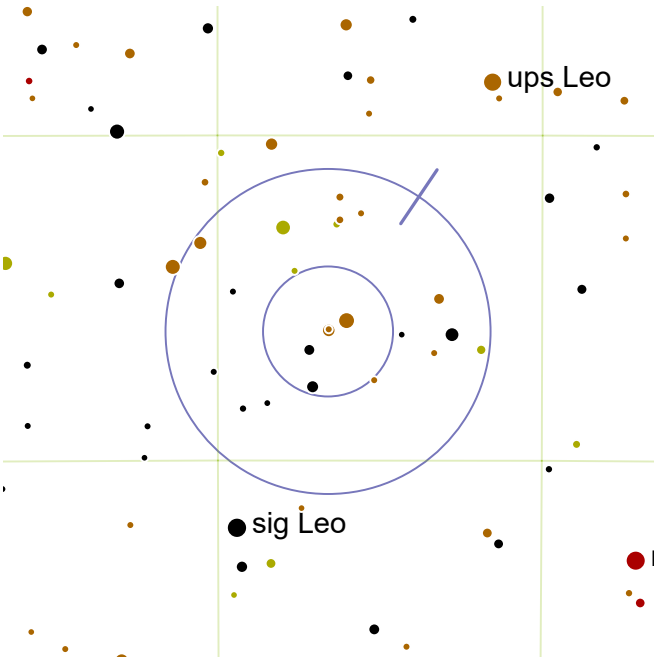
Position Angle: 240°

SAO 118449 | HIP 52452 | GDR2 36489909632

An unusual orange-yellow pairing, reasonably balanced and closely separated.

35 Sextantis is two finder circles south east of 47 Leonis.

A difficult double to locate far south east of Regulus. South east of Regulus lies 47 Leonis (magnitude 3.8), a very interesting pulsating variable star and also a spectroscopic binary. 47 Leonis is very massive, around 21 times the mass of the Sun and nearly 300,000 brighter than the Sun.



83 Leo

RA: 171.7° | 11h 26.79' — DEC: 3.02° | 3° 1'

Magnitude: 6.6 | 7.5

Separation: 28.6"

Position Angle: 146°

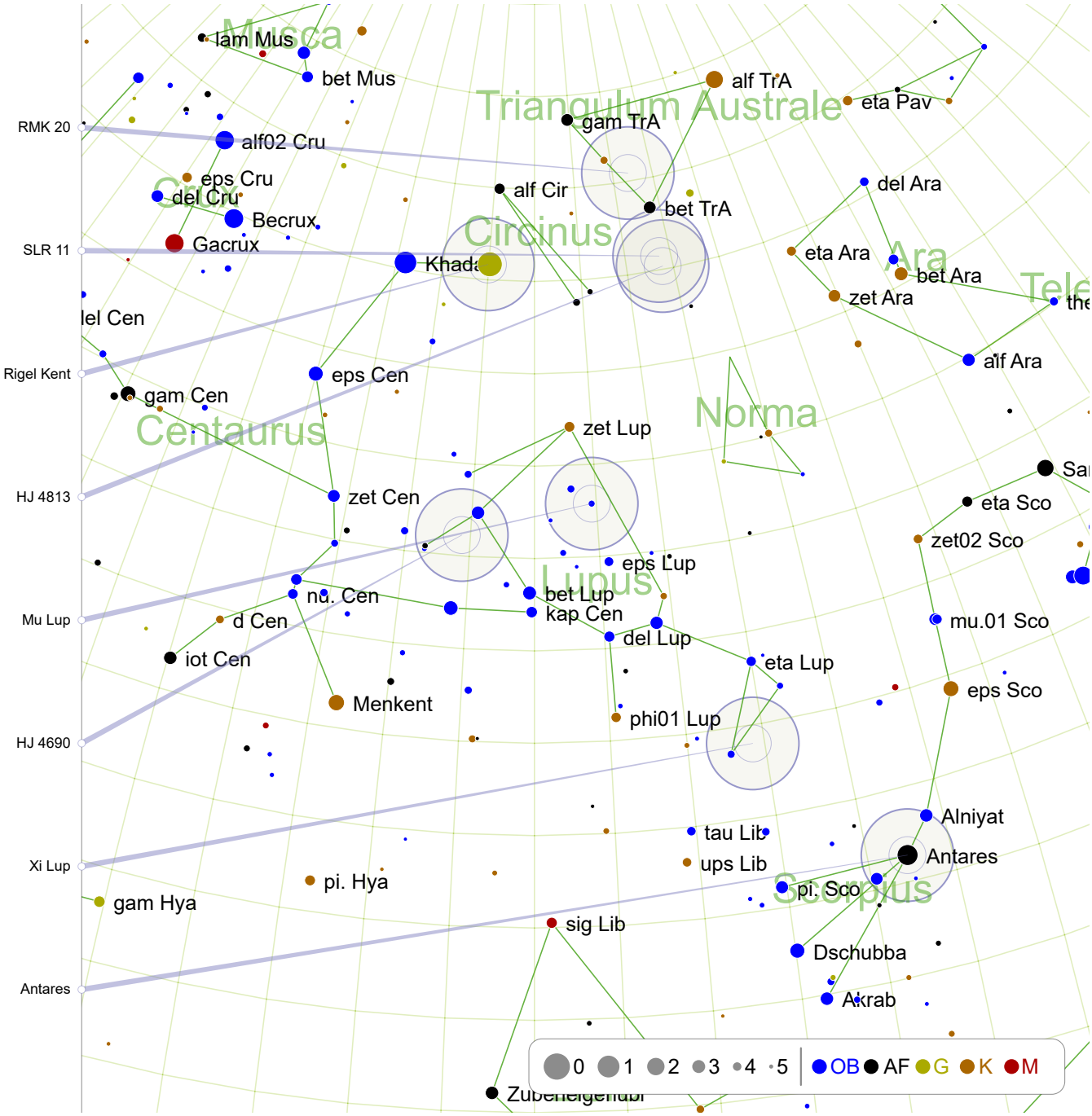
SAO 118864 | HIP 55846

A fairly bright yellow primary with an easily apparent orange secondary, widely separated.

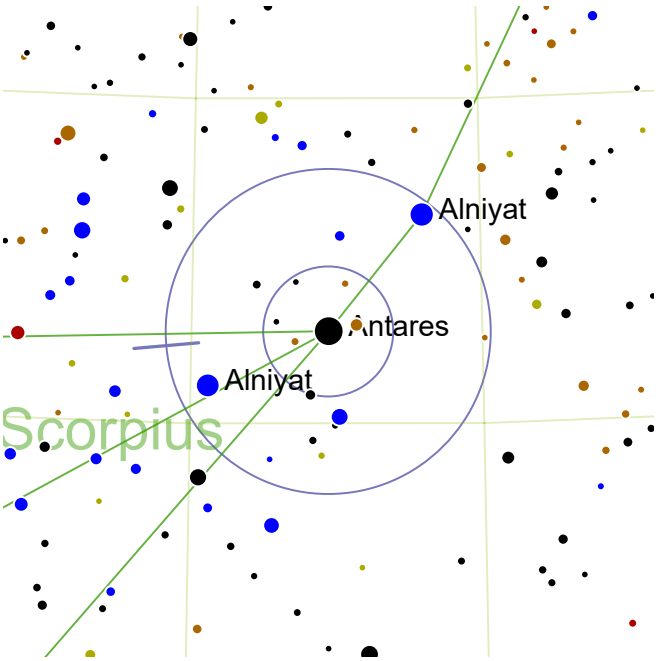
One finder circle NWW from magnitude 3.8 Zavijava.

The galaxy NGC 3640 (mag. 10.4) lies toward the eastern edge of the finder view.

Late Autumn - Looking South



Antares: page 148 | Xi Lup: page 148 | HJ 4690: page 149 | Mu Lup: page 149
HJ 4813: page 150 | Rigel Kent: page 150 | SLR 11: page 151 | RMK 20: page 151



Antares

RA: 247.35° | 16h 29.39' — DEC: -26.43° | -26° 25'

Magnitude: 1.2 | 5.4

Separation: 2.9"

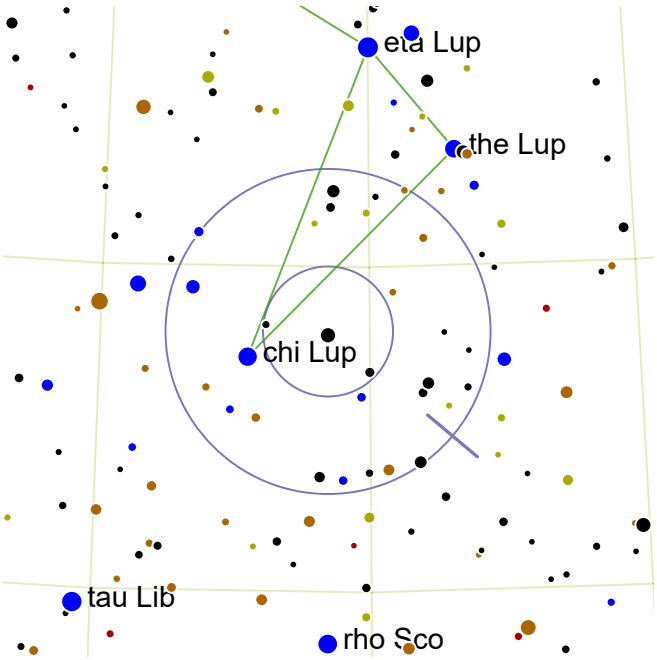
Position Angle: 275°

SAO 184415 | HIP 80763

A fiercely brilliant and intensely red primary with a very close, bright, blue or green companion.

Antares is a bright star in Scorpius. Antares is a bright star in Scorpius.

Antares means the "rival of Mars" as this star's color competes with that of the Red Planet. This is a gravitationally bound binary system about 550 light-years from Earth. Antares is fairly red (B-V color index: 1.86).



Xi Lup

RA: 239.23° | 15h 56.89' — DEC: -34.02° | -34° 0'

Magnitude: 5.1 | 5.6

Separation: 10.2"

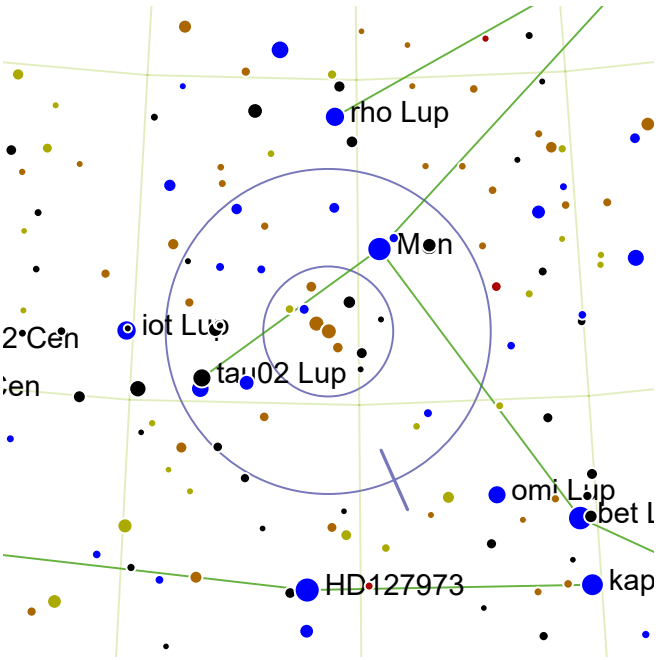
Position Angle: 50°

SAO 207144 | HIP 78105 | GDR2 02400278016

A bright white primary with an almost as bright blue companion close by.

Half a finder circle N from magnitude 3.61 eta Lup. One and a half finder circles S from magnitude 3.0 pi. Sco.

Globular cluster NGC 5986 (mag. 6.9) lies one finder circle to the south.



HJ 4690

RA: 219.33° | 14h 37.29' — DEC: -46.13° | -46° 7'

Magnitude: 5.6 | 7.7

Separation: 19.2"

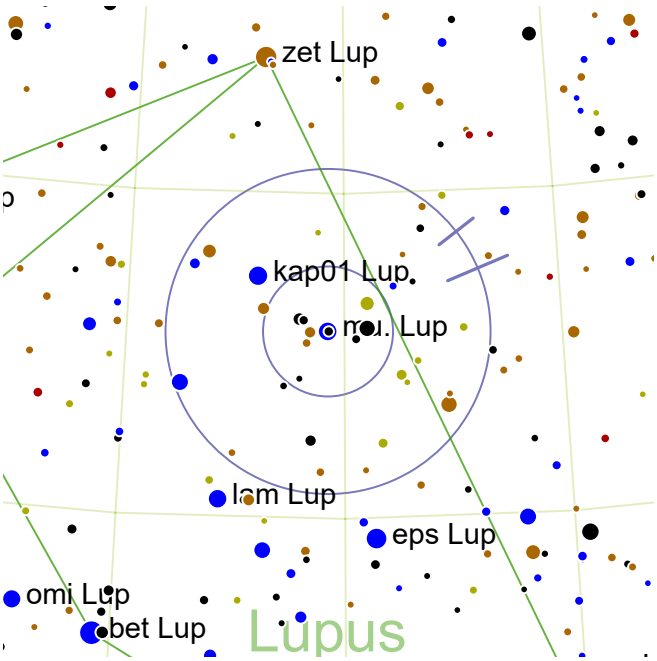
Position Angle: 24°

SAO 225062 | HIP 71500 | GDR2 32950518528

A bright yellow primary easily separated from a white secondary.

One degree NNW from magnitude 2.89 Men. Two and a half finder circles N from magnitude 1.7 alf Cen.

The primary is itself an equal double (separation 0.2"). Tau 1 and 2 Lupi form a lovely binocular double on the north-western edge of the finder view.



Mu Lup

RA: 229.63° | 15h 18.5' — DEC: -47.88° | -47° 52'

Magnitude: 4.9 | 4.9 | 6.3

Separation: 0.74" | 23.1"

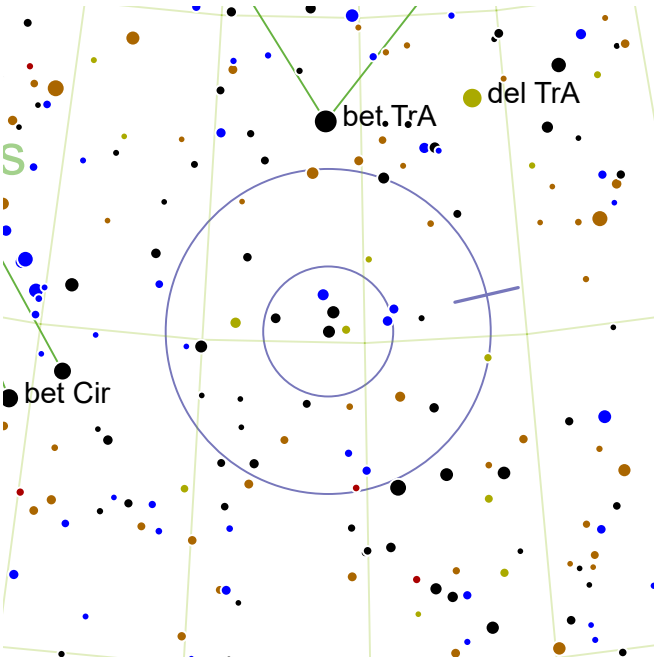
Position Angle: 113° | 128°

SAO 225638 | HIP 74911

An extraordinarily tight pair of equally brilliant bluish stars, with a widely separated, fairly bright, white third component.

Half a finder circle SSW from magnitude 3.74 eps Lup. Half a finder circle NNE from magnitude 3.5 zet Lup.

Just beyond the south-eastern edge of the finder circle are two globular clusters: NGC 5927 (mag. 8.9) is closest, with NGC 5946 (mag 10.7) nearly two degrees further east.



HJ 4813

RA: 238.88° | 15h 55.5' — DEC: -60.18° | -60° 10'

Magnitude: 5.9 | 8.4

Separation: 4.8"

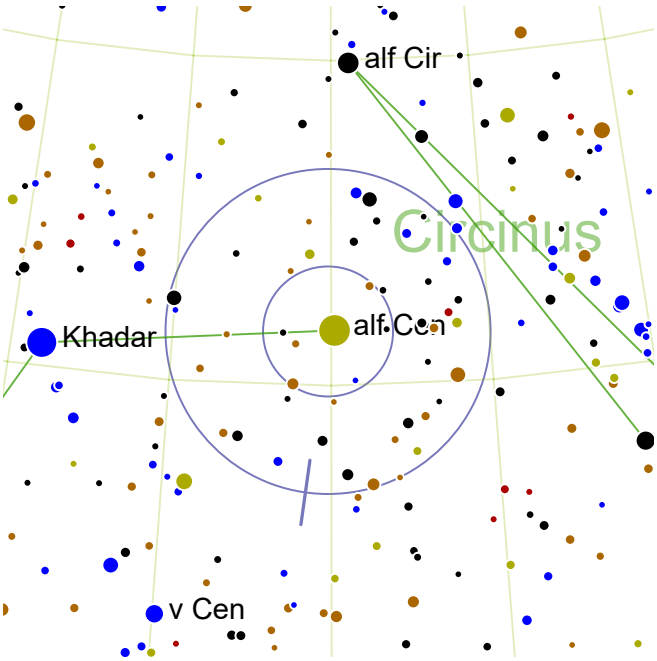
Position Angle: 103°

SAO 253349 | HIP 77990 | GDR2 34699732352

A bright yellow primary with a very close companion.

Half a finder circle N from magnitude 3.04 bet TrA. One and a half finder circles E from magnitude 1.7 alf Cen.

Located in a very rich region of the sky, magnitude 5.1 open cluster Caldwell 95 is only one degree to the east of this double.



Rigel Kent

RA: 219.9° | 14h 39.6' — DEC: -60.83° | -60° 49'

Magnitude: 0.0 | 1.3

Separation: 6.1"

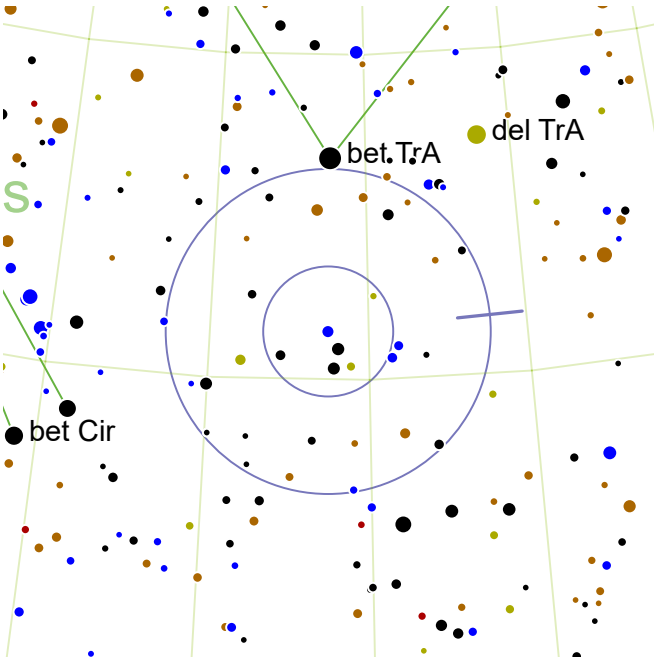
Position Angle: 352°

SAO 252838 | HIP 71683 | GDR2 48286736896

A close, extremely brilliant pair with a yellow primary and orange secondary.

Less than half a degree W from magnitude 1.7 alf Cen. Less than half a degree W from magnitude 0.33 Rigel Kentaurus.

Famous as being the closest star system to the Sun, the third member of this system is Proxima Centauri. At Magnitude 12.7 and over 999" from the primary, Proxima is highly elusive.



SLR 11

RA: 238.73° | 15h 54.89' — DEC: -60.75° | -60° 44'

Magnitude: 6.5 | 8.8

Separation: 1.2"

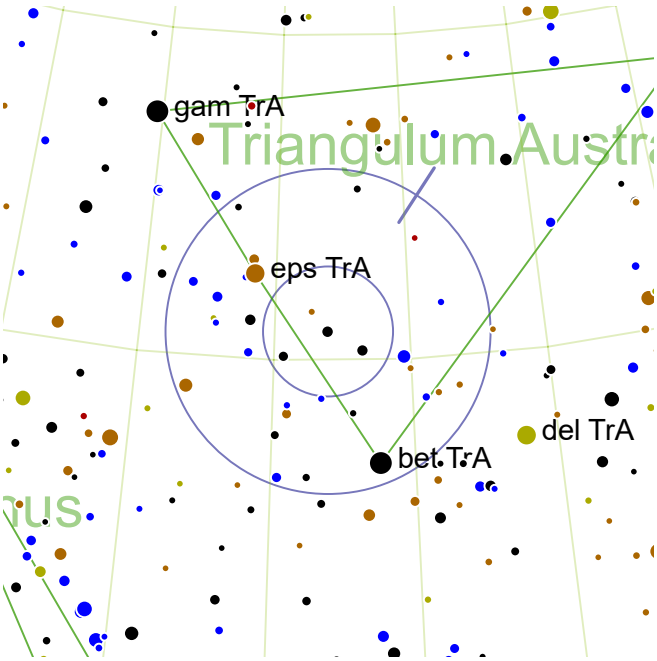
Position Angle: 96°

SAO 253344 | HIP 77927 | GDR2 55424187392

A fairly bright blue primary with an almost inseparable companion.

Half a finder circle N from magnitude 3.04 bet TrA. One and a half finder circles E from magnitude 1.7 alf Cen.

Bright open cluster Caldwell 95 (magnitude 5.1) is a degree to the east of this double.



RMK 20

RA: 236.98° | 15h 47.89' — DEC: -65.45° | -65° 26'

Magnitude: 6.2 | 6.4

Separation: 1.8"

Position Angle: 147°

SAO 253297 | HIP 77390 | GDR2 83847202176

An extremely tight, equal pair of fairly bright, white stars.

One and a half degrees SSW from magnitude 3.04 bet TrA. One finder circle SEE from magnitude 3.41 alf Cir.

This gravitationally bound pair of A-type subgiants is 365 light-years from Earth.

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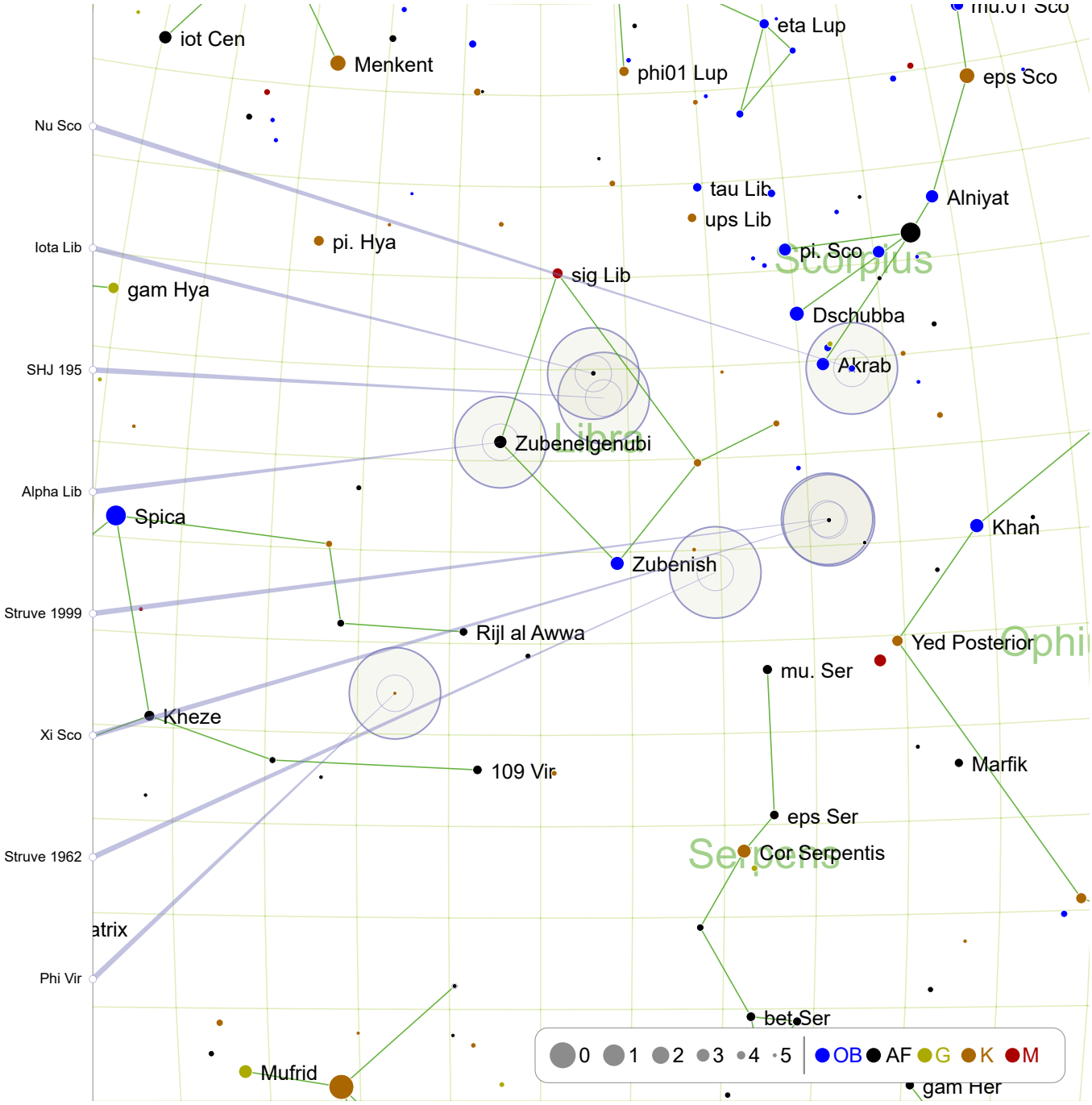
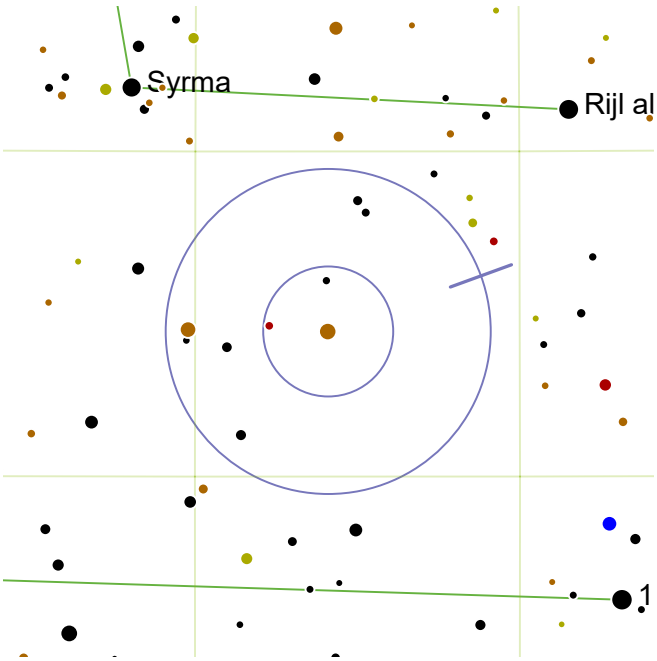
Late Autumn - Looking North



Phi Vir: page 154 | Struve 1962: page 154 | Xi Sco: page 155 | Struve 1999: page 155

Alpha Lib: page 156 | SHJ 195: page 156 | Iota Lib: page 157 | Nu Sco: page 157



Phi Vir

RA: 217.05° | 14h 28.2' — DEC: -2.23° | -2° 13'

Magnitude: 4.8 | 9.3

Separation: 4.8"

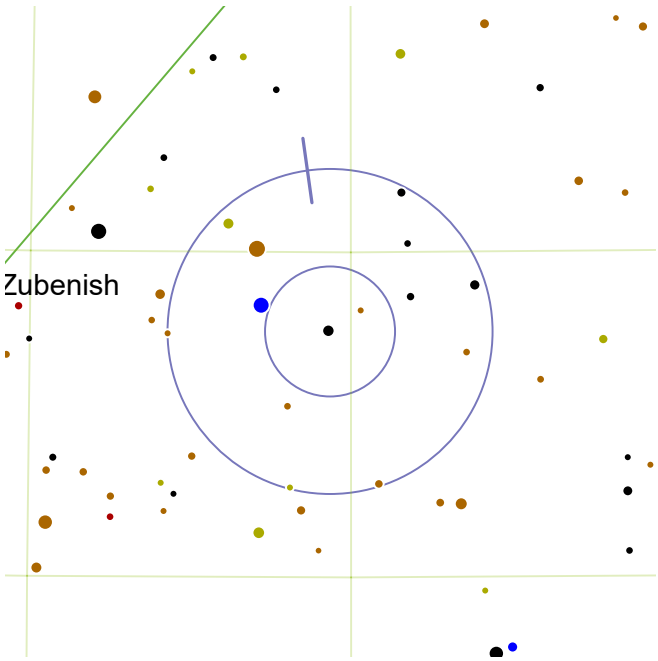
Position Angle: 110°

SAO 139951 | HIP 70755 | GDR2 95468596480

A very close and unequal yellow-blue pair.

One finder circle NW from magnitude 3.95 Rijl al Awwa.

The system is only 118 light-years from Earth.



Struve 1962

RA: 234.68° | 15h 38.7' — DEC: -8.78° | -8° 46'

Magnitude: 6.5 | 6.6

Separation: 11.9"

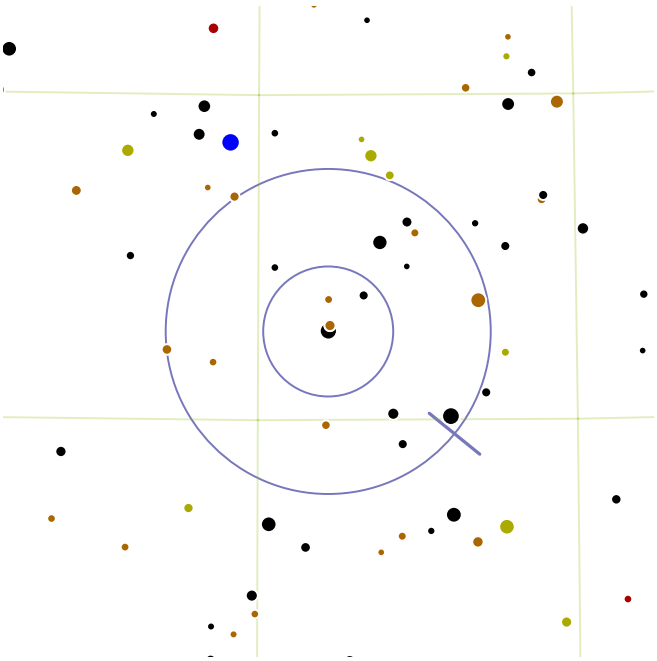
Position Angle: 188°

SAO 140672 | HIP 76603 | GDR2 01723597440

An easily separated equal pair of yellow stars.

This southerly double is located just over two finder circles dues east of the gloriously named Zubeneschamali, which at magnitude 2.61 is a good signpost.

Zubeneschamali means the "northern claw" of Scorpius, although now the star is classified as the brightest star of Libra.



Xi Sco

RA: 241.1° | 16h 4.39' — DEC: -11.37° | -11° 21'

Magnitude: 4.8 | 7.3

Separation: 7.6"

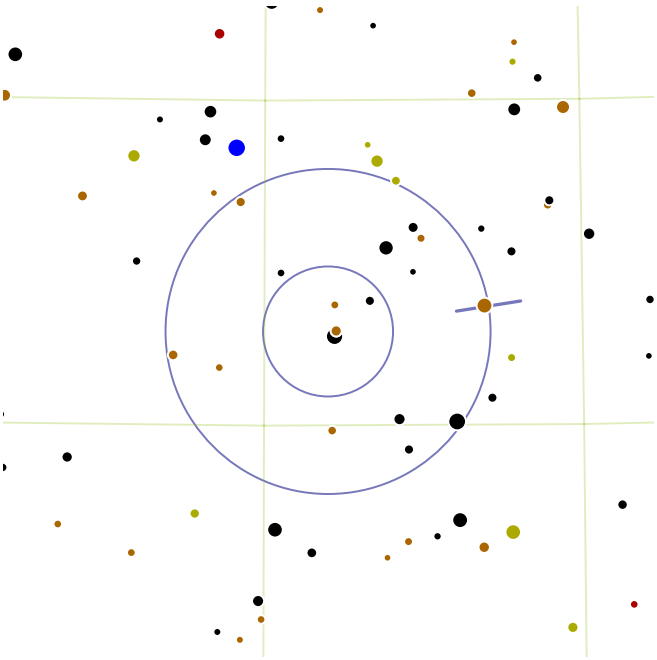
Position Angle: 51°

SAO 159665 | HIP 78727 | GDR2 92367555200

Xi Sco (Grafias) is a triple star system. The yellow primary can be split by larger telescopes into a an equal pale yellow pair with a separation of 1.1". Lesser telescopes show a single yellow point distantly separated from a fairly apparent blue companion.

This double lies one and a half finder circles north of the arc of three stars marking Scorpius' head.

While in the region of Scorpius, turn your telescope to Antares and try to resolve its blue companion (or is it green?).



Struve 1999

RA: 241.0° | 16h 4.0' — DEC: -11.45° | -11° 26'

Magnitude: 7.4 | 8.1

Separation: 11.6"

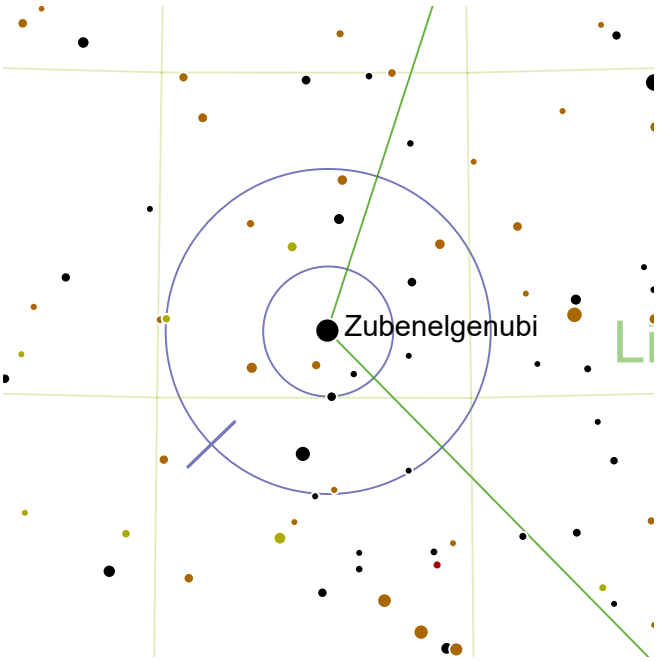
Position Angle: 99°

SAO 159668 | HIP 78738 | GDR2 77465522816

An easily separated and well balanced pair of deep yellow stars.

Two and a half finder circles south east of Arcturus.

Only 82 light-years distant, this double is a pair of cool yellow (slightly orange) main sequence dwarfs, smaller and cooler than our Sun.



Alpha Lib

RA: 222.73° | 14h 50.89' — DEC: -16.03° | -16° 1'

Magnitude: 2.8 | 5.2

Separation: 231"

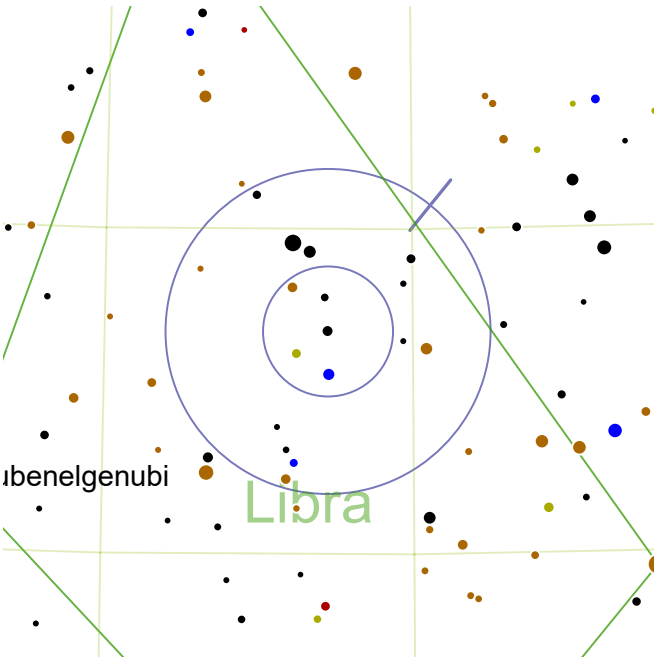
Position Angle: 314°

SAO 158840 | HIP 72622 | GDR2 07860824832

A brilliant white primary with distant bright, white companion.

Alpha Lib is a bright star in Libra. Two finder circles S from magnitude 3.95 Rijl al Awwa.

This system of F-class main sequence stars (with the delicious proper name of Zubenelgenubi) is 76 light-years from Earth.



SHJ 195

RA: 228.63° | 15h 14.5' — DEC: -18.43° | -18° 25'

Magnitude: 6.8 | 8.3

Separation: 47.5"

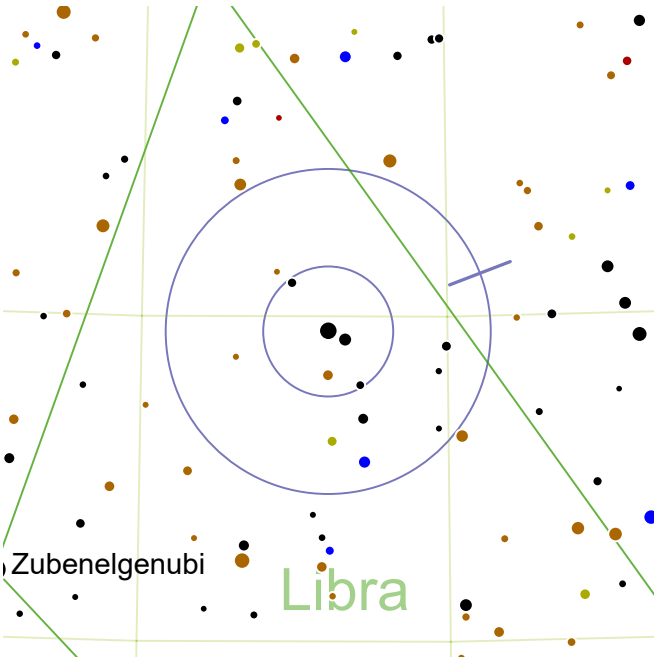
Position Angle: 141°

SAO 159118 | HIP 74593 | GDR2 95725037696

A widely separated, fairly balanced pair of yellowish stars.

One finder circle SEE from magnitude 2.9 Zubenelgenubi. Two finder circles NWW from magnitude 2.54 Dschubba.

With this double centered in the finder, globular cluster NGC 5897 (magnitude 8.5) is on the southern edge of the finder circle.



Iota Lib

RA: 228.05° | 15h 12.2' — DEC: -19.78° | -19° 46'

Magnitude: 4.5 | 10.9

Separation: 57.8"

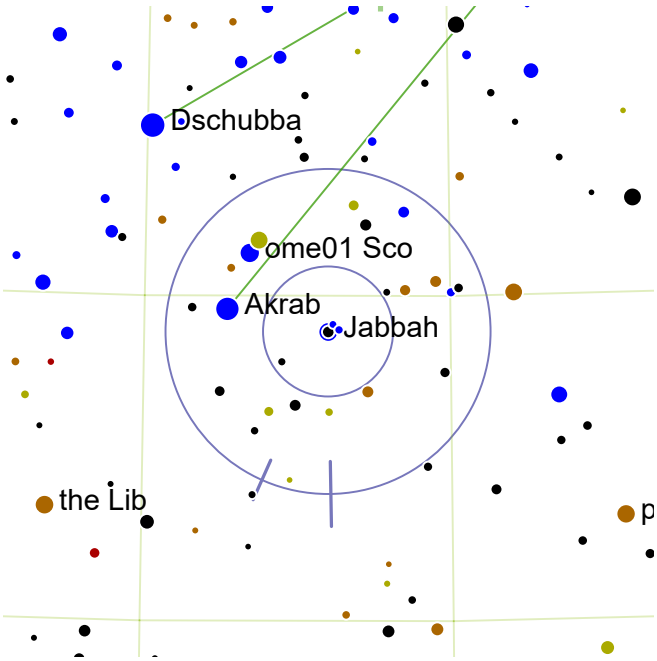
Position Angle: 111°

SAO 159090 | HIP 74392 | GDR2 84362600064

A distantly separated pair, with a brilliant white primary and tiny secondary.

One finder circle NNE from magnitude 3.41 sig Lib. One finder circle SE from magnitude 2.9 Zubenelgenubi.

This pair are gravitationally bound. The tiny secondary is a challenging, balanced double in its own right, with a separation of 1.9".



Nu Sco

RA: 243.0° | 16h 12.0' — DEC: -19.47° | -19° 27'

Magnitude: 4.35 | 5.31 | 6.60

Separation: 1.3" | 41.3"

Position Angle: 1° | 336°

SAO 159763 | HIP 79374 | GDR2 81070158080

A bright, extremely tight and balanced pair of blue stars.

One degree NEE from magnitude 2.9 Akrab. Half a finder circle NE from magnitude 2.54 Dschubba.

This double, also known as Jabbah, lies in front of of the Blue Horsehead Nebula (IC 4592).

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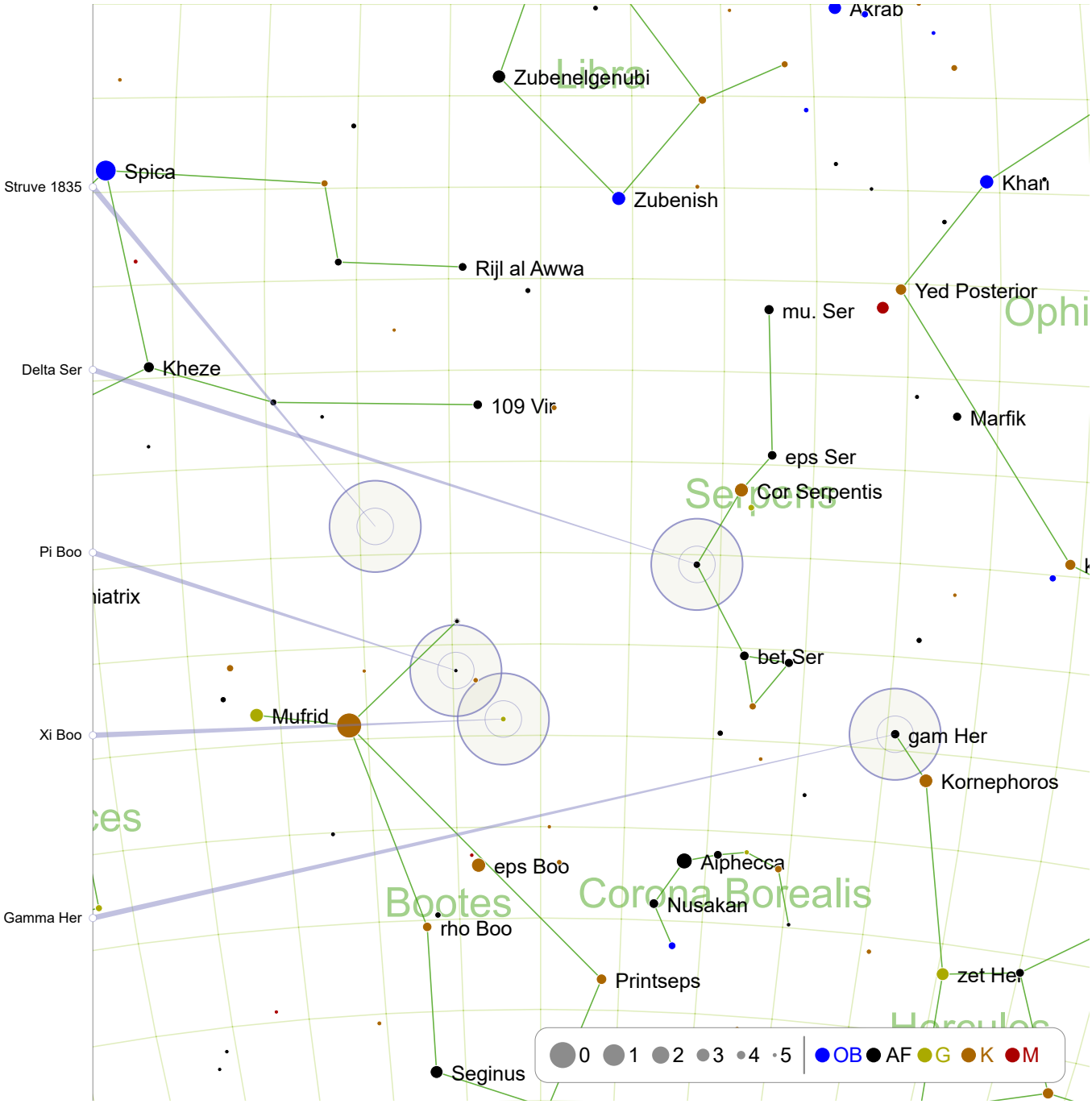
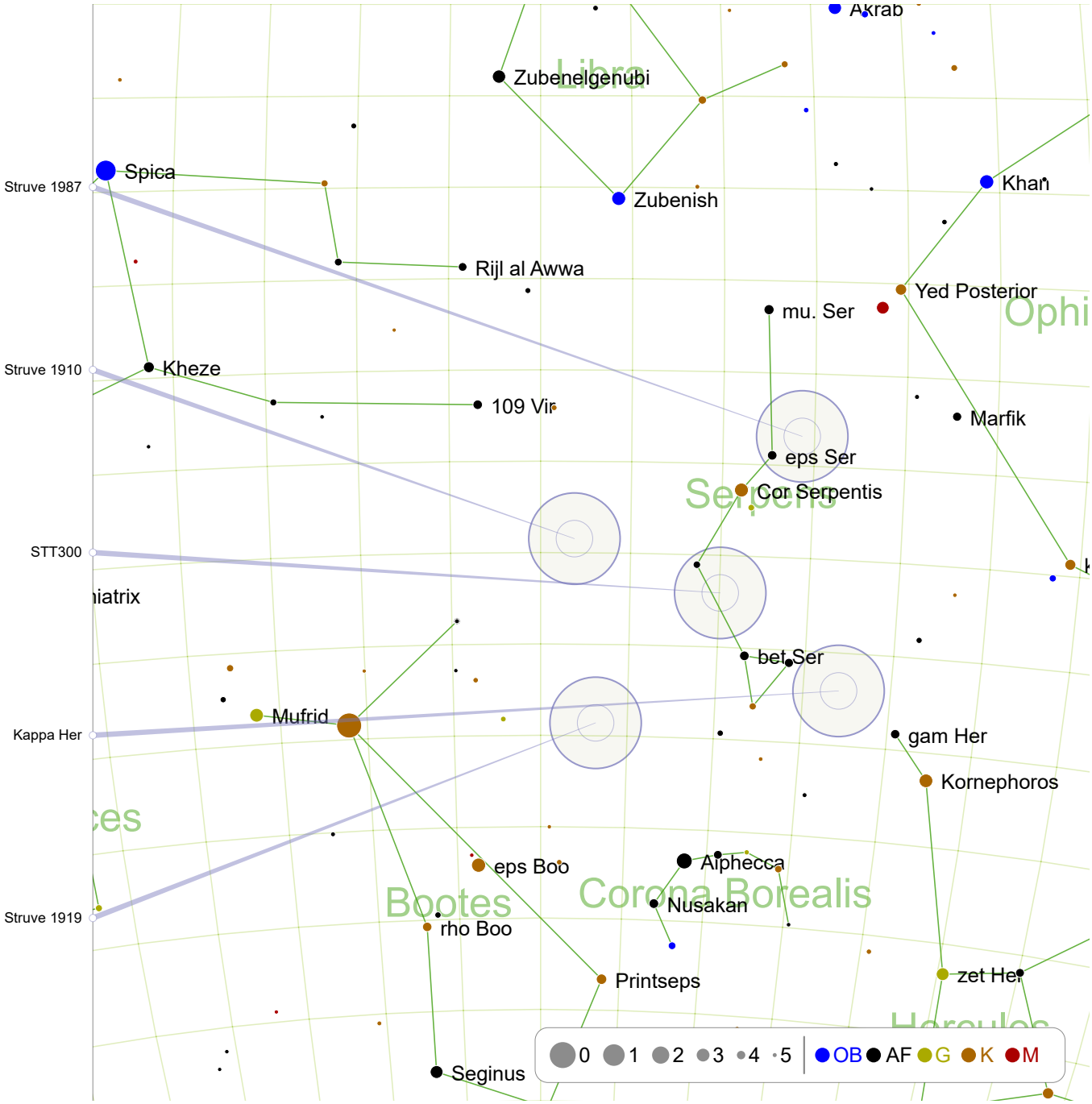
Late Autumn - Northern Horizon (1)

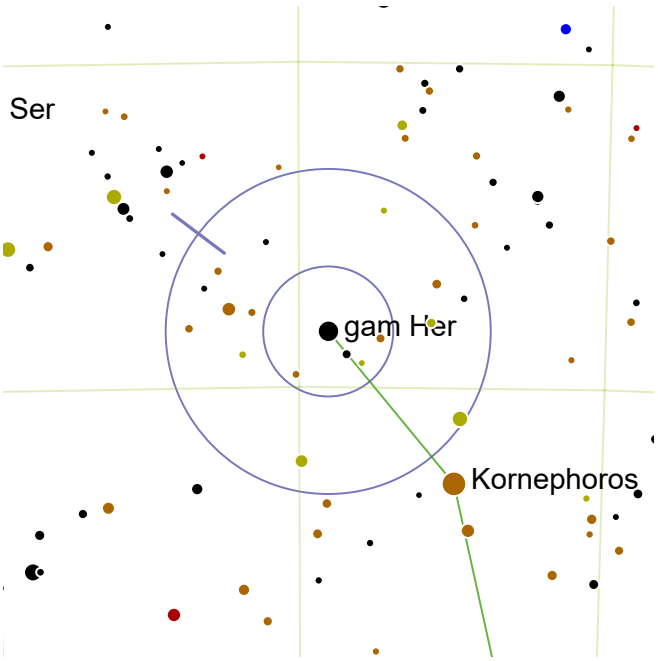


Gamma Her: page 161 Xi Boo: page 161 Pi Boo: page 162 Delta Ser: page 162
Struve 1835: page 163

Late Autumn - Northern Horizon (2)



Struve 1919: page 163 Kappa Her: page 164 STT300: page 164 Struve 1910: page 165
Struve 1987: page 165



Gamma Her

RA: 245.48° | 16h 21.89' — DEC: 19.15° | 19° 9'

Magnitude: 3.8 | 9.8

Separation: 41.6"

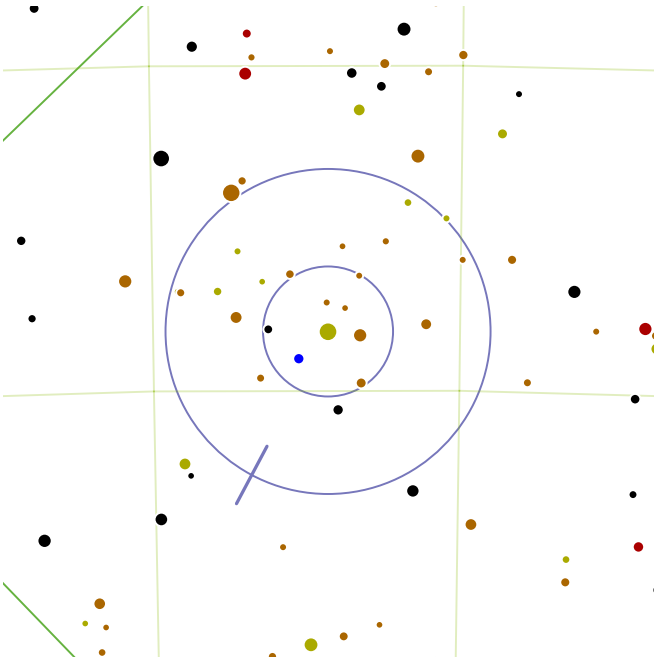
Position Angle: 233°

SAO 102107 | HIP 80170 | GDR2 39456872704

A yellow-yellow pairing with a brilliant primary and dim secondary. Distantly separated.

Find magnitude 2.75 Kornephoros south west of the Keystone asterism of Hercules. Track west by a degree and Gamma Herculis will appear on the western edge of the finder.

One and a half finder circles north east is the dim planetary nebula NGC 6210. An equal distance in the opposite direction to the SSW, lies another planetary nebula, IC 4593.



Xi Boo

RA: 222.85° | 14h 51.39' — DEC: 19.1° | 19° 6'

Magnitude: 4.7 | 7.0

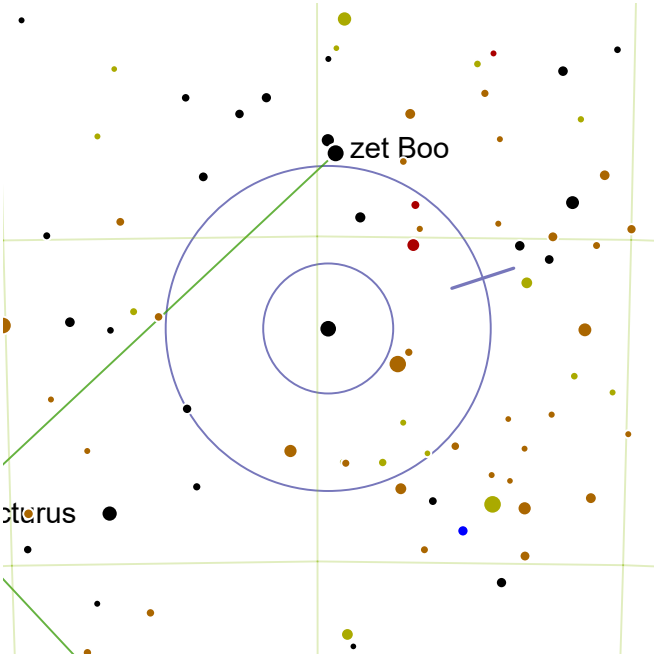
Separation: 6.9"

Position Angle: 332°

SAO 101250 | HIP 72659 | GDR2 38916392704

A close yellow-orange duo, with a bright primary and brightish secondary.

Two finder circles due east of Arcturus. Xi and Pi Bootis just fit in a finder, on the outer edges of the north-east and south-west quadrants.



Pi Boo

RA: 220.18° | 14h 40.7' — DEC: 16.42° | 16° 25'

Magnitude: 4.9 | 5.8

Separation: 5.6"

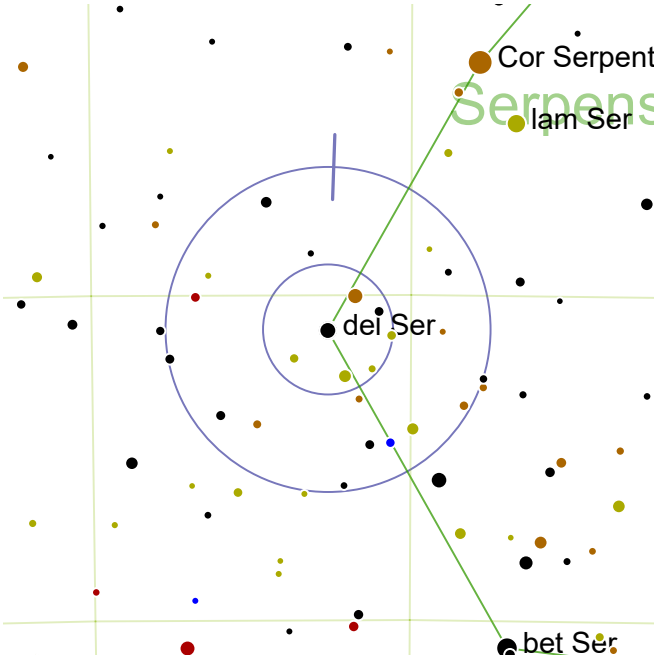
Position Angle: 108°

SAO 101138 | HIP 71762 | GDR2 87617291520

A close and reasonably balanced pair of white stars.

One and a half finder circles east of south-east of Arcturus.

Pi Bootis is 305 light-years from the Sun.



Delta Ser

RA: 233.7° | 15h 34.79' — DEC: 10.53° | 10° 32'

Magnitude: 4.2 | 5.2

Separation: 3.9"

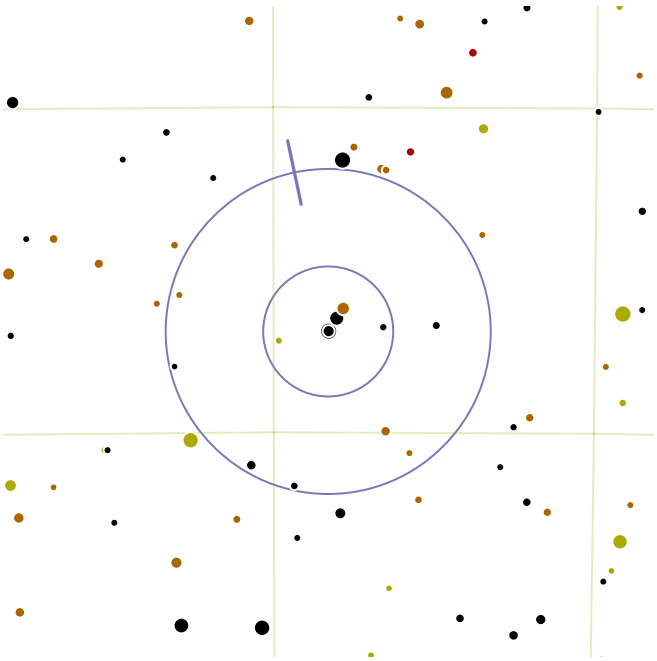
Position Angle: 178°

SAO 101623 | HIP 76276 | GDR2 58411028096

A reasonably balanced and very tight yellow-yellow pair.

Bright enough to be picked out in strong light pollution, you can find find this star five degrees north-west of Cor Serpentis.

The orbit of these two F-type stars has been calculated at 3200 years with a separation of 375 astronomical units (nearly ten times the distance between Pluto and the Sun).



Struve 1835

RA: 215.85° | 14h 23.39' — DEC: 8.45° | 8° 27'

Magnitude: 5.1 | 7.6

Separation: 6.2"

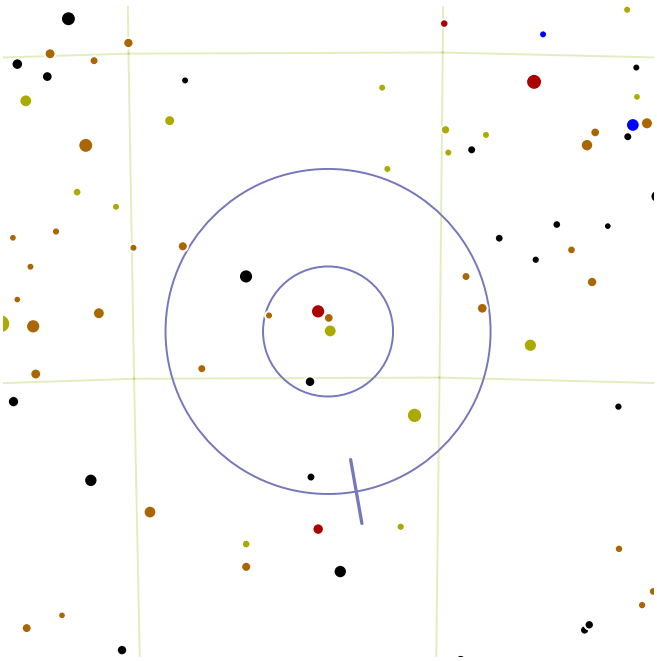
Position Angle: 192°

SAO 120426 | HIP 70327 | HIP 16168739456

A bright white primary close to a yellow secondary.

Struve 1835 is located just over two finder circles due south and slightly east of Arcturus. Struve 1835 is the northernmost of a one-degree line of three stars.

The system is 216 light-years away.



Struve 1919

RA: 228.18° | 15h 12.7' — DEC: 19.3° | 19° 18'

Magnitude: 6.7 | 7.6

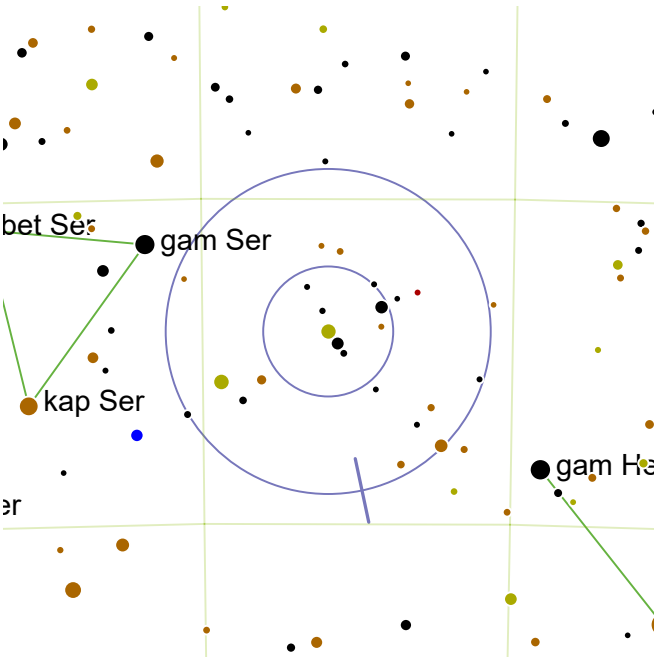
Separation: 23.9"

Position Angle: 10°

SAO 101437 | HIP 74432

A less bright and quite wide yellow-blue pairing.

Three finder circles east of Arcturus, so quite far out in the inky void. But if you can first locate the brighter Xi Bootis, then it is a short one-finder hop east to Struve 1919.



Kappa Her

RA: 242.03° | 16h 8.1' — DEC: 17.05° | 17° 3'

Magnitude: 5.3 | 6.5

Separation: 28"

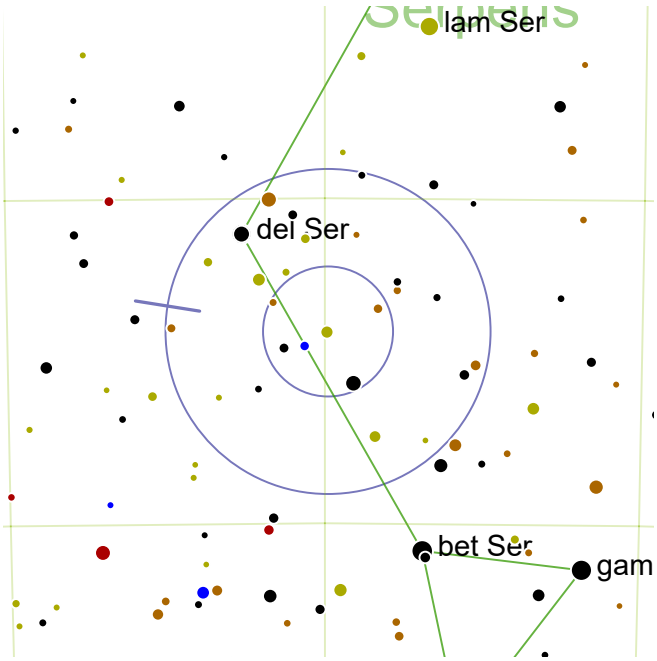
Position Angle: 12°

SAO 101951 | HIP 79043 | GDR2 34296727296

A reasonably balanced and bright, but widely separated, pair of yellow stars.

Midway between Gamma Herculis and Gamma Serpentis, perhaps the best way to find this double is to fill the finder view with the three stars of Serpens' head, and then track east one finder circle.

The planetary nebula IC 4593 is one finder circle south and very slightly east of this double.



STT300

RA: 235.05° | 15h 40.2' — DEC: 12.05° | 12° 3'

Magnitude: 6.4 | 9.5

Separation: 15.3"

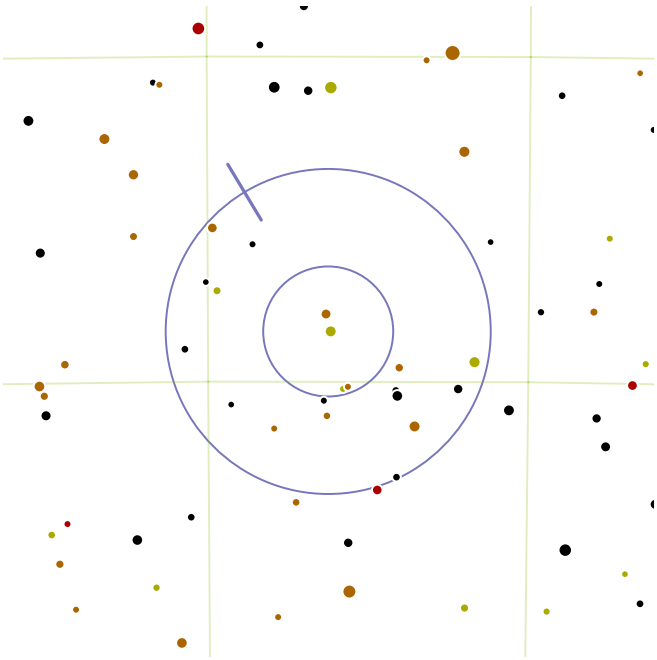
Position Angle: 261°

SAO 101673 | HIP 76733 | GDR2 34460189824

An easily separated yellow-blue pair, although the B component is quite dim.

Center Delta Serpentis in your finder; Struve 300 lies on the north-eastern edge of the field.

The primary is a luminous G-class giant star shining from a distance of nearly 1000 light-years.



Struve 1910

RA: 226.88° | 15h 7.5' — DEC: 9.23° | 9° 14'

Magnitude: 7.5 | 7.5

Separation: 4.3"

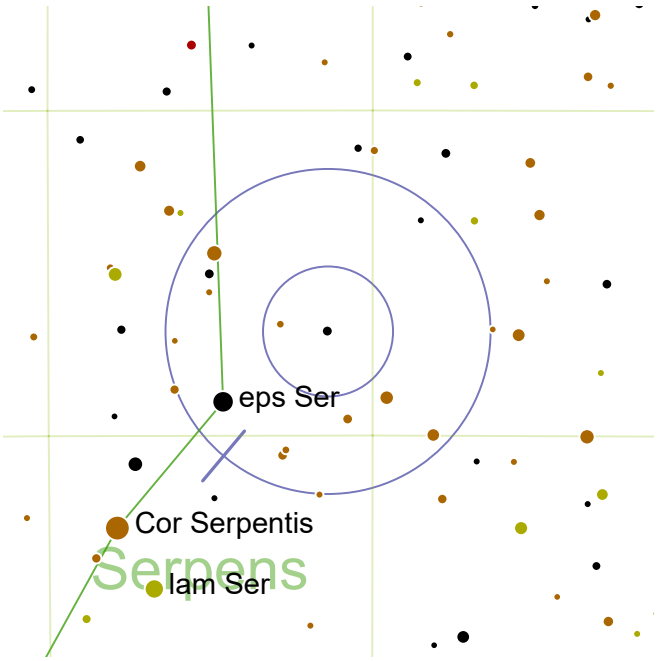
Position Angle: 211°

HIP 74016 | GDR2 49194619264

A close pair of perfectly balanced yellow stars.

Starting at Alpha Serpentis or Unukalhai (magnitude 2.6), move two finder circles west and slightly north.

Consisting of two stars almost identical to the Sun, these stars are in our backyard at only 103 light-years distance.



Struve 1987

RA: 239.31° | 15h 57.25' — DEC: 3.4° | 3° 24'

Magnitude: 7.3 | 8.7

Separation: 10.4"

Position Angle: 320°

SAO 121277 | HIP 78134 | GDR2 4425002520426044032

A white primary with a somewhat fainter blue companion, easily separated.

One degree SEE from magnitude 3.75 eps Ser. Half a finder circle SE from magnitude 2.75 Cor Serpentis.

This is a physical binary system. The stars are about 585 light-years from Earth.

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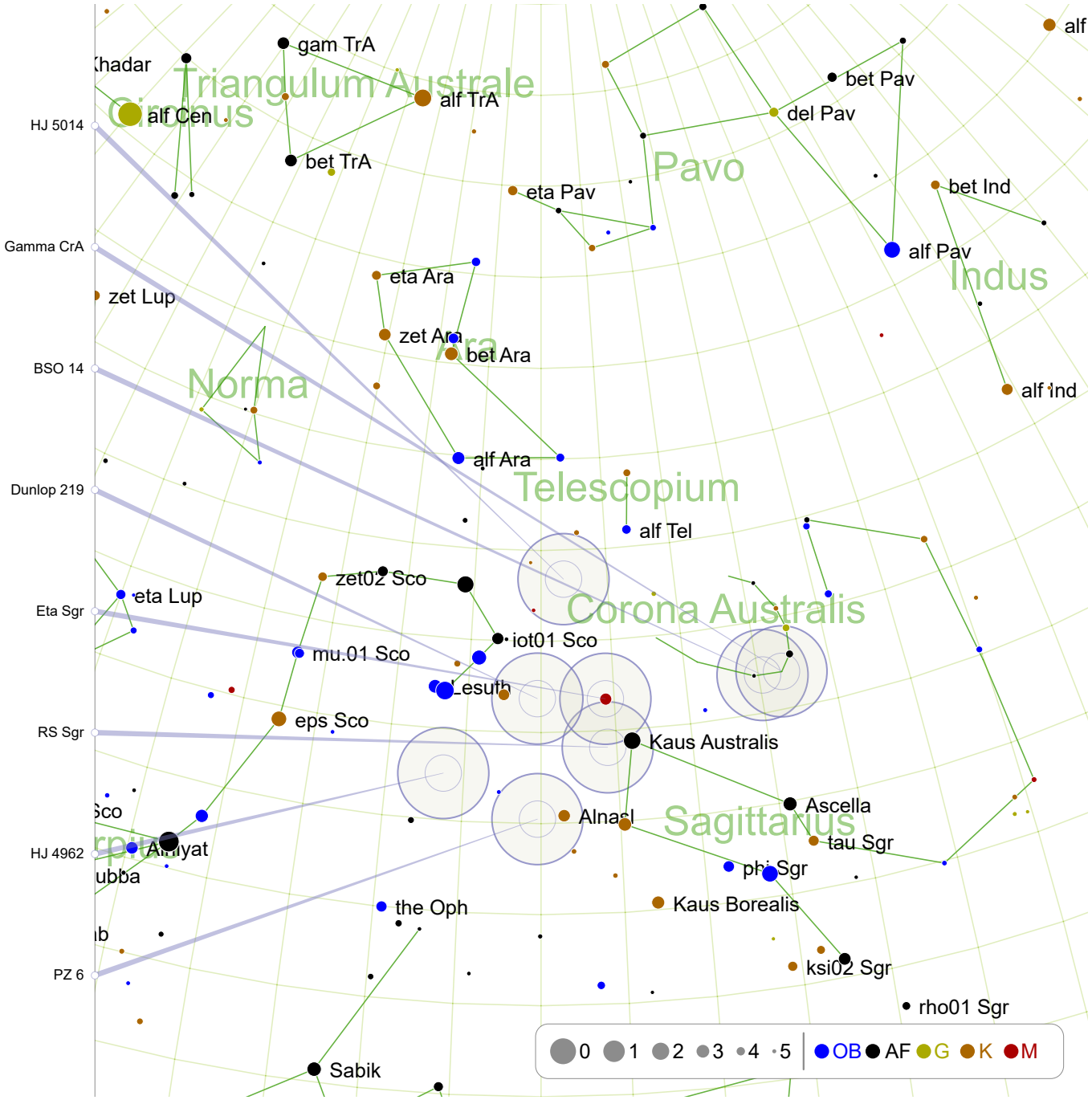
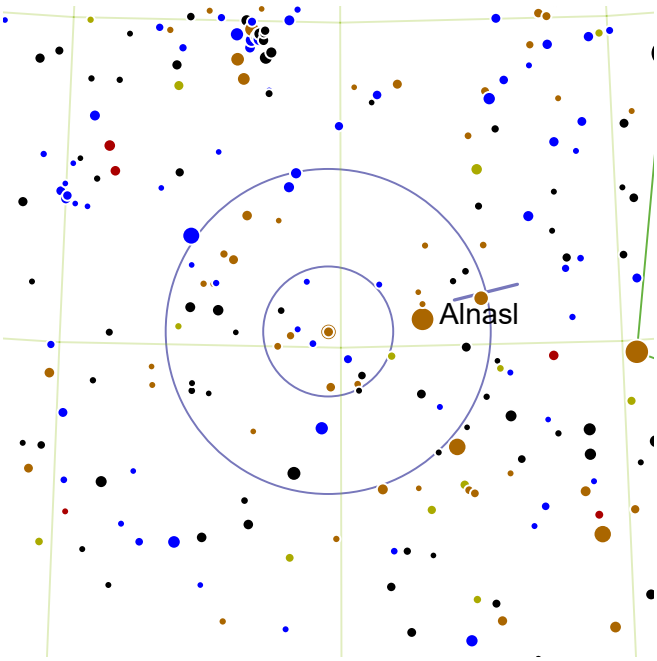
Early Winter - Looking South



PZ 6: page 168 | HJ 4962: page 168 | RS Sgr: page 169 | Eta Sgr: page 169
Dunlop 219: page 170 | BSO 14: page 170 | Gamma CrA: page 171 | HJ 5014: page 171



PZ 6

RA: 269.77° | 17h 59.09' — DEC: -30.25° | -30° 14'

Magnitude: 5.4 | 7.0

Separation: 5.9"

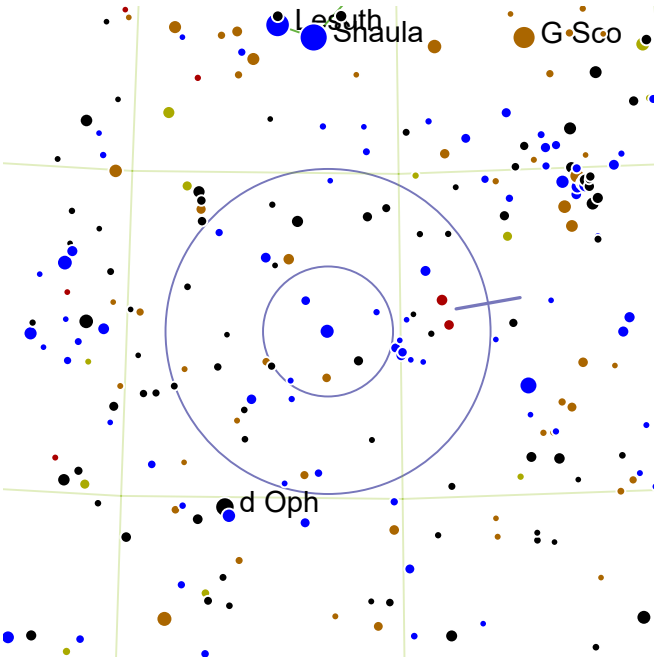
Position Angle: 104°

SAO 209553 | HIP 88060 | GDR2 83404244736

A bright red star with a fairly bright, yellow companion close by.

One degree W from magnitude 3.07 Alnasl. Half a finder circle W from magnitude 2.84 Kaus Media.

Two globular clusters are around one degree to the east of this double. Furthest east of these is magnitude 10.7 NGC 6528, while the one to the west closest to PZ 6 is magnitude 9.5 NGC 6522.



HJ 4962

RA: 263.68° | 17h 34.7' — DEC: -32.58° | -32° 34'

Magnitude: 5.7 | 10.5

Separation: 5.9"

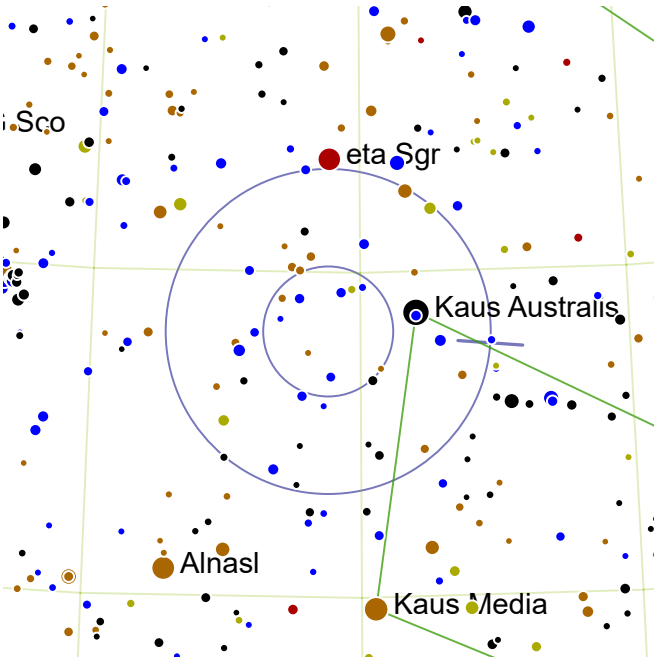
Position Angle: 100°

SAO 208977 | HIP 86011 | GDR2 59611164288

A bright blue star with a close but faint blue companion.

Half a finder circle N from magnitude 1.71 Shaula. Half a finder circle N from magnitude 2.8 Lesuth.

The very bright open cluster Messier 6 (magnitude 4.2) fills the easter quarter of the finder view.



RS Sgr

RA: 274.4° | 18h 17.59' — DEC: -34.1° | -34° 5'

Magnitude: 6.0 | 9.5

Separation: 38.9"

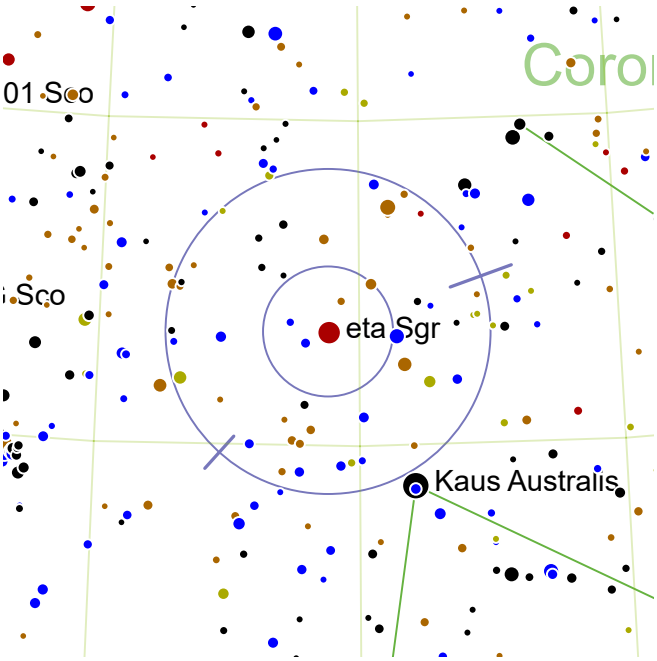
Position Angle: 86°

SAO 209959 | HIP 89637 | GDR2 55085884800

A very wide pair with a bright, blue primary and a fairly faint secondary.

One degree NWW from magnitude 1.95 Kaus Australis. Half a finder circle N from magnitude 3.16 eta Sgr.

A degree to the east is the extremely brilliant Kaus Australis (magnitude 1.75) while a degree to the west is NGC 6563, a magnitude 10.0 planetary nebula.



Eta Sgr

RA: 274.4° | 18h 17.59' — DEC: -36.77° | -36° 45'

Magnitude: 3.3 | 8.0 | 10.0

Separation: 3.5" | 93.8"

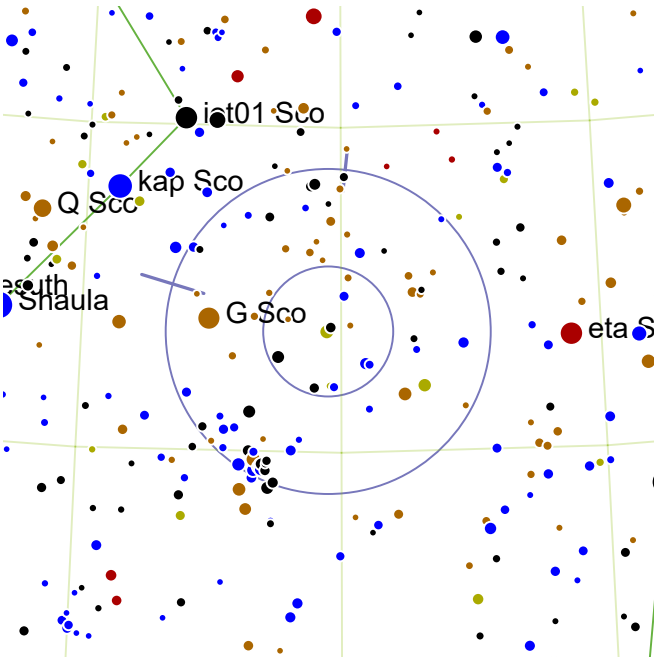
Position Angle: 110° | 318°

SAO 209957 | HIP 89642

A trio of stars, a brilliant red primary and very close secondary are distantly separated from a very faint third component.

Eta Sgr is a bright star in Sagittarius.

The primary, also known as Hamalwarid or Arkab, is 145 light-years from the Earth.



Dunlop 219

RA: 269.75° | 17h 59.0' — DEC: -36.87° | -36° 51'

Magnitude: 5.8 | 7.8 | 11.3

Separation: 54.2" | 40.7"

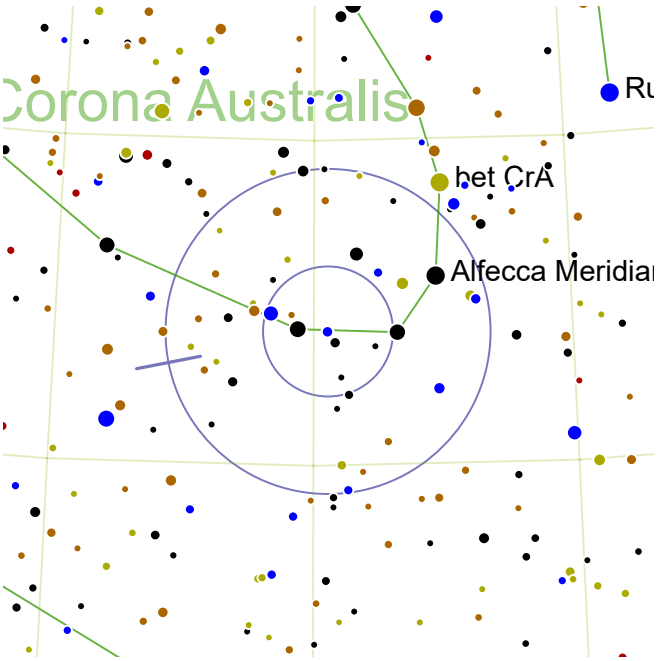
Position Angle: 253° | 174°

SAO 209545 | HIP 88038 | GDR2 26191922688

A yellow primary with two widely separated companions, one extremely faint.

One degree E from magnitude 3.25 G Sco. Half a finder circle W from magnitude 3.16 eta Sgr.

Brilliant M7, a magnitude 3.3 open cluster, is on the north-western edge of the finder view.



BSO 14

RA: 285.27° | 19h 1.09' — DEC: -37.07° | -37° 3'

Magnitude: 6.5 | 7

Separation: 13"

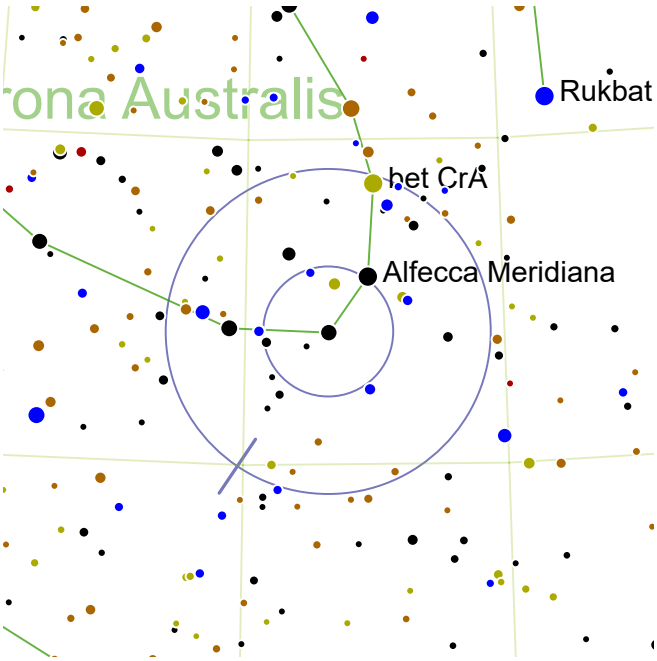
Position Angle: 281°

SAO 210816 | HIP 93371 | GDR2 02462393088

A fairly bright, balanced double, easily separated. Both components have a blue hue.

One finder circle S from magnitude 2.71 Ascella. One and a half finder circles SEE from magnitude 1.95 Kaus Australis.

The finder is richly decorated with bright stars. Less than a degree to the north west is NGC 6723, a magnitude 7.9 globular cluster.



Gamma CrA

RA: 286.6° | 19h 6.4' — DEC: -37.07° | -37° 3'

Magnitude: 4.5 | 6.4

Separation: 1.5"

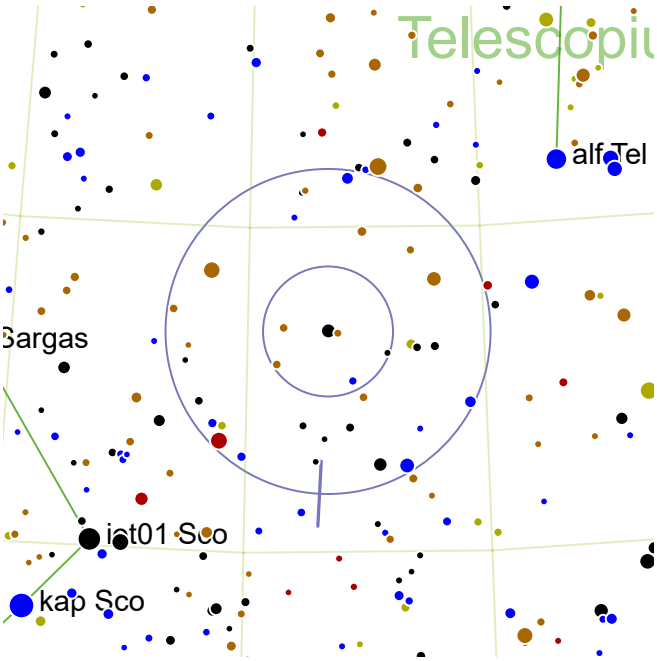
Position Angle: 326°

SAO 210928 | HIP 93825 | GDR2 45032456832

A brilliant yellowish primary tightly bound to a fairly bright companion.

One finder circle S from magnitude 2.71 Ascella. One and a half finder circles SEE from magnitude 1.95 Kaus Australis.

This system is a mere 56 light-years from Earth. The system is always very tightly separated, but the separation is slowly increasing, exceeding 1.7" by 2028.



HJ 5014

RA: 271.7° | 18h 6.79' — DEC: -43.42° | -43° 24'

Magnitude: 5.7 | 5.7

Separation: 1.8"

Position Angle: 357°

SAO 228708 | HIP 88726 | GDR2 56508792576

An extremely tight pairing of two equally bright white stars.

Half a finder circle NWW from magnitude 3.76 alf Tel. One finder circle SSW from magnitude 3.16 eta Sgr.

Caldwell 78, a magnitude 7.3 globular cluster, is half a degree south east of this binary system. Two degrees to the south west is another globular cluster, NGC 6496 (magnitude 8.6).

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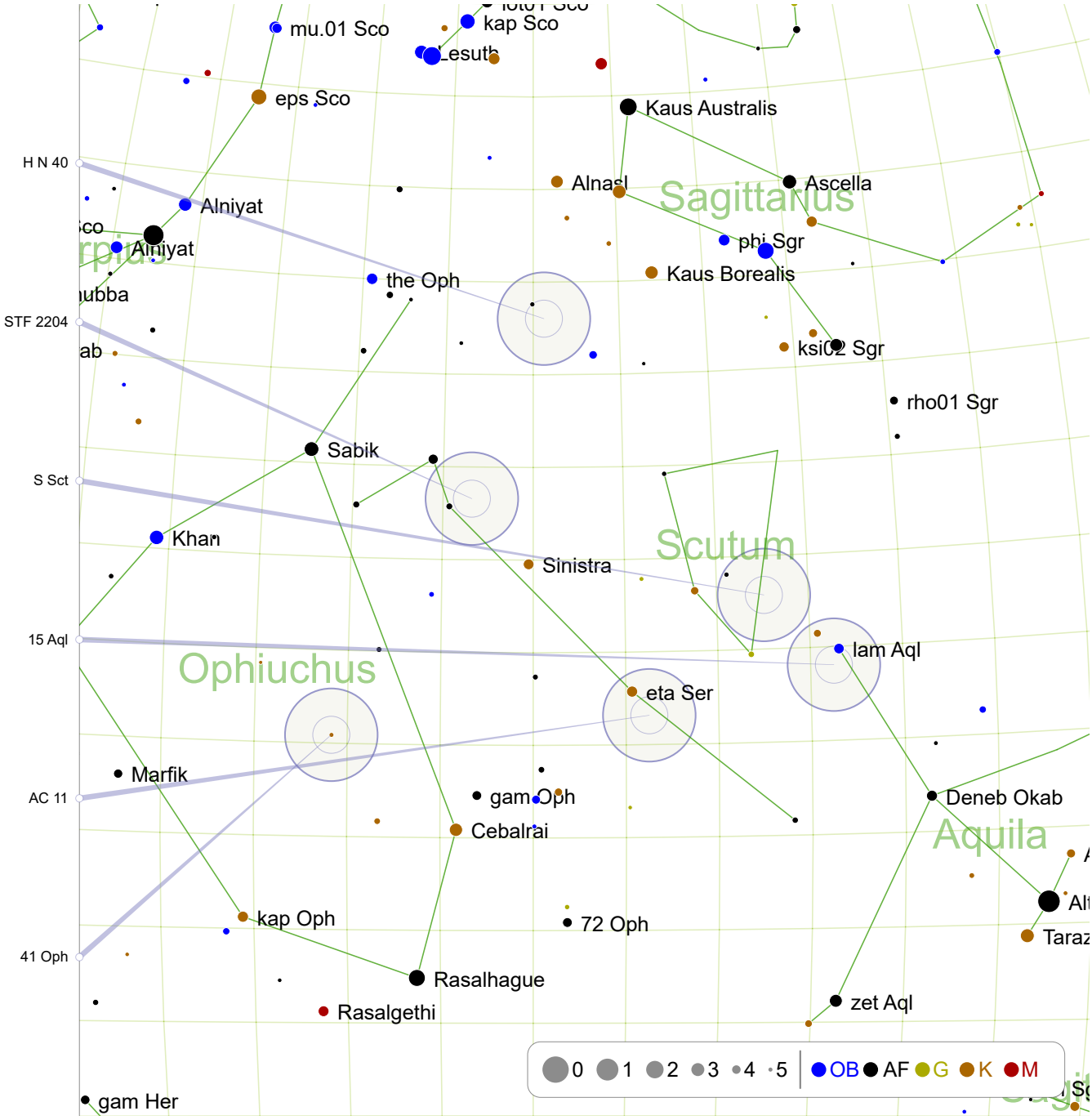
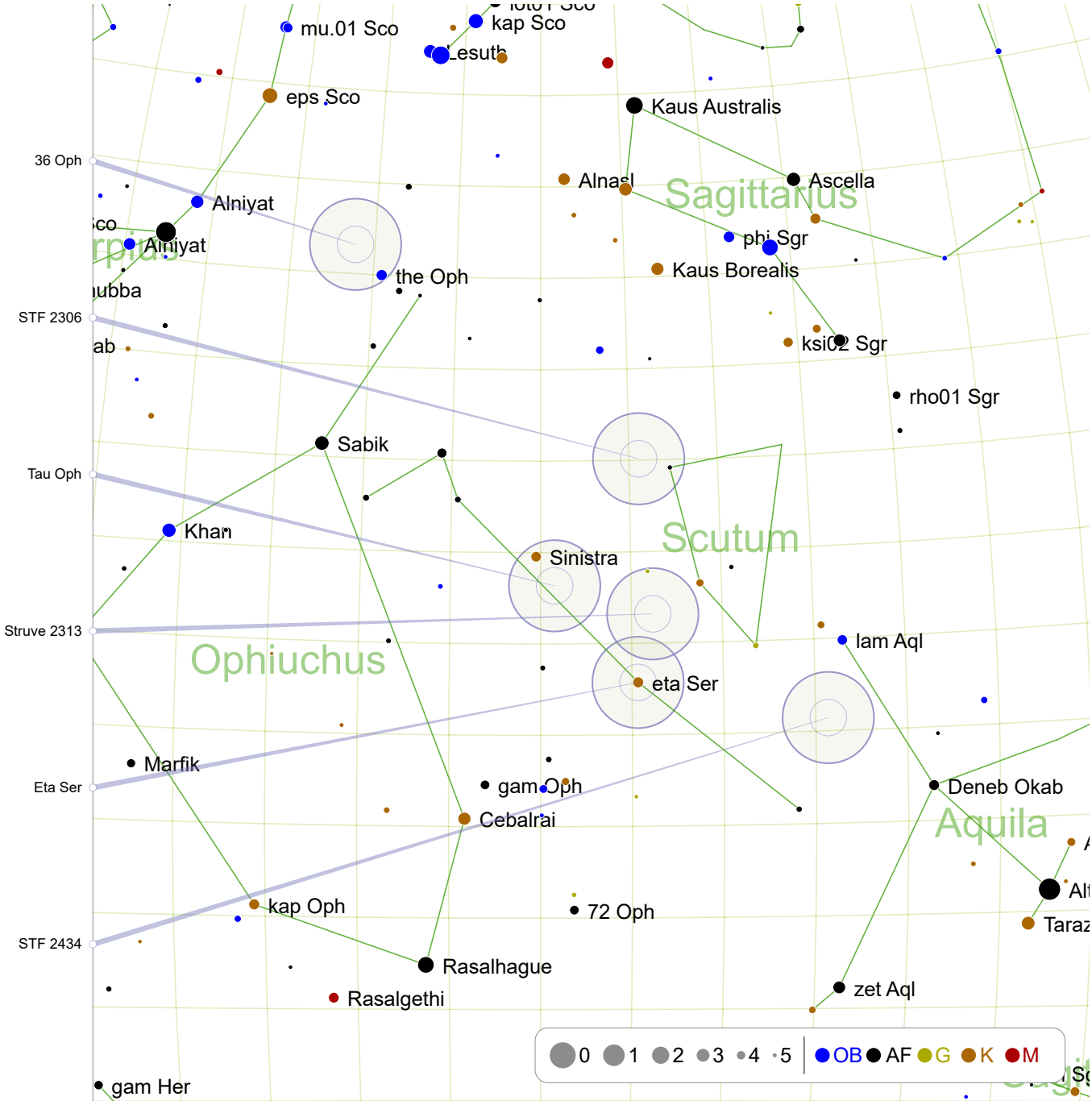
Early Winter - Looking North (1)

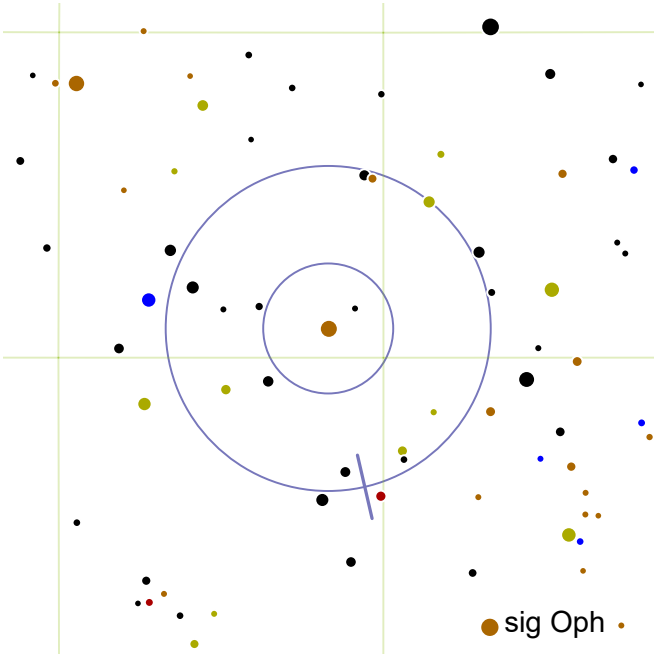


41 Oph: page 175 AC 11: page 175 15 Aql: page 176 S Sct: page 176
STF 2204: page 177 H N 40: page 177

Early Winter - Looking North (2)



STF 2434: page 178
Eta Ser: page 178
Struve 2313: page 179
Tau Oph: page 179
STF 2306: page 180
36 Oph: page 180



41 Oph

RA: 259.15° | 17h 16.59' — DEC: -0.45° | 0° 26'

Magnitude: 4.9 | 7.5

Separation: 1"

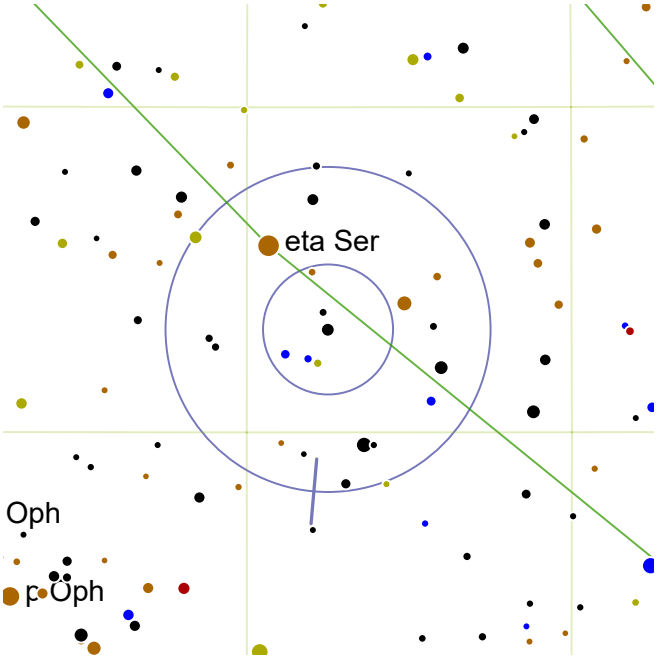
Position Angle: 13°

SAO 141586 | HIP 84514

A fantastically close unequal orange-white pairing.

One and a half finder circles SW from magnitude 2.94 Cebalrai. Two finder circles SSE from magnitude 3.42 kap Oph.

The primary is an orange K-class giant approximately 3.7 billion years old. The components orbit in 141 years.



AC 11

RA: 276.25° | 18h 25.0' — DEC: -1.58° | -1° 34'

Magnitude: 6.7 | 7.2

Separation: 0.85"

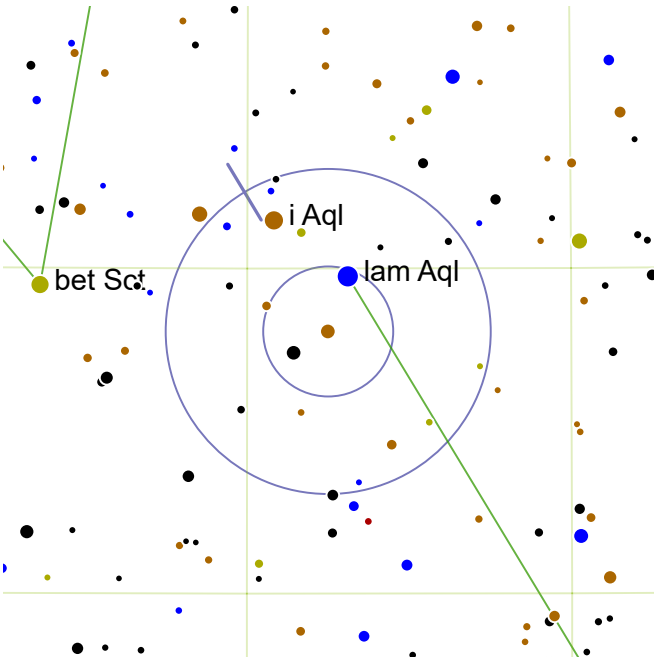
Position Angle: 355°

SAO 142294 | HIP 90253 | GDR2 01112859136

A balanced but difficult white-white double with a tiny separation.

One degree NE from magnitude 3.42 eta Ser.

The system is 435 light-years from Earth.



15 Aql

RA: 286.25° | 19h 5.0' — DEC: -4.03° | -4° 1'

Magnitude: 5.5 | 7.0

Separation: 39.6"

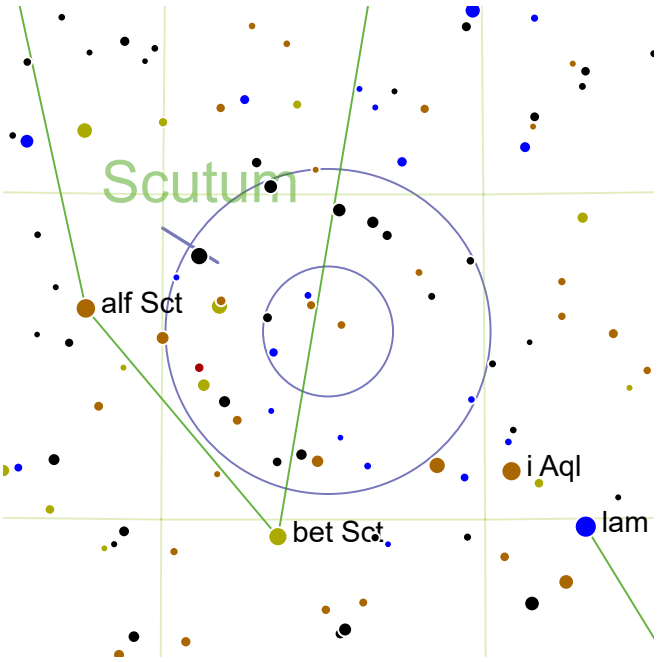
Position Angle: 211°

SAO 142996 | HIP 93717 | GDR2 92802784384

A very wide pair of yellow stars.

Located a degree to the north of Lamda Aquilae, the tail of the Eagle.

Good at low powers as the star lies in the Milky Way. The region is rich in dark nebulae - Barnard 132 and Barnard 120 lie to one to two degrees to the east and west respectively of this double.



S Sct

RA: 282.58° | 18h 50.29' — DEC: -7.9° | -7° 53'

Magnitude: 7.5 | 12

Separation: 14.4"

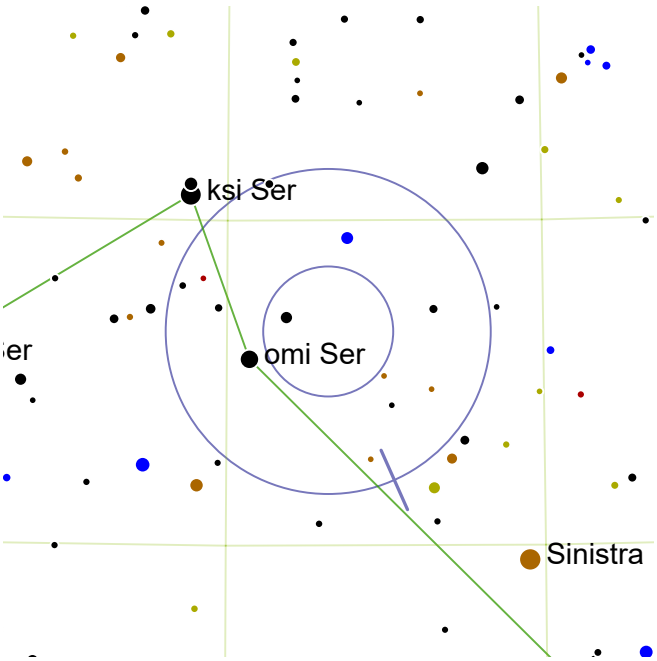
Position Angle: 238°

SAO 142674 | HIP 92442 | GDR2 71231284224

A deep red primary with an easily separated, tiny orange companion.

Half a finder circle SW from magnitude 3.55 lam Aql. One and a half finder circles SE from magnitude 3.42 eta Ser.

The primary is a carbon star, so it is deeply red and quite variable (Δ magnitude 4.0).



STF 2204

RA: 266.6° | 17h 46.4' — DEC: -13.3° | -13° 17'

Magnitude: 8.1 | 8.1

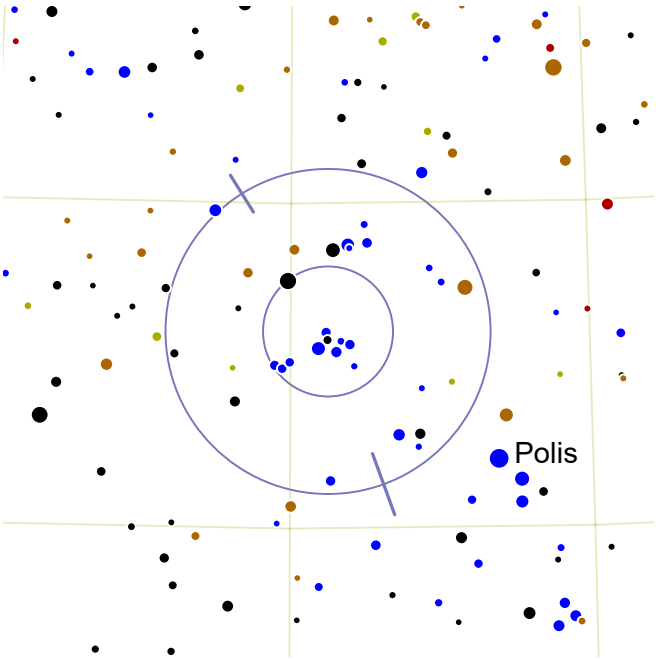
Separation: 14.4"

Position Angle: 24°

SAO 160809 | GDR2 94949053952

An equal pair of easily separated white stars.

Half a finder circle NE from magnitude 3.64 ksi Ser. One and a half finder circles NEE from magnitude 2.63 Sabik.



H N 40

RA: 270.63° | 18h 2.5' — DEC: -23.03° | -23° 1'

Magnitude: 7.6 | 10.5 | 8.7

Separation: 6.2" | 10.7"

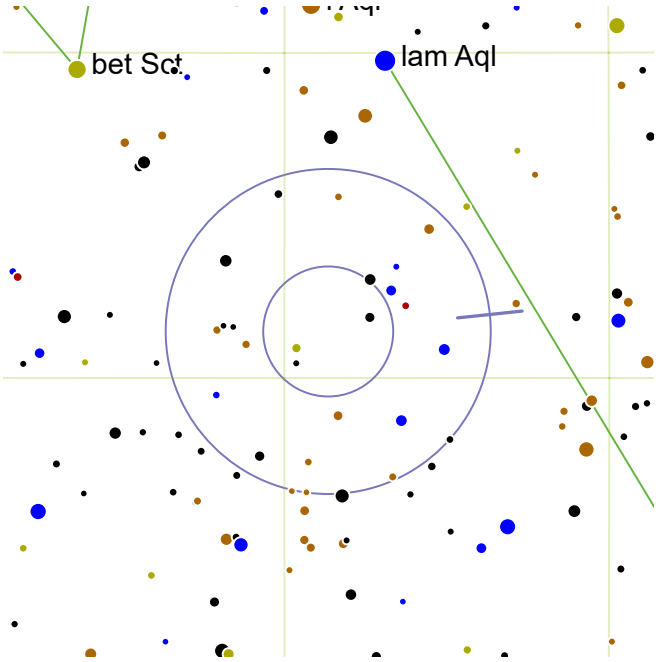
Position Angle: 20° | 212°

SAO 186145 | HIP 88333 | GDR2 58691324672

A close trio of stars, none of which are very bright. The primary is blue.

One finder circle NWW from magnitude 2.94 Kaus Borealis. One and a half finder circles NNW from magnitude 2.84 Kaus Media.

Located in the Triffid Nebula (Messier 20, magnitude 6.3). Under good skies, the Lagoon Nebula (Messier 8, magnitude 6.0) should stand out prominently in the southern quarter of the finder view. The Washington Double Star catalog lists 9 components, but most are extremely faint.



STF 2434

RA: 285.68° | 19h 2.7' — DEC: -0.72° | 0° 42'

Magnitude: 8.4 | 8.6

Separation: 26"

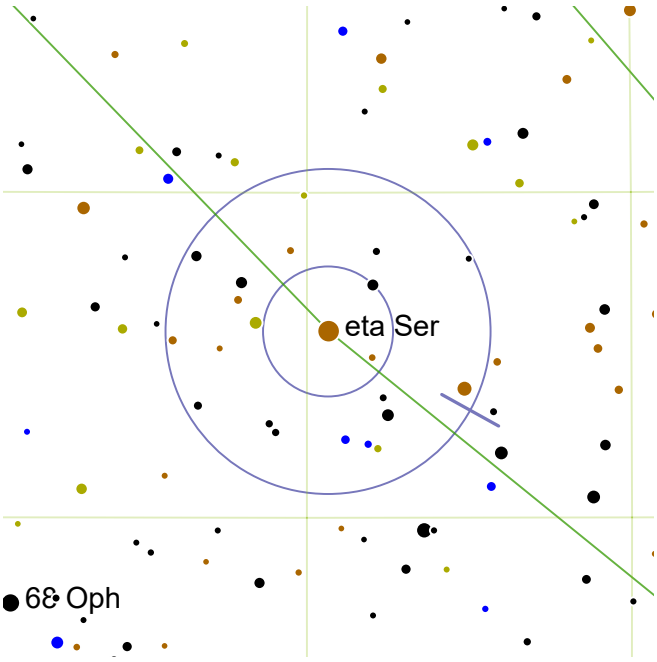
Position Angle: 96°

SAO 142955 | HIP 93518 | GDR2 4265524749785867008

A yellow-yellow pairing, widely separated.

Half a finder circle NNW from magnitude 3.55 lam Aql. One finder circle SW from magnitude 3.44 Deneb Okab.

The secondary component is also a balanced binary with a separation of 0.78".



Eta Ser

RA: 275.33° | 18h 21.29' — DEC: -2.87° | -2° 51'

Magnitude: 3.4 | 12.1

Separation: 179.7"

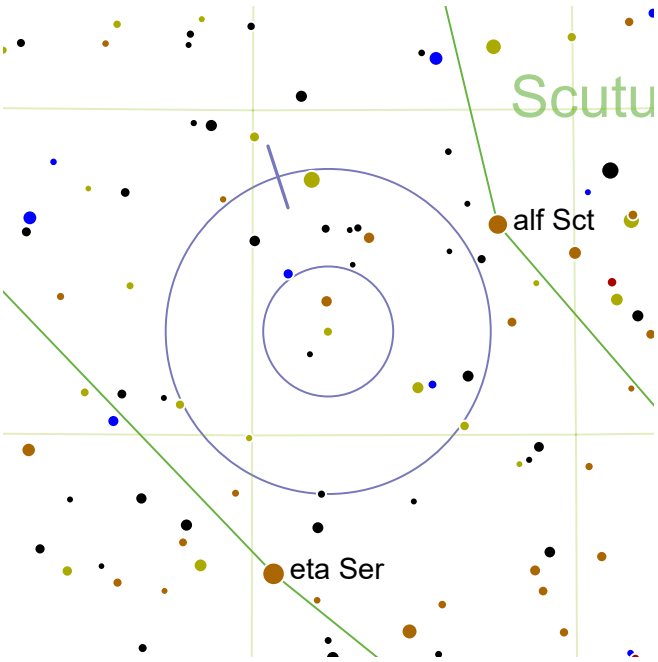
Position Angle: 61°

SAO 142241 | HIP 89962

The primary is a a brilliant orange but the companion is very faint indeed.

Eta Ser is a bright star in Serpens.

The primary is only 60 light-years from Earth, but this double is merely a line of sight coincidence.



Struve 2313

RA: 276.18° | 18h 24.7' — DEC: -6.6° | -6° 35'

Magnitude: 7.5 | 8.8

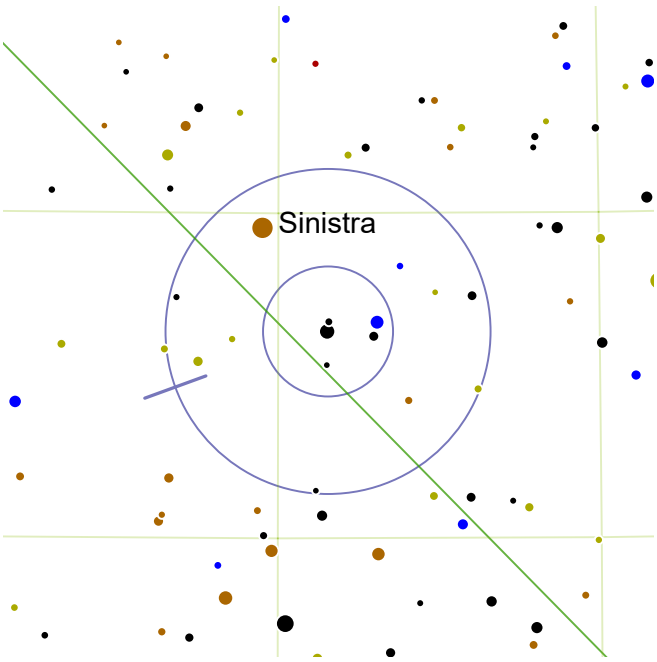
Separation: 6.1"

Position Angle: 198°

SAO 142289 | HIP 90239 | GDR2 80326713984

A close yellow and blue pair.

From magnitude 3.20 Eta Serpentis, move one finder circle south and very slightly east.



Tau Oph

RA: 270.77° | 18h 3.09' — DEC: -8.18° | -8° 10'

Magnitude: 5.2 | 5.9

Separation: 1.5"

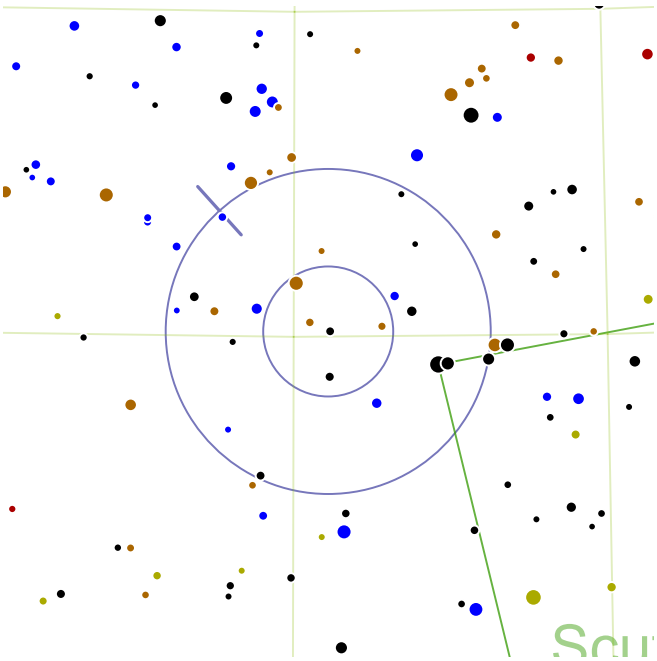
Position Angle: 290°

SAO 142050 | HIP 88404 | GDR2 76094715520

An extremely tight, balanced pair of yellowish stars.

One degree NNE from magnitude 3.5 Sinistra. One finder circle SW from magnitude 3.42 eta Ser.

The double lies between two globular clusters: NGC 6539 (mag. 8.9) lies within a degree to the north-east, and NGC 6517 (mag. 11.1) lies within a degree to the south.



STF 2306

RA: 275.55° | 18h 22.2' — DEC: -15.08° | -15° 4'

Magnitude: 8.1 | 8.6

Separation: 9.1"

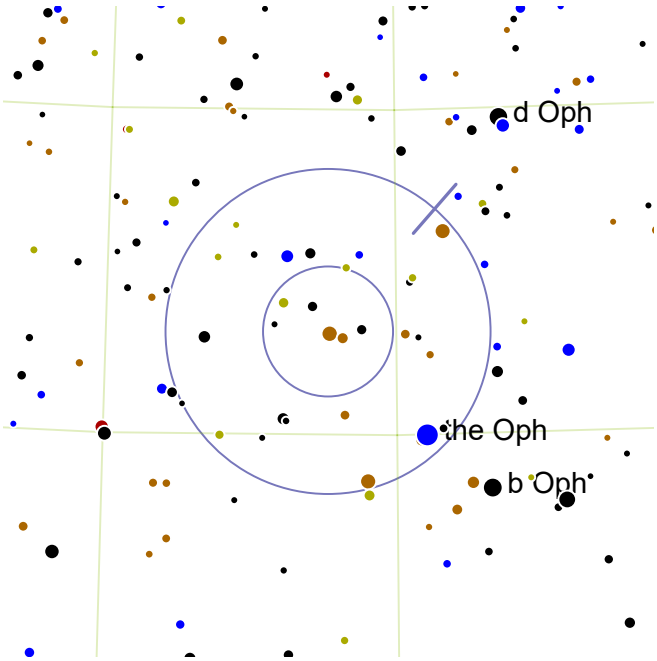
Position Angle: 222°

SAO 161390 | HIP 90032 | GDR2 19300677504

A deep yellow primary with a balanced secondary, closely separated.

One and a half finder circles SE from magnitude 3.5 Sinistra. Two finder circles NW from magnitude 3.61 ksi02 Sgr.

The finder circle is rich in nebulae. M17 (mag. 6.0) lies a degree to the south, while M16 (mag.6.0) lies a degree to the north west.



36 Oph

RA: 258.83° | 17h 15.29' — DEC: -26.6° | -26° 35'

Magnitude: 5.1 | 5.1

Separation: 4.8"

Position Angle: 139°

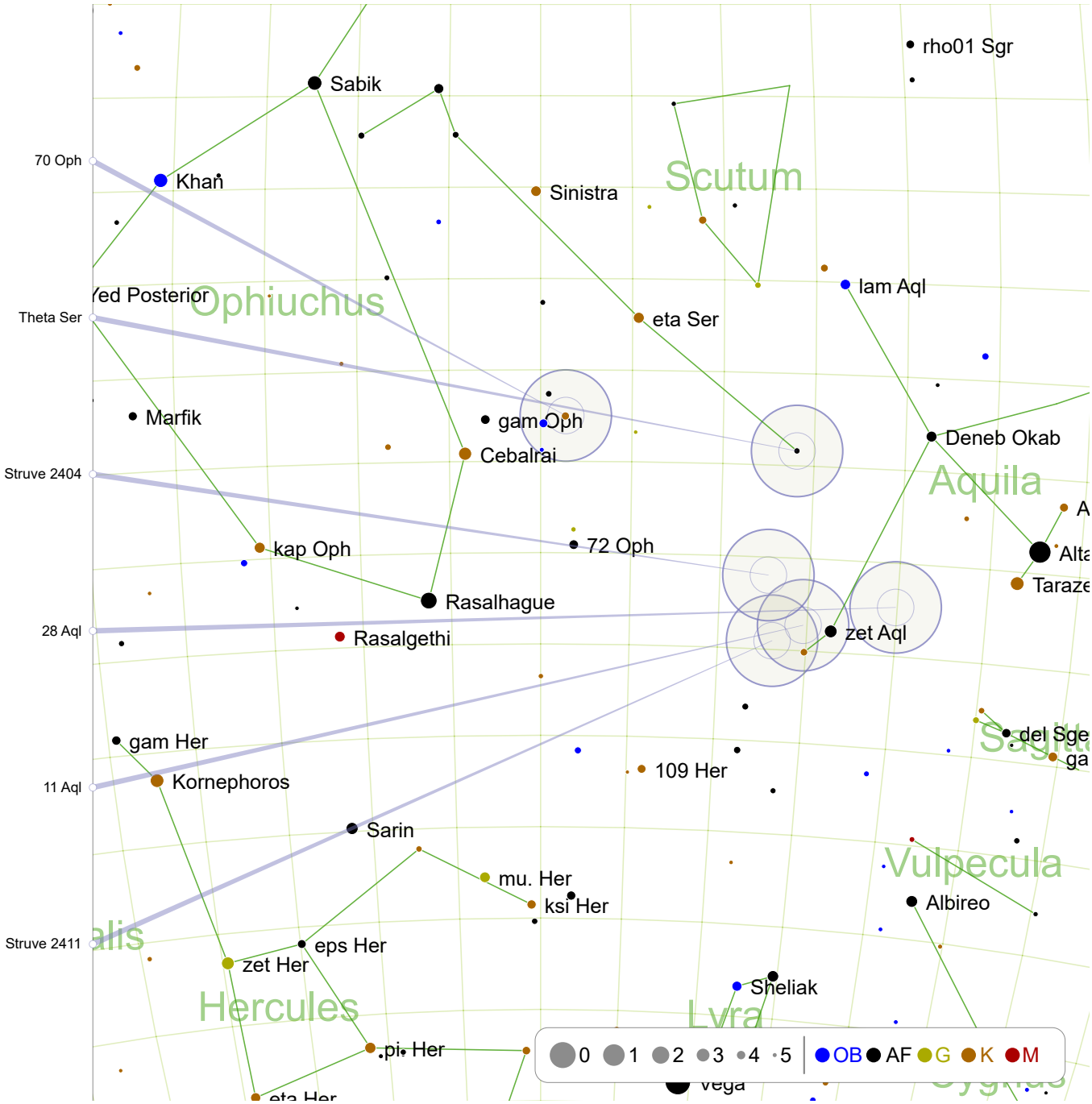
SAO 185199 | HIP 84405

A bright, equal pair of orange dwarfs, closely separated.

One and a half degrees SW from magnitude 3.37 the Oph. Two finder circles S from magnitude 2.63 Sabik.

There are three globular clusters in the finder view. NGC 6293 (mag. 9.0) is a degree to the west. NGC 6319 (mag. 9.0) is nearly two degree to the south. NGC 6355 (mag. 11.0) is two degrees to the east. This double if only 19 light-years from Earth.

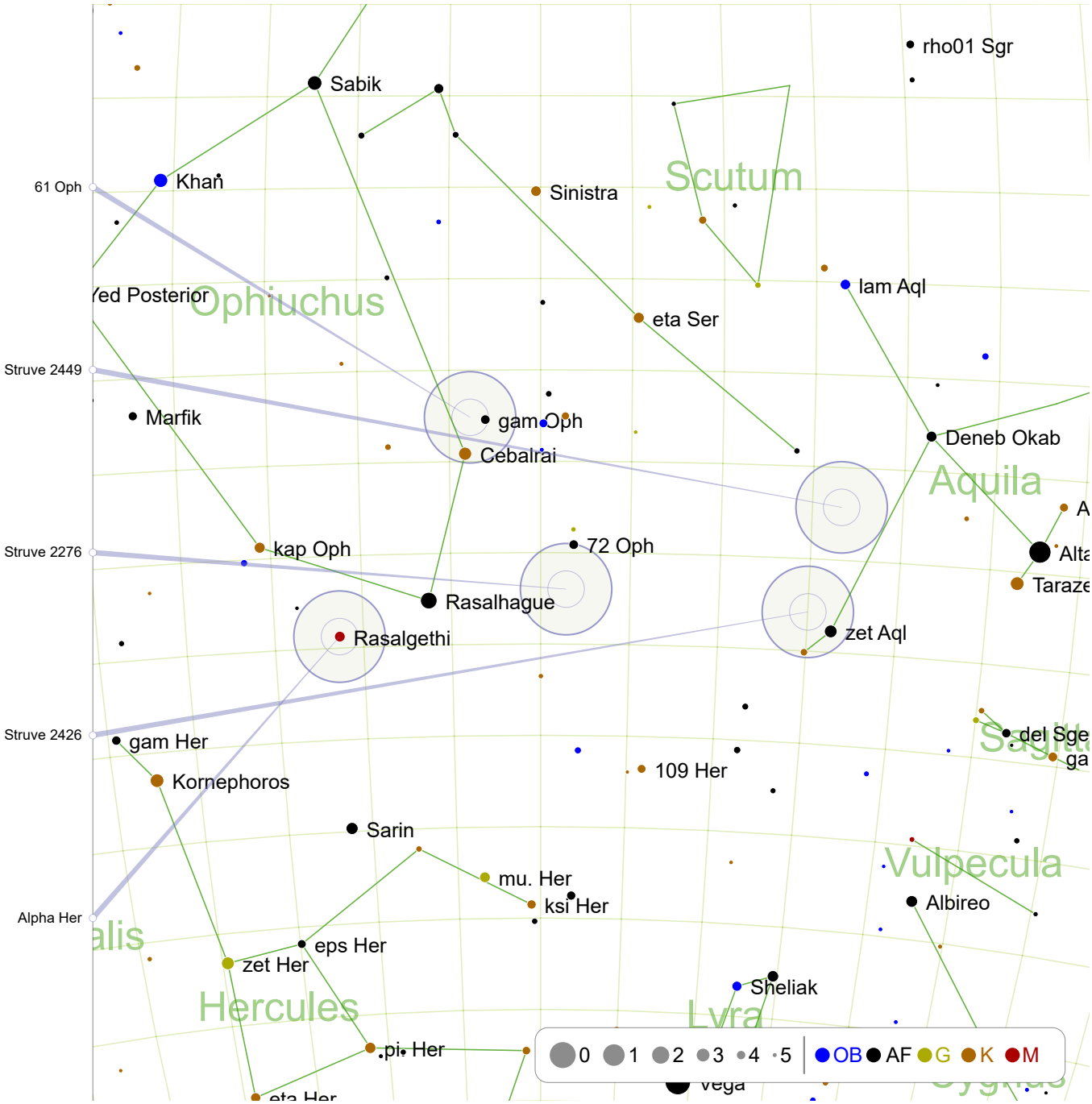
Early Winter - Northern Horizon (1)



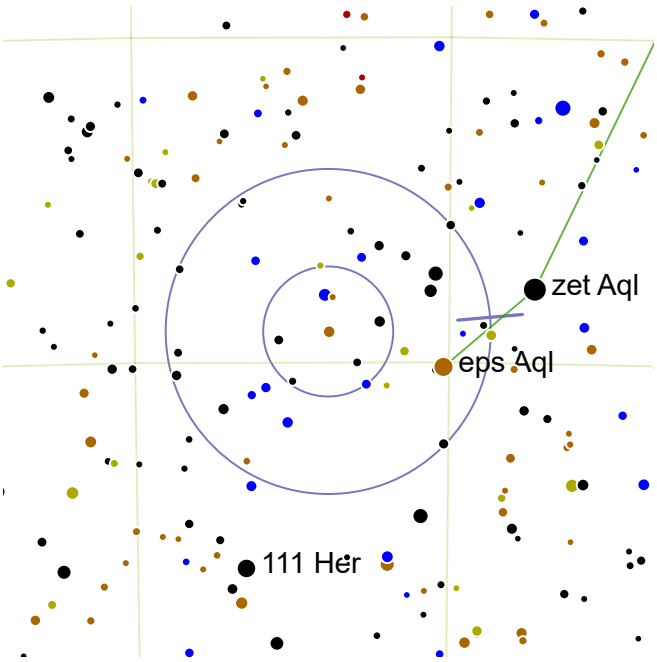
Struve 2411: page 183 | 11 Aql: page 183 | 28 Aql: page 184 | Struve 2404: page 184

Theta Ser: page 185 | 70 Oph: page 185

Early Winter - Northern Horizon (2)



Alpha Her: page 186 Struve 2426: page 186 Struve 2276: page 187 Struve 2449: page 187
61 Oph: page 188



Struve 2411

RA: 283.08° | 18h 52.29' — DEC: 14.53° | 14° 32'

Magnitude: 6.6 | 9.4

Separation: 13.5"

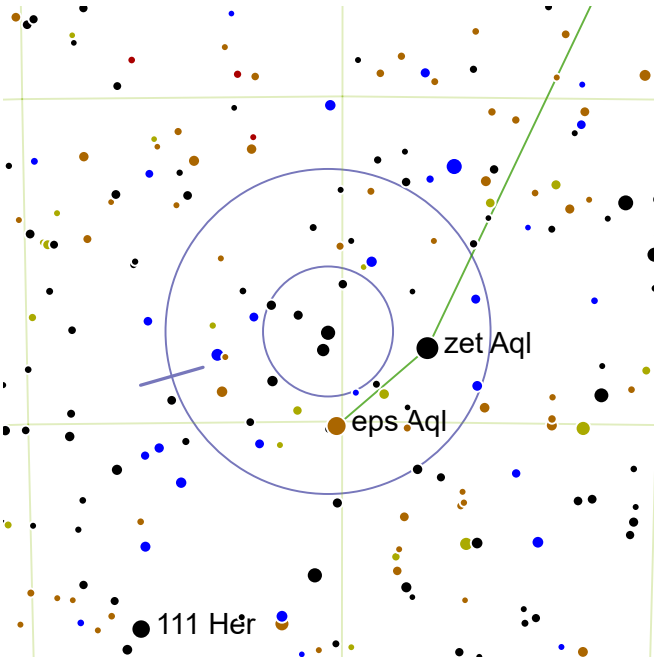
Position Angle: 95°

SAO 104203 | HIP 92620 | GDR2 62086517760

A comfortably separated pair with a yellow primary and a faint secondary.

In the same finder circle as Zeta Aquilae, 3 degrees to the west.

The yellow giant primary is only 362 light-years away. With Struve 2411 centered, open cluster NGC 6738 lies just beyond the south eastern edge of the finder circle.



11 Aql

RA: 284.77° | 18h 59.09' — DEC: 13.62° | 13° 37'

Magnitude: 5.2 | 8.7

Separation: 17"

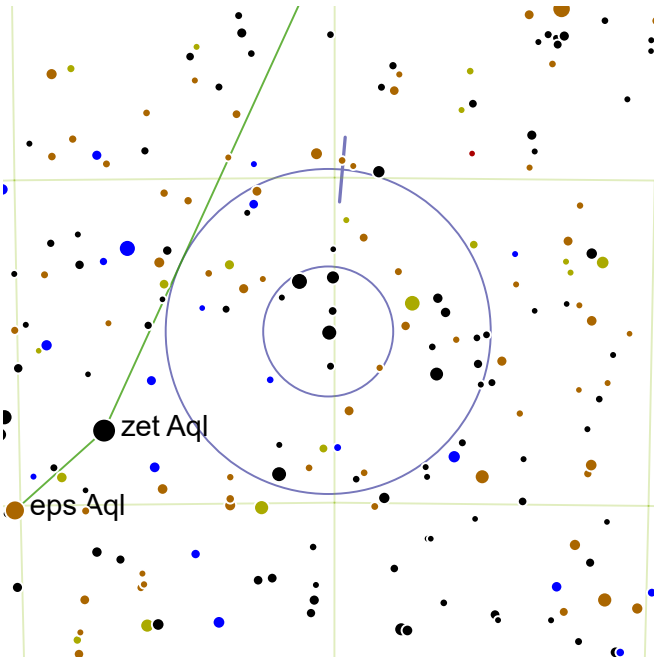
Position Angle: 286°

SAO 104308 | HIP 93203 | GDR2 21465681536

A wide pair with a white primary and a faint blue companion.

Easily found one degree due west of magnitude 2.95 Zeta Aquilae, the northernmost wingtip of the Eagle.

The two stars are not physically bound but only lie on the same line of sight. Open cluster NGC 6738 is two degrees south of this cluster.



28 Aql

RA: 289.9° | 19h 19.59' — DEC: 12.37° | 12° 22'

Magnitude: 5.6 | 9.0

Separation: 60.7"

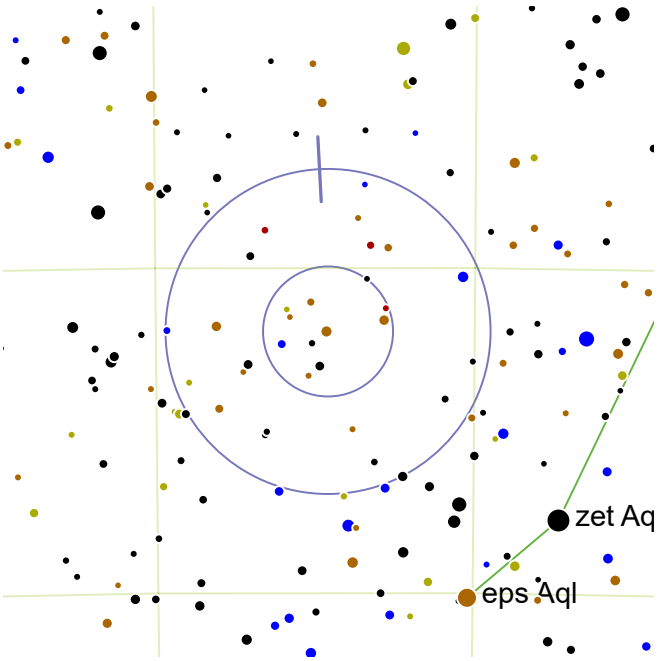
Position Angle: 175°

SAO 104722 | HIP 94982 | GDR2 89873075200

A bright yellowish primary with a distant much fainter companion.

Half a finder circle SEE from magnitude 3.02 zet Aql. One finder circle NWW from magnitude 2.8 Tarazed.

The pair are gravitationally bound. The primary is also a variable star, V1208 Aquilae.



Struve 2404

RA: 282.7° | 18h 50.79' — DEC: 10.98° | 10° 59'

Magnitude: 6.9 | 8.1

Separation: 3.6"

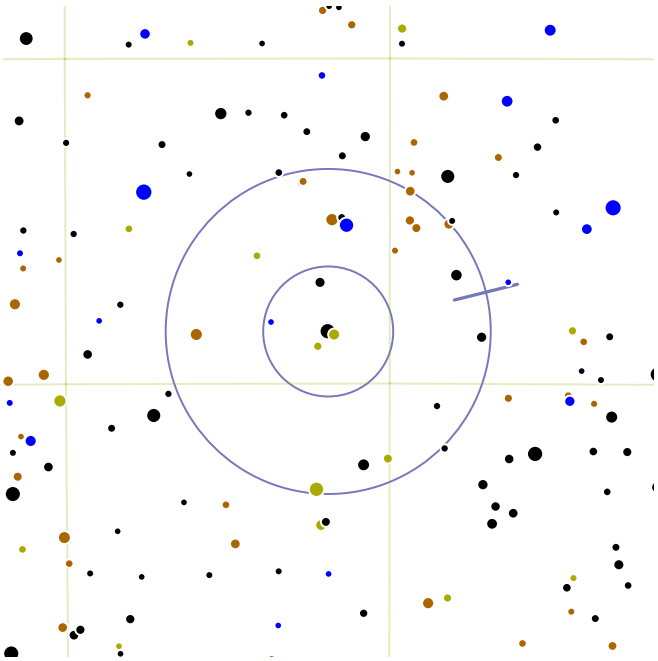
Position Angle: 183°

SAO 104170 | HIP 92475 | GDR2 61225172736

Two orange stars with very tight separation.

One finder circle south west of Zeta Aquilae. This system is 1259 light-years from the Sun.

This pair of orange giants is 1259 light-years from the Sun.



Theta Ser

RA: 284.05° | 18h 56.2' — DEC: 4.2° | 4° 12'

Magnitude: 4.5 | 5.4

Separation: 22.3"

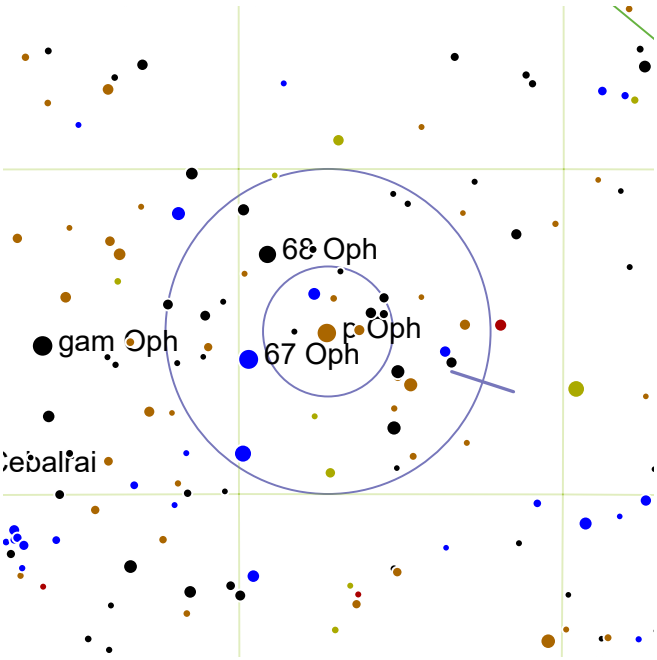
Position Angle: 104°

SAO 124068 | HIP 92946 | GDR2 84413726208

A widely separated pair of bright blue stars.

The end of the serpent's tail, nestled among the stars of Aquila. The Serpentis lies two finder circles due west from Delta Aquilae, the central star of the Eagle.

With this double centered in the finder, two open clusters lie just beyond the eastern edge of the finder circle: NGC 6755 and the much fainter NGC 6756.



70 Oph

RA: 271.38° | 18h 5.5' — DEC: 2.5° | 2° 30'

Magnitude: 4.2 | 6.0

Separation: 2.8"

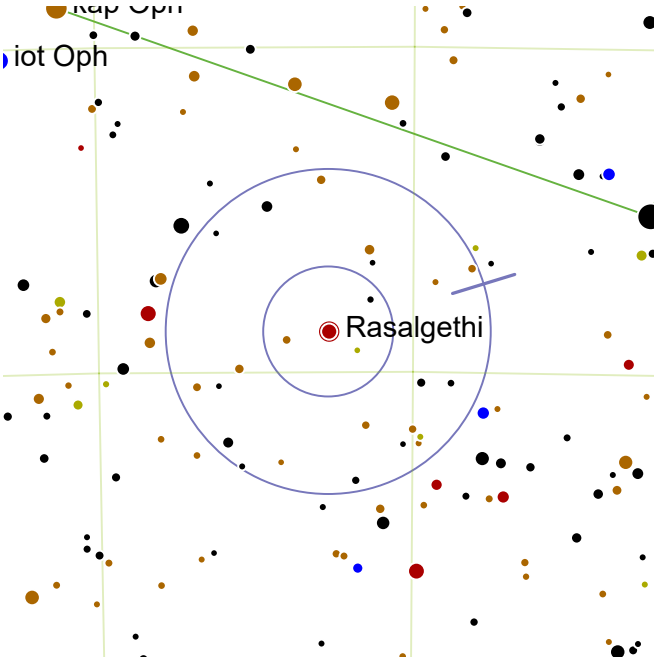
Position Angle: 72°

SAO 123107 | HIP 88601 | GDR2 89937892096

A brilliant yellow star with a bright orange companion. The pair are very close, especially given their apparent magnitude. The gap is currently near the maximum.

Located in the center of a brilliant star field, 70 Ophiuchi lies one and a half finder circles east and slightly south of magnitude 2.75 Celebrai of the constellation Ophiuchus.

70 Oph is only 16.6 light-years from the Sun. William Herschel calculated its 88 year orbit proving gravity applies beyond the Solar System. Behind 70 Oph looms an enormous loose group of stars, Melotte 186.



Alpha Her

RA: 258.65° | 17h 14.59' — DEC: 14.38° | 14° 23'

Magnitude: 3.5 | 5.4

Separation: 4.7"

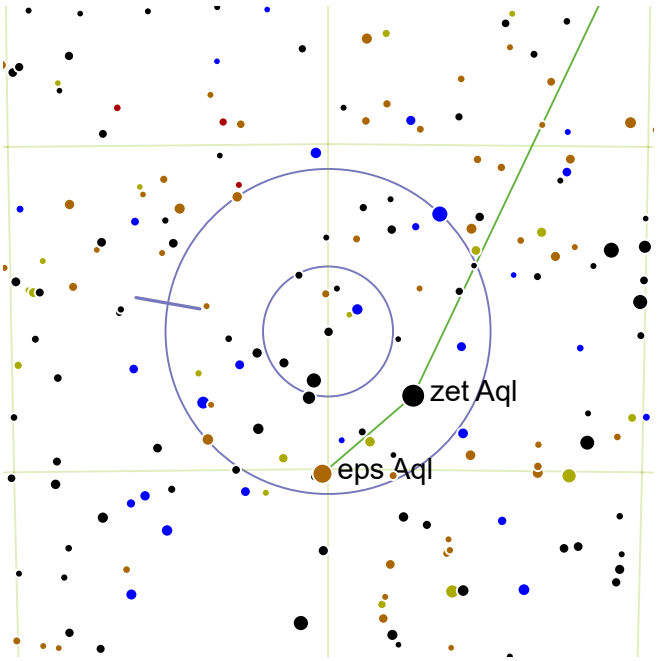
Position Angle: 107°

SAO 102680 | HIP 84345 | | GDR2 95116193408

A reasonably balanced orange-blue pair, very close with a brilliant primary and bright secondary.

Alpha Herculis is far south of the Keystone asterism and might be mistaken as a member of Ophiuchus. Starting at the Keystone asterism, go two Keystone asterism spans due south, and the magnitude 3.08 star you come to is Alpha Herculis.

Some report that through some trick of the contrast, the secondary can appear greenish.



Struve 2426

RA: 285.0° | 19h 0.0' — DEC: 12.88° | 12° 53'

Magnitude: 7.4 | 8.8

Separation: 16.9"

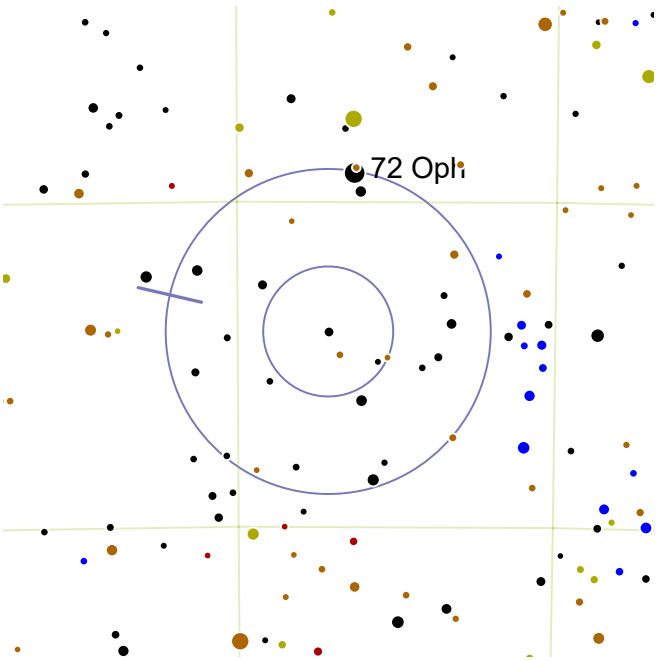
Position Angle: 260°

SAO 104332 | HIP 93273 | GDR2 61529250944

A less common white-orange pair, the two components are easily separated.

Find Okab, the magnitude 2.95 northern wingtip of Aquila amd position it in the north-eastern quadrant of the finder. Struve 2426 is in the center of the view.

With Struve 2426 centered, you will find the open star cluster NGC 6738 1.5 degrees to the south.



Struve 2276

RA: 271.43° | 18h 5.7' — DEC: 12.0° | 12° 0'

Magnitude: 7.0 | 7.4

Separation: 6.9"

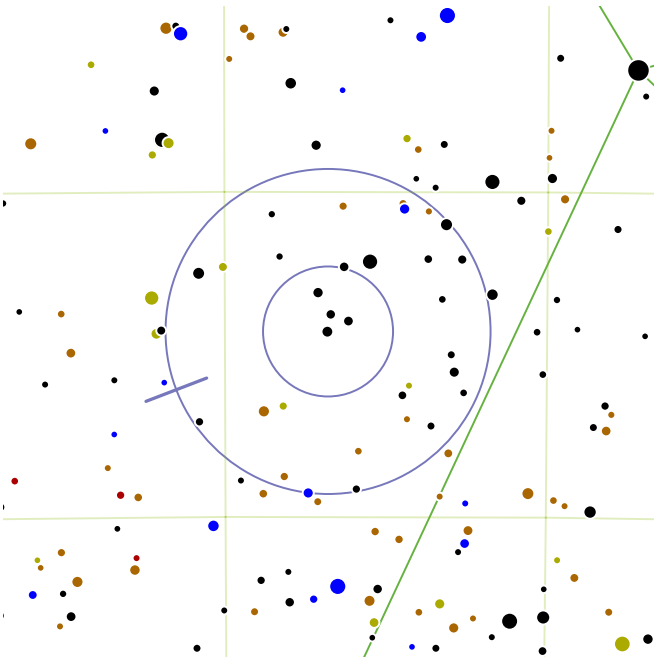
Position Angle: 257°

SAO 103373 | HIP 88627 | GDR2 47069328256

A balanced and close pair of white stars.

One and a half finder circles east of Rasalhague.

The system is 450 light-years from the Sun.



Struve 2449

RA: 286.6° | 19h 6.4' — DEC: 7.15° | 7° 9'

Magnitude: 7.2 | 7.9

Separation: 8.0"

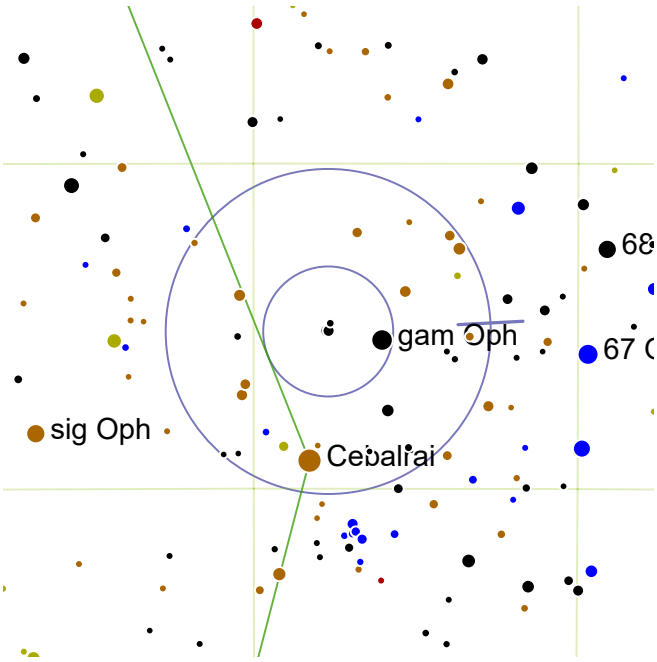
Position Angle: 291°

SAO 124265 | HIP 93822 | GDR2 41936413312

A close and well balanced yellow-blue pair.

Starting at Delta Aquilae, the heart of the Eagle, move two and a half finder circles north west.

The primary lies 344 light-years from the Sun, but it is not known if the secondary is gravitationally bound.



61 Oph

RA: 266.15° | 17h 44.59' — DEC: 2.58° | 2° 35'

Magnitude: 6.2 | 6.6

Separation: 20.6"

Position Angle: 93°

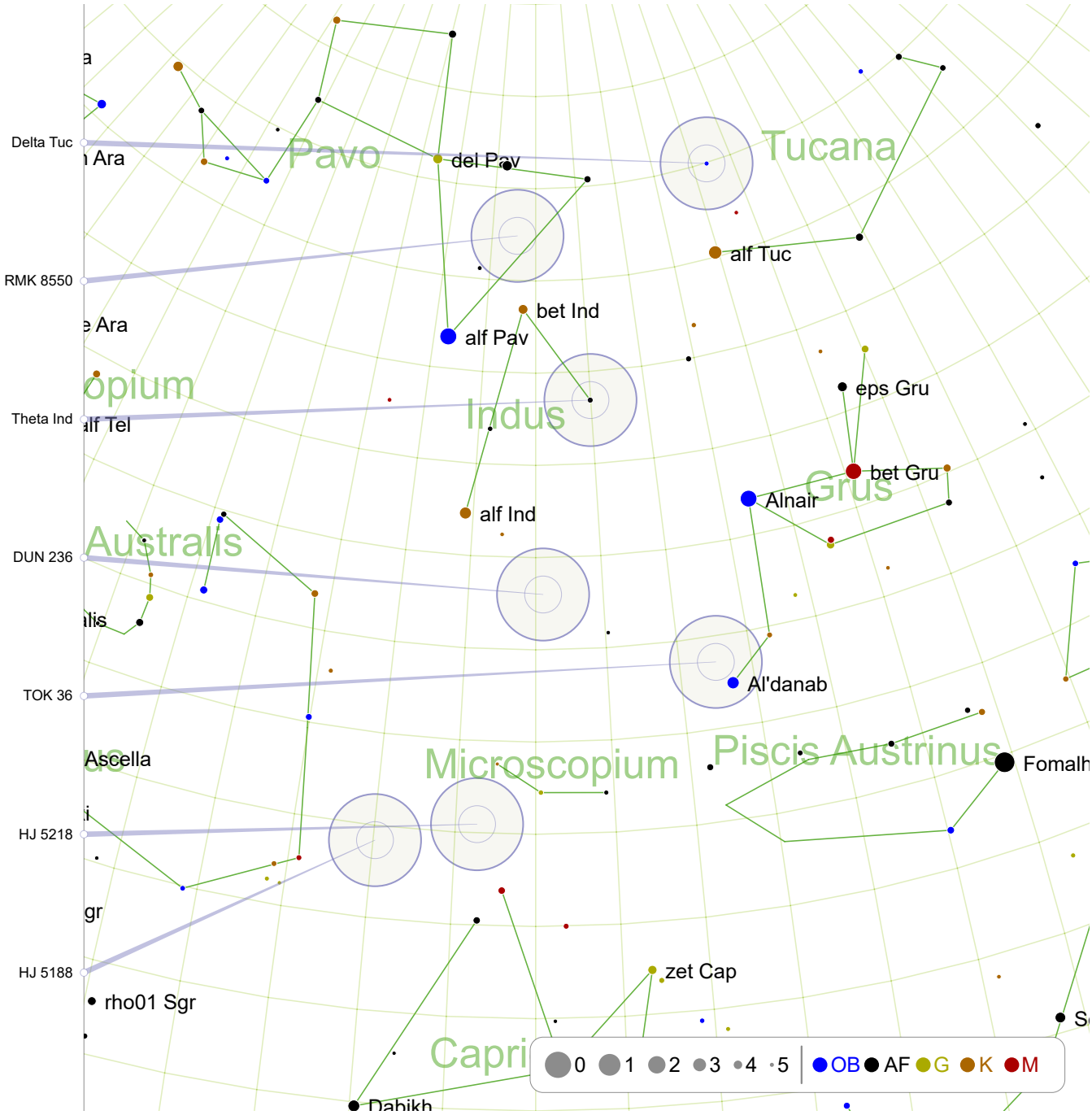
SAO 122690 | HIP 86831 | GDR2 89983293696

A widely separated pair of white stars. Both components are fairly bright.

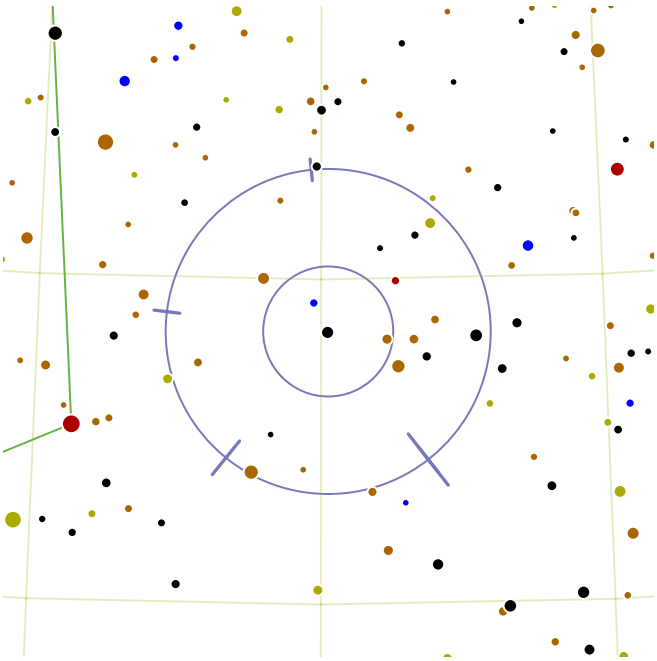
Located just over 2 degrees south-east of magnitude 2.7 Cebalrai. Cebalrai is the second brightest star in Ophiuchus.

With Cebalrai centered in the finder, globular cluster NGC 6426 lies between Cebalrai and 61 Oph, while the north eastern quadrant of the finder is filled by the Summer Beehive Cluster (IC 4665).

Late Winter - Looking South



HJ 5188: page 190
HJ 5218: page 190
TOK 36: page 191
DUN 236: page 191
Theta Ind: page 192
RMK 8550: page 192
Delta Tuc: page 193



HJ 5188

RA: 305.13° | 20h 20.5' — DEC: -29.2° | -29° 11'

Magnitude: 6.7 | 10.1 | 7.6 | 10.1 | 9.9 | 10.1

Separation: 3.7" | 27.3" | 120.6" | 437.0" | 4.7"

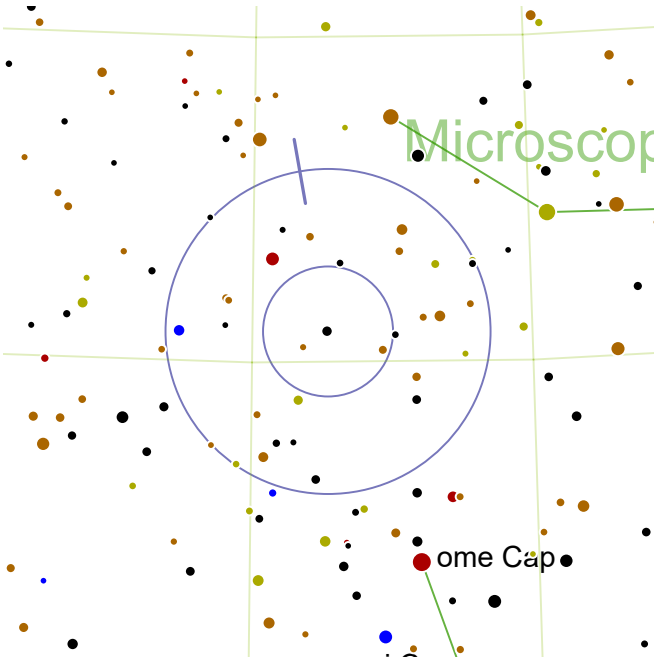
Position Angle: 38° | 321° | 38° | 263° | 186°

SAO 189164 | HIP 100288 | GDR2 22396076928

A complex of 6 stars, centered on a fairly bright white primary. The widely separated C component is moderately bright, but the remaining four members are all faint.

Two and a half finder circles S from magnitude 3.25 193496. Two and a half finder circles S from magnitude 3.25 Dabikh.

The primary is 443 light-years from Earth. It is not clear if the members are gravitationally bound together.



HJ 5218

RA: 311.35° | 20h 45.4' — DEC: -30.48° | -30° 28'

Magnitude: 6.8 | 11

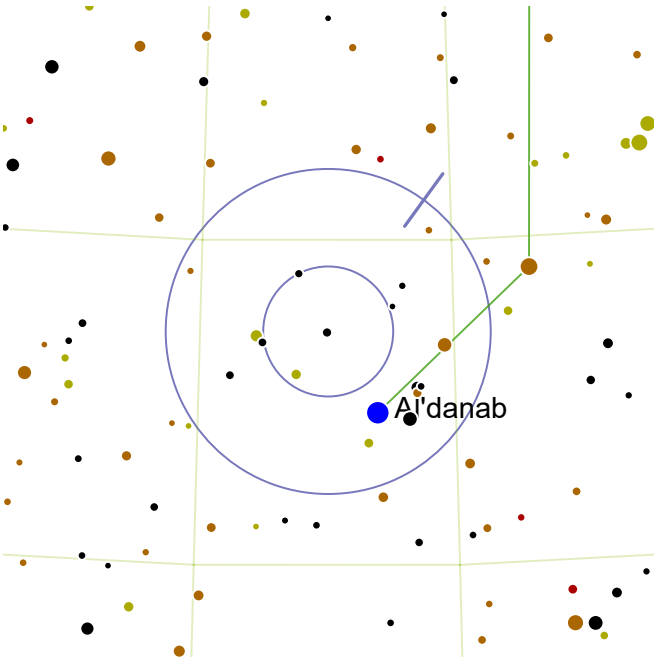
Separation: 9.8"

Position Angle: 190°

SAO 212410 | HIP 102435 | GDR2 92535208576

A fairly bright yellow primary with a very faint secondary close by.

Two finder circles SW from magnitude 3.86 zet Cap.



TOK 36

RA: 327.52° | 21h 50.09' — DEC: -38.62° | -38° 36'

Magnitude: 6.1 | 9.6

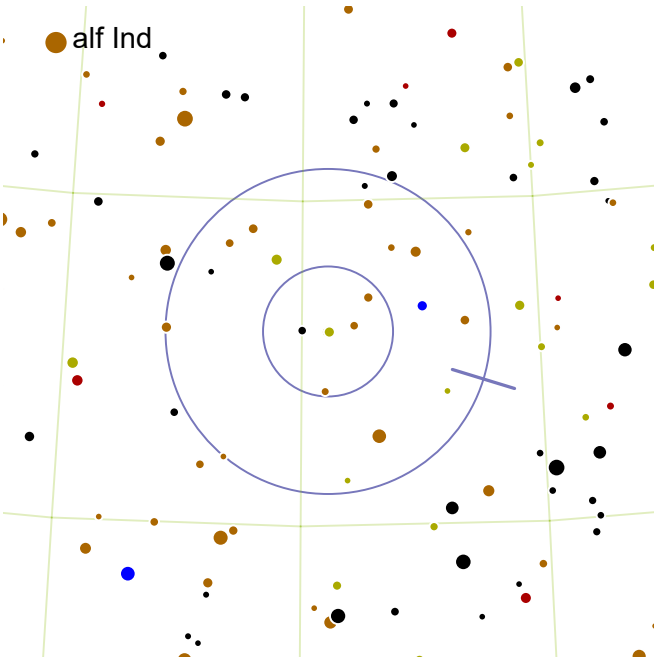
Separation: 2.2"

Position Angle: 144°

SAO 213325 | HIP 107779

A fairly bright yellow star with a tightly bound faint companion.

One degree SSW from magnitude 3.16 Al'danab.



DUN 236

RA: 315.55° | 21h 2.2' — DEC: -43.0° | -43° 0'

Magnitude: 6.7 | 7.0

Separation: 57.4"

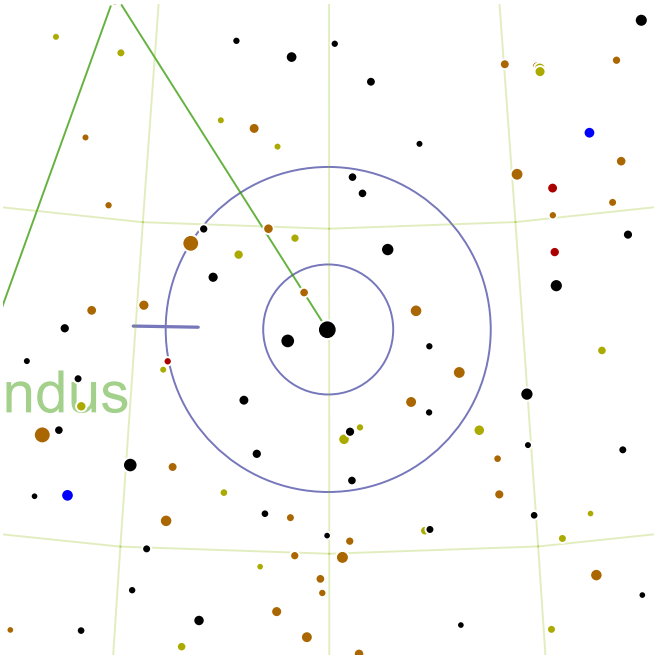
Position Angle: 73°

SAO 230492 | HIP 103814 | GDR2 42680733824

A fairly bright, nearly equal pair, with a yellow primary widely separated from an orange companion.

One finder circle NE from magnitude 3.21 alf Ind. Two finder circles SW from magnitude 3.16 Al'danab.

This gravitationally bound pair of subgiants is 268 light-years from Earth.



Theta Ind

RA: 319.98° | 21h 19.9' — DEC: -53.45° | -53° 26'

Magnitude: 4.5 | 6.9

Separation: 7.3"

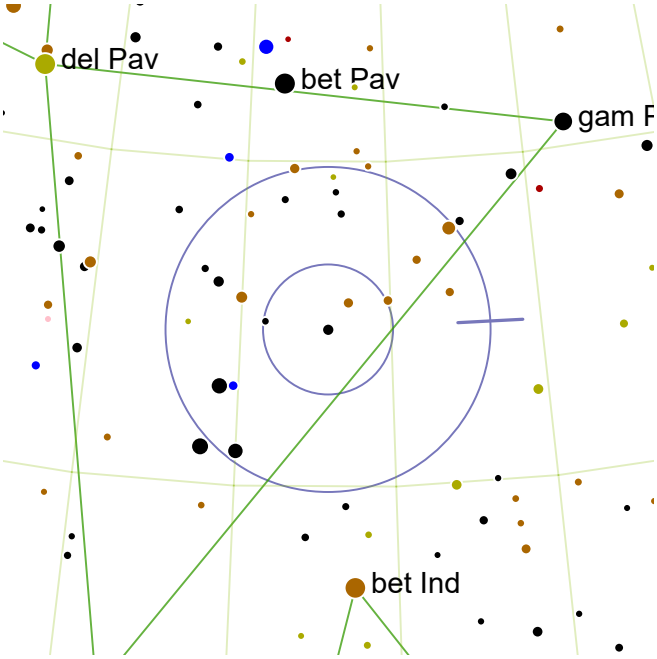
Position Angle: 269°

SAO 246965 | HIP 105319 | GDR2 69563201152

A brilliant white primary with a close fairly bright yellow companion.

One finder circle NE from magnitude 3.72 bet Ind. One and a half finder circles NEE from magnitude 2.12 alf Pav.

99 light-years from Earth, the primary is probably itself a double, with a separation of 0.06" and an orbital period of 1.3 years.



RMK 8550

RA: 312.9° | 20h 51.59' — DEC: -62.43° | -62° 25'

Magnitude: 5.8 | 5.8

Separation: 2.7"

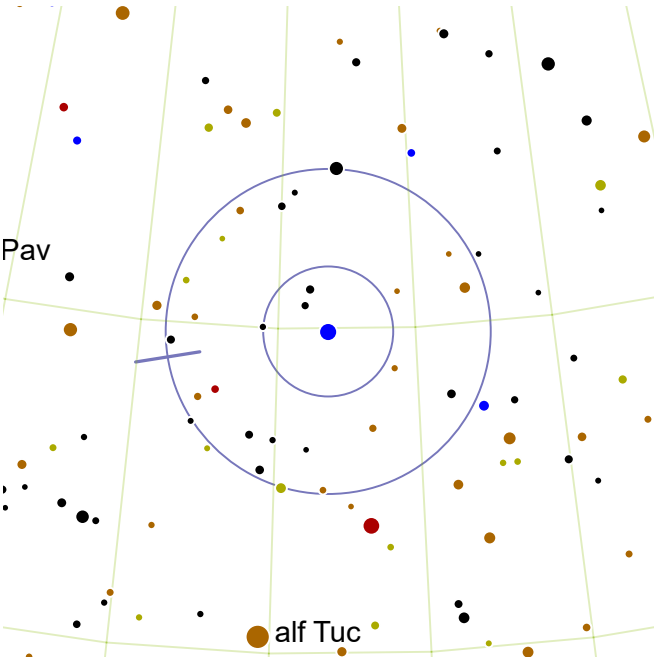
Position Angle: 93°

SAO 254883 | HIP 102962

An equal and very tight pair of bright white stars.

Half a finder circle NNE from magnitude 3.6 bet Pav. One finder circle SSE from magnitude 2.12 alf Pav.

This pair of stars similar to Sirius is 249 light-years from Earth.



Delta Tuc

RA: 336.83° | 22h 27.29' — DEC: -64.97° | -64° 57'

Magnitude: 4.5 | 8.7

Separation: 6.8"

Position Angle: 279°

SAO 255222 | HIP 110838 | GDR2 08023617664

A brilliant bluish primary close to a fairly faint secondary.

Half a finder circle S from magnitude 2.91 alf Tuc. Two finder circles E from magnitude 3.6 bet Pav.

The primary is three times the mass of the Sun and only 232 million years old. The pair appear to be gravitationally bound.

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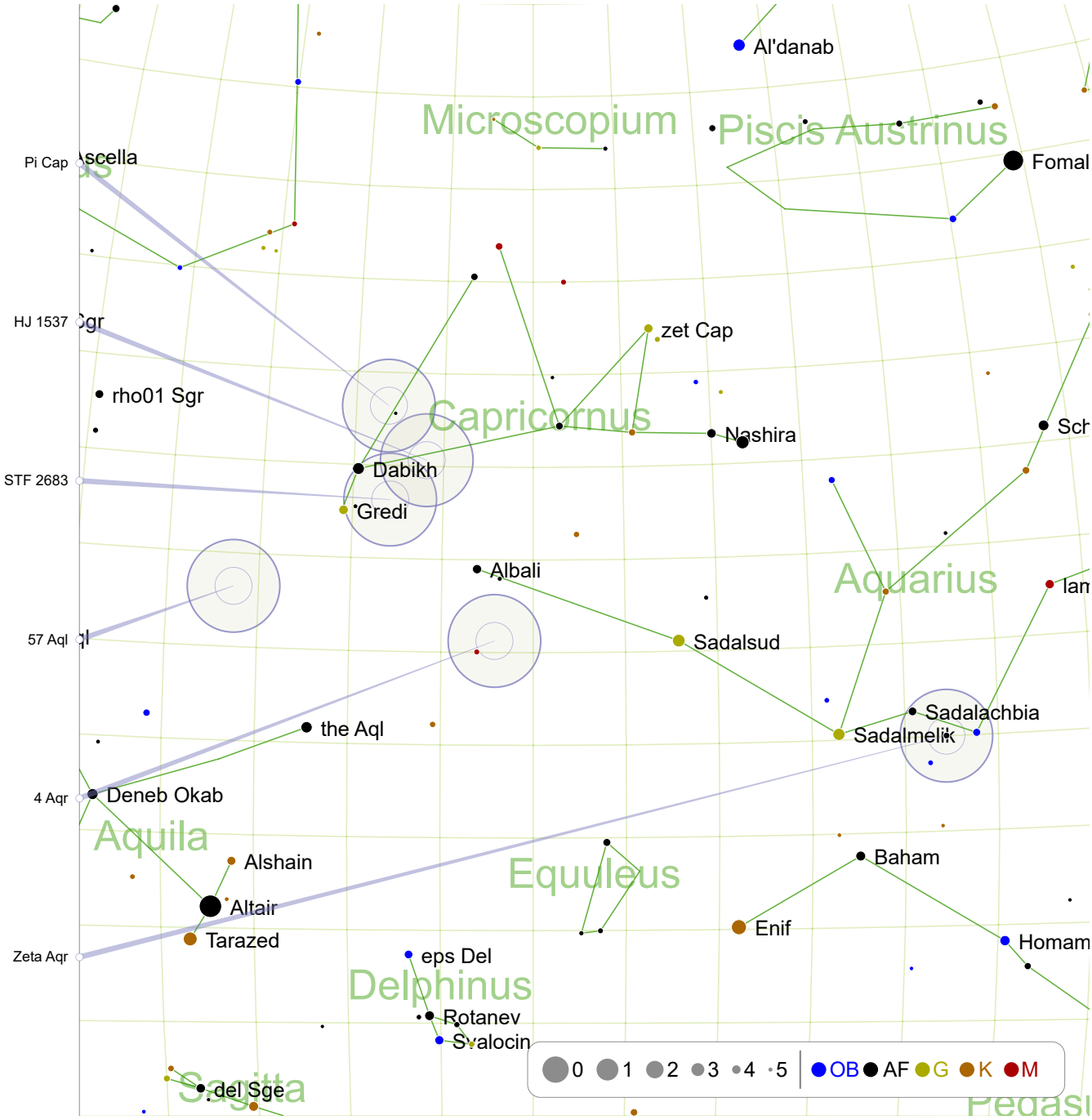
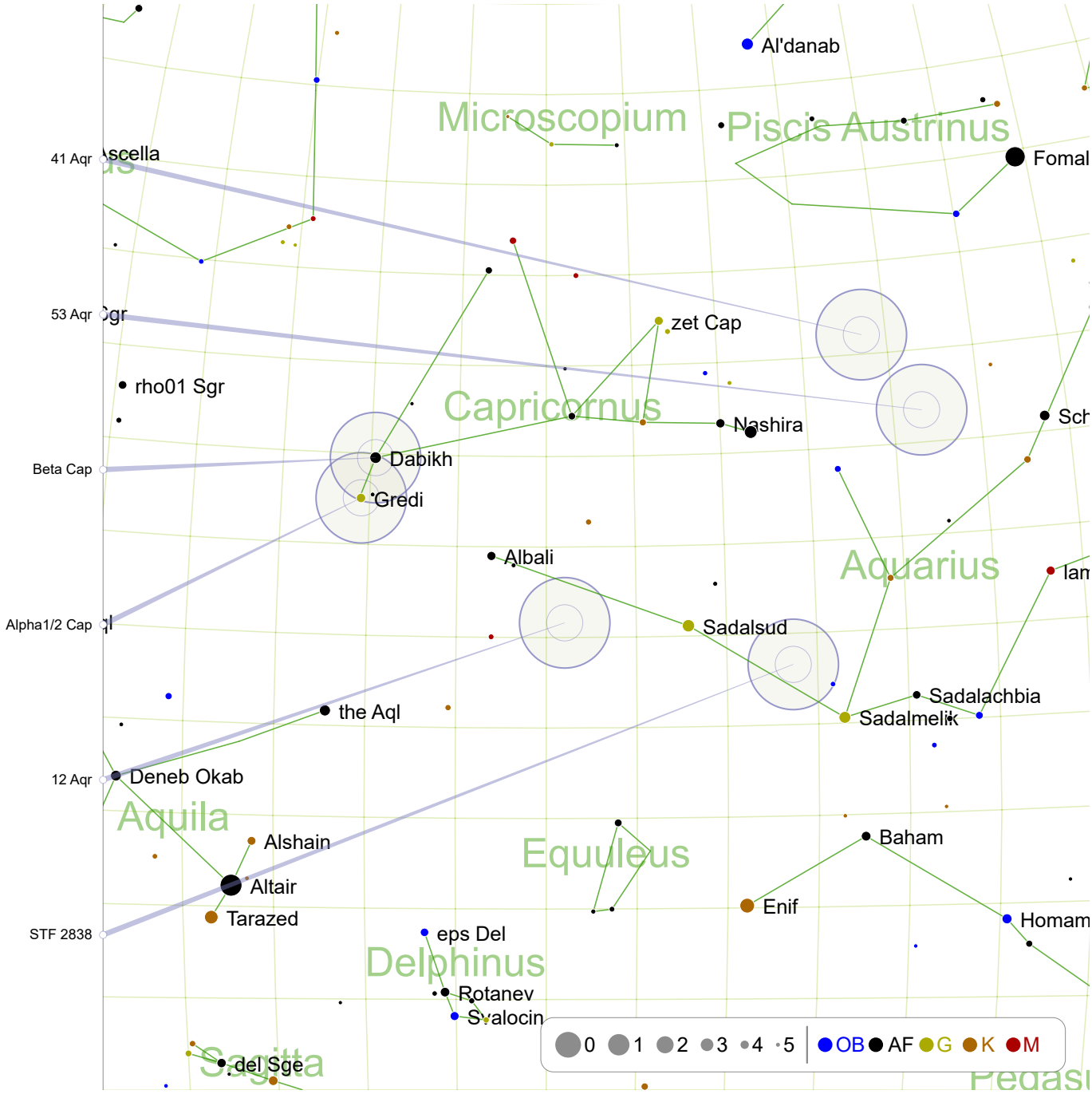
Late Winter - Looking North (1)

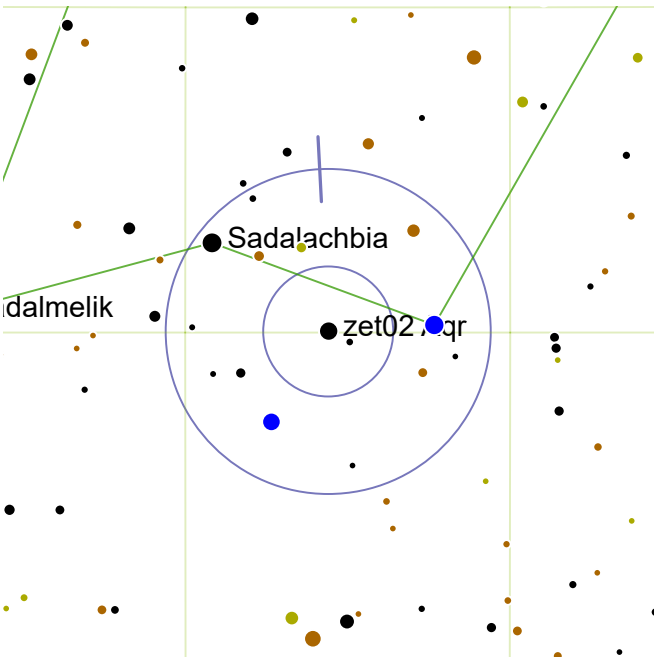


Zeta Aqr: page 197 4 Aqr: page 197 57 Aql: page 198 STF 2683: page 198
HJ 1537: page 199 Pi Cap: page 199

Late Winter - Looking North (2)



STF 2838: page 200 12 Aqr: page 200 Alpha1/2 Cap: page 201 Beta Cap: page 201
53 Aqr: page 202 41 Aqr: page 202



Zeta Aqr

RA: 337.2° | 22h 28.79' — DEC: -0.02° | 0° 0'

Magnitude: 4.3 | 4.5

Separation: 2.3"

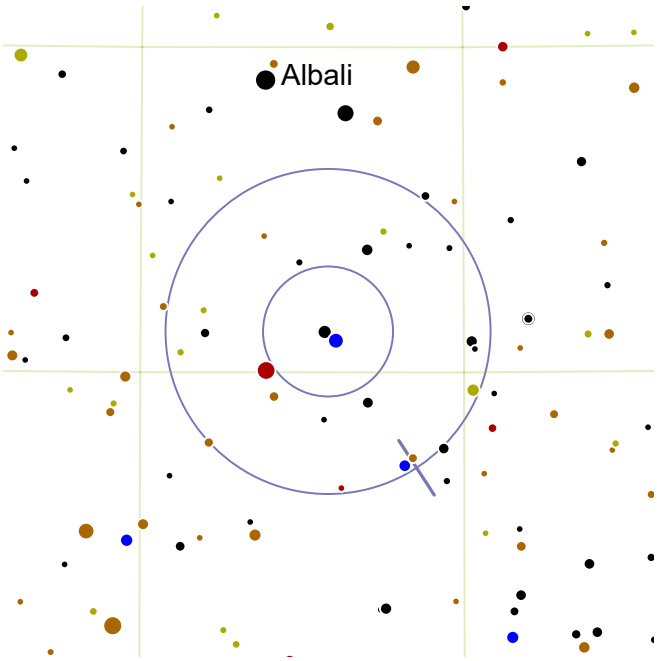
Position Angle: 183°

SAO 146107 | HIP 110960

A balanced, tight pair of white stars.

One and a half degrees NE from magnitude 3.97 Sadalachbia. One finder circle E from magnitude 3.19 Sadalmelik.

Located in the center of a a Y-shaped asterism of fourth magnitude stars that fills the finder view.



4 Aqr

RA: 312.9° | 20h 51.59' — DEC: -5.63° | -5° 37'

Magnitude: 6.4 | 7.4

Separation: 0.7"

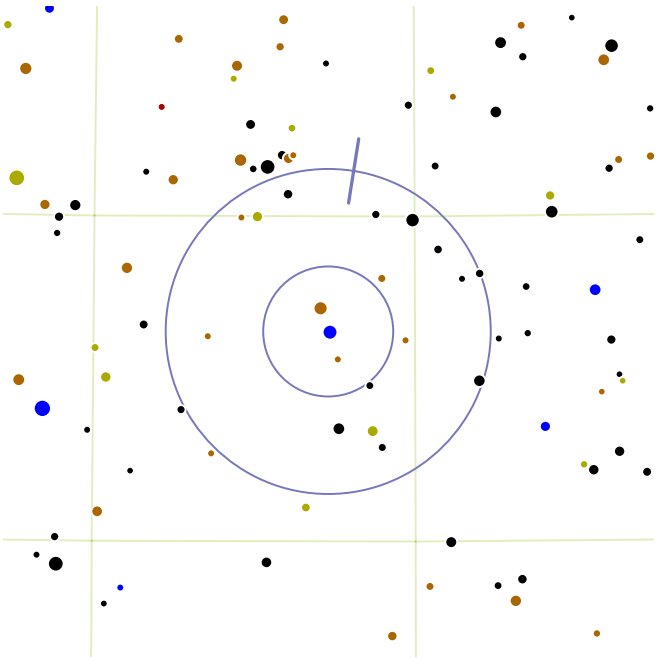
Position Angle: 33°

SAO 144877 | HIP 102945

An extremely tight pair of fairly balanced yellowish stars.

Half a finder circle NNE from magnitude 3.83 Albali. Two finder circles NE from magnitude 3.77 Gredi.

The primary has 1.6 times the mass of the Sun and 11 times the luminosity.



57 Aql

RA: 298.65° | 19h 54.59' — DEC: -8.23° | -8° 13'

Magnitude: 5.7 | 6.4

Separation: 36"

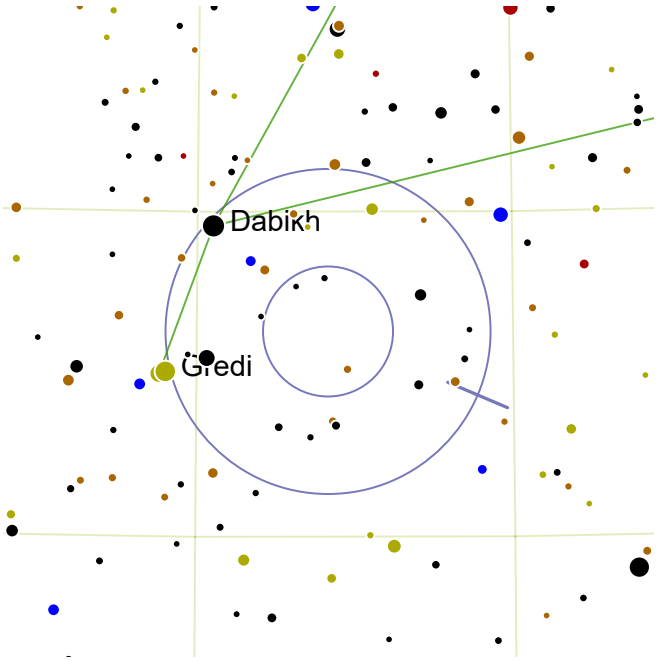
Position Angle: 171°

SAO 143898 | HIP 97966 | Struve 2594

A very wide and balanced pair of bright, bluish stars.

One finder circle NW from magnitude 3.77 Gredi.

This pair of hot B-type main sequence stars are roughly 480 light-years from Earth. As with manyB-type stars, they rotate extremely fast (the A component has a rotational velocity of 190 km/s.



STF 2683

RA: 307.08° | 20h 28.29' — DEC: -13.17° | -13° 9'

Magnitude: 8.5 | 8.9

Separation: 22.8"

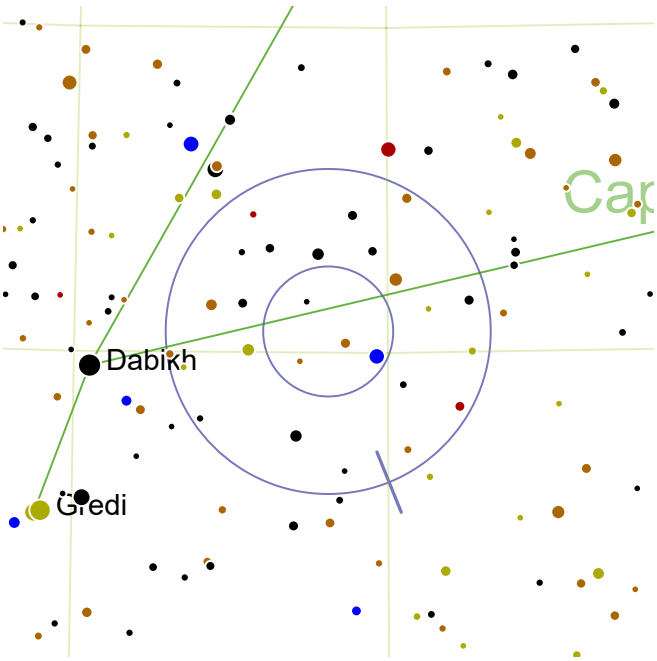
Position Angle: 67°

SAO 163606 | GDR2 68361287040

An equal pair of easily separated yellowish stars.

One and a half degrees NE from magnitude 3.25 193496. One and a half degrees NE from magnitude 3.25 Dabikh.

Globular cluster M72 (mag. 9.2) lies one finder circle east of this double. Open cluster M73 (mag. 8.9) is a further two degrees east. With M73 centered, planetary nebula C55 (mag. 8.0) lies in the middle of the north-eastern quarter of the finder.



HJ 1537

RA: 309.05° | 20h 36.2' — DEC: -15.33° | -15° 19'

Magnitude: 8.4 | 8.6

Separation: 3.6"

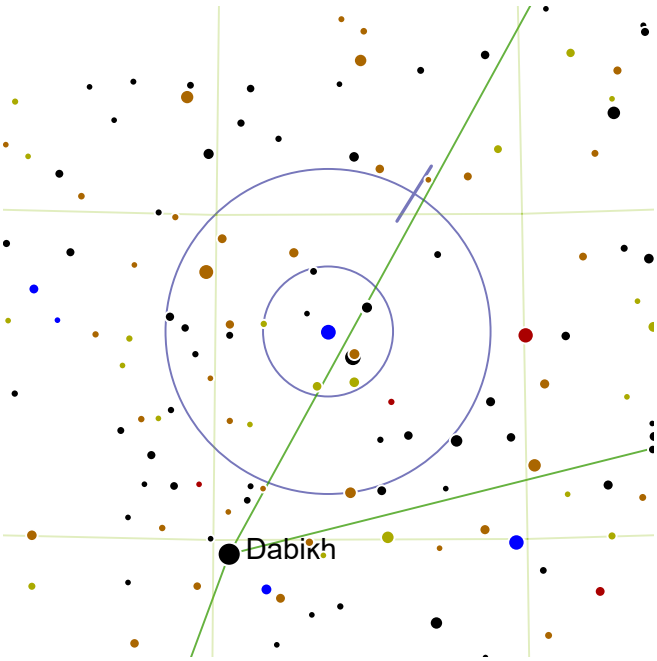
Position Angle: 22°

HIP 101649 | GDR2 64097811840

A yellow primary with a very close, faint companion.

Half a finder circle E from magnitude 3.25 193496. Half a finder circle E from magnitude 3.25 Dabikh.

The primary has a spectral class of G1V, very close to the Sun's class of G2V. The binary system lies 495 light-years from Earth.



Pi Cap

RA: 306.83° | 20h 27.29' — DEC: -18.22° | -18° 12'

Magnitude: 5.3 | 8.9

Separation: 3.2"

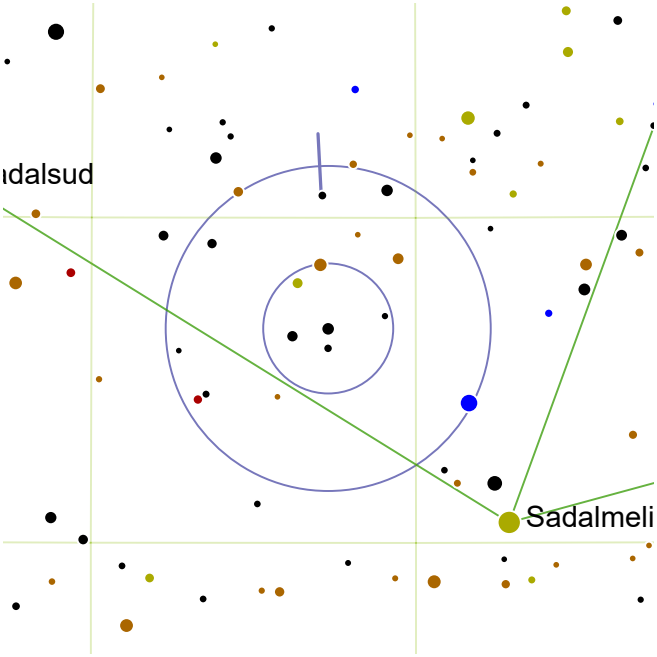
Position Angle: 148°

SAO 163592 | HIP 100881 | GDR2 73140593152

A very close pair, with a bright blue primary and fairly faint secondary.

Half a finder circle SSE from magnitude 3.25 193496. Half a finder circle SSE from magnitude 3.25 Dabikh.

The primary has six times the mass and 238 times the luminosity of the Sun.



STF 2838

RA: 328.65° | 21h 54.59' — DEC: -3.3° | -3° 17'

Magnitude: 6.3 | 9.1

Separation: 16"

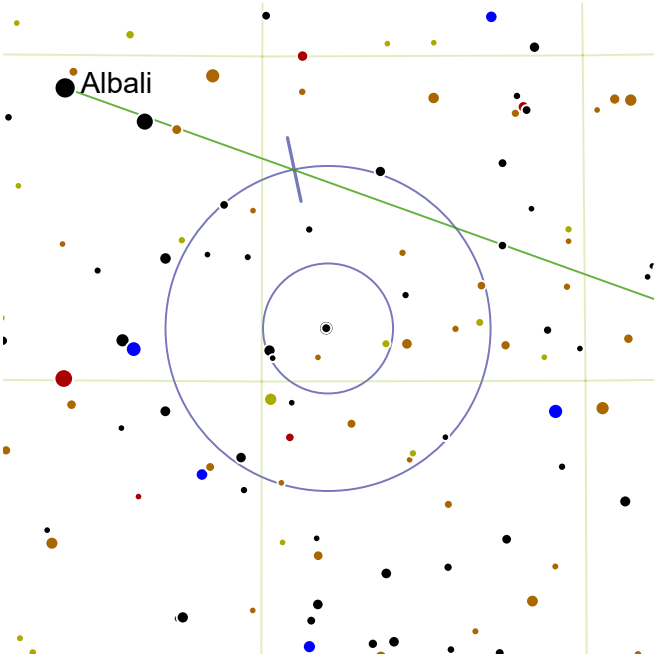
Position Angle: 183°

SAO 145735 | HIP 108144 | GDR2 75057612800

An easily separated pair of white stars with a bright primary and a faint secondary.

Half a finder circle SW from magnitude 3.19 Sadalmelik. Two and a half finder circles N from magnitude 2.98 Sheddi.

This double is a line of sight coincidence; the two components are not gravitationally bound.



12 Aqr

RA: 316.02° | 21h 4.09' — DEC: -5.82° | -5° 48'

Magnitude: 5.9 | 7.3

Separation: 2.8"

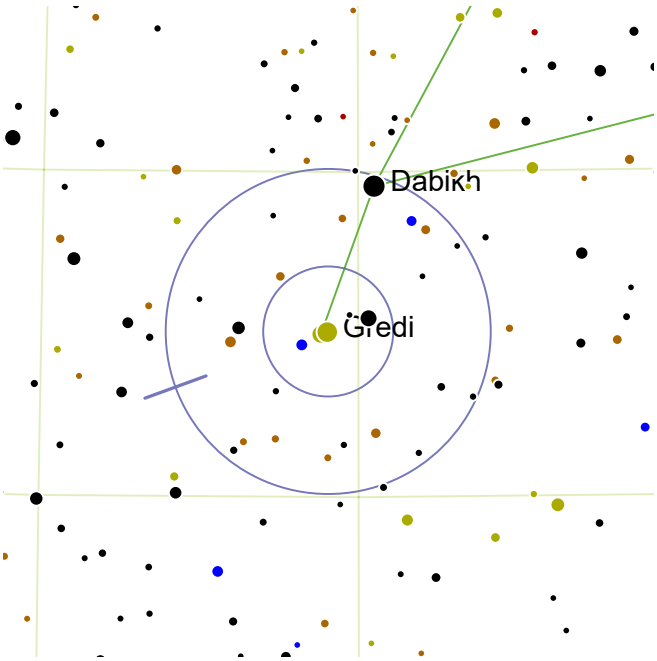
Position Angle: 192°

SAO 145065 | HIP 103981 | GDR2 42353215104

A very tight yellow-blue system, with the small blue component sufficiently bright to show some color.

With few signposts to go by, find Lamda Equuleus, and track due south for three finder circles.

Just over one finder circle south of of this double is the bright planetary nebula, Caldwell 55 (NGC 7009).



Alpha1/2 Cap

RA: 304.52° | 20h 18.09' — DEC: -12.55° | -12° 32'

Magnitude: 3.7 | 4.3

Separation: 381"

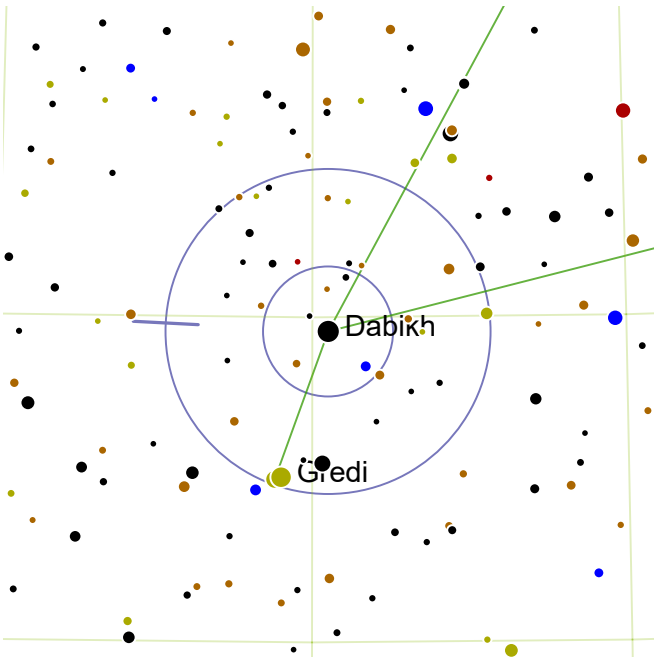
Position Angle: 290°

SAO 163422 | HIP 100027

A distantly separated pair of brilliant white stars.

Alpha1/2 Cap is a bright star in Capricornus.

Superb in the finder scope.



Beta Cap

RA: 305.25° | 20h 21.0' — DEC: -14.78° | -14° 46'

Magnitude: 3.2 | 6.1

Separation: 205"

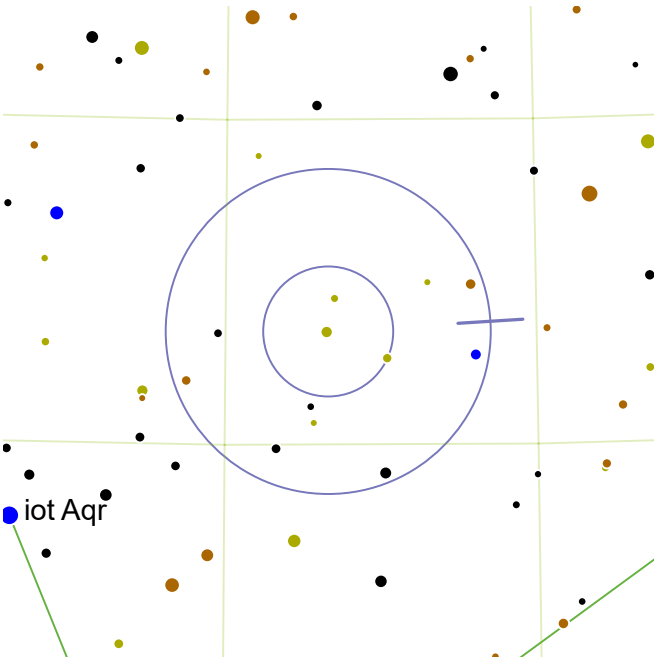
Position Angle: 267°

SAO 163481 | HIP 100345

A brilliant yellow primary distantly separated from bright white secondary.

Beta Cap is a bright star in Capricornus. Beta Cap is a bright star in Capricornus.

Also known as Dabih ("butcher"), this binary system is almost exactly 100 parsecs from us (327 light-years).



53 Aqr

RA: 336.65° | 22h 26.59' — DEC: -16.75° | -16° 44'

Magnitude: 6.3 | 6.4

Separation: 1.2"

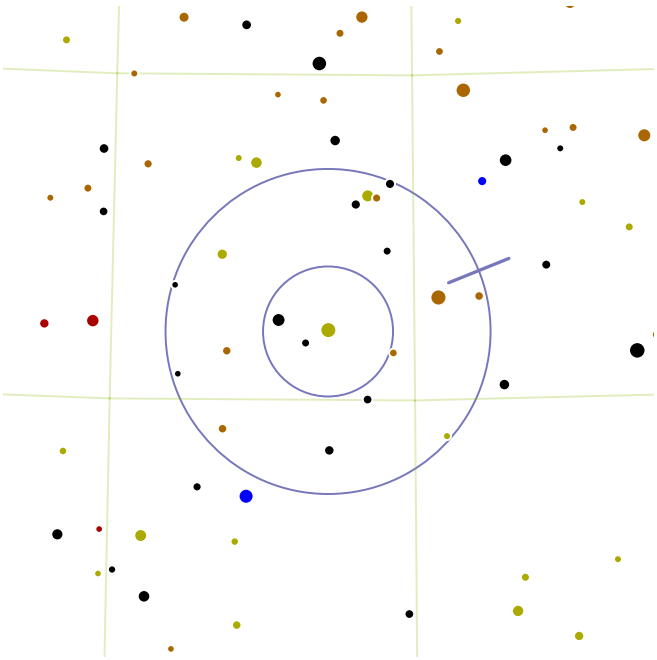
Position Angle: 93.6°

SAO 165078 | HIP 110778

An extremely tight and exactly equal pair of yellow suns.

One finder circle W from magnitude 3.51 Scheat. One and a half finder circles E from magnitude 2.98 Sheddi.

C63, the Helix Nebula, lies one finder circle south of this double.



41 Aqr

RA: 333.58° | 22h 14.29' — DEC: -21.07° | -21° 3'

Magnitude: 5.6 | 6.7

Separation: 5.2"

Position Angle: 112°

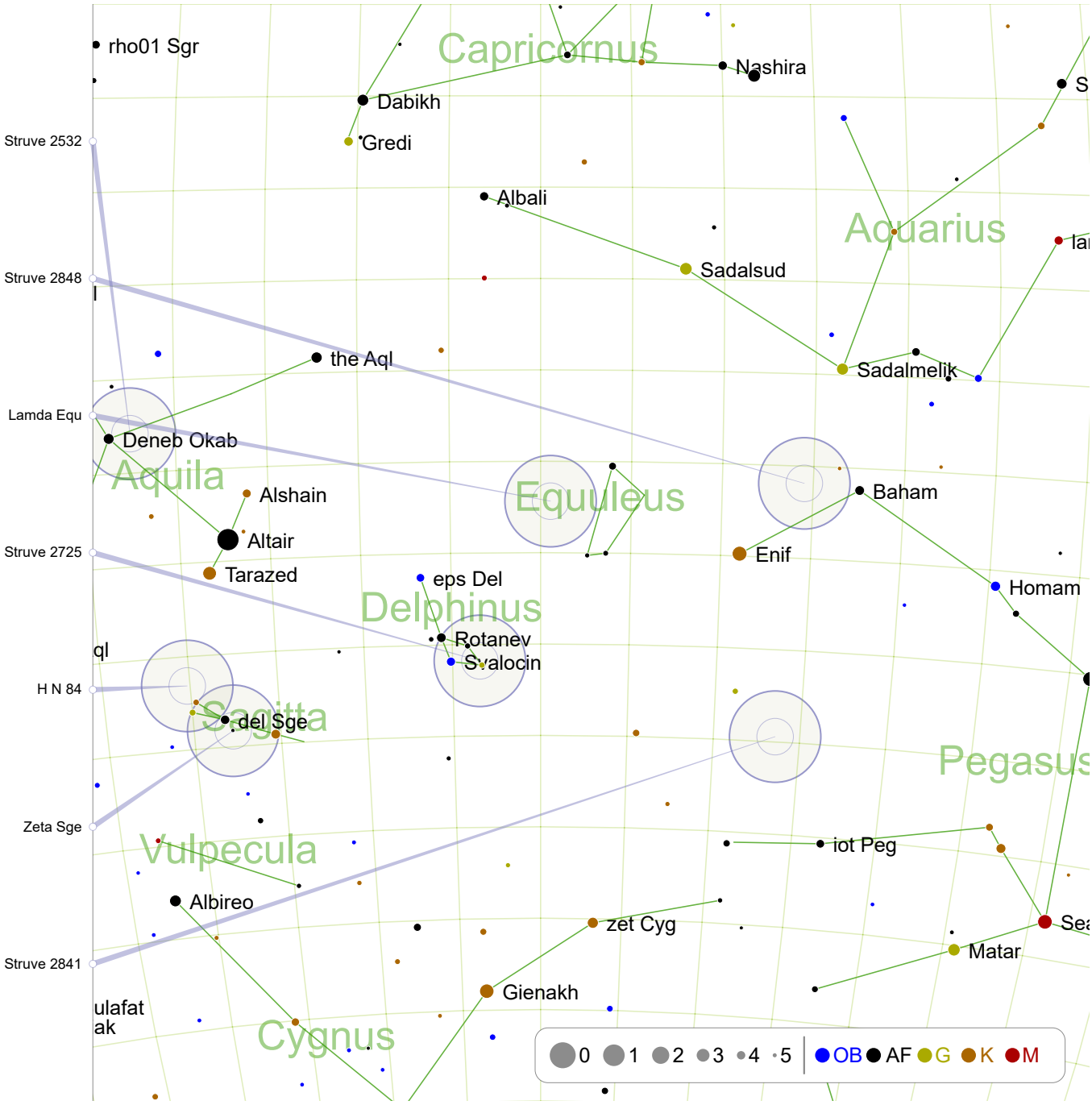
SAO 190986 | HIP 109786 | GDR2 69260987520

A close, balanced with a bright orange primary and yellowish secondary.

One and a half finder circles SE from magnitude 2.98 Sheddi.

It is not clear if the pair are gravitationally bound, but the orange primary is a K-type giant 233 light-years from Earth.

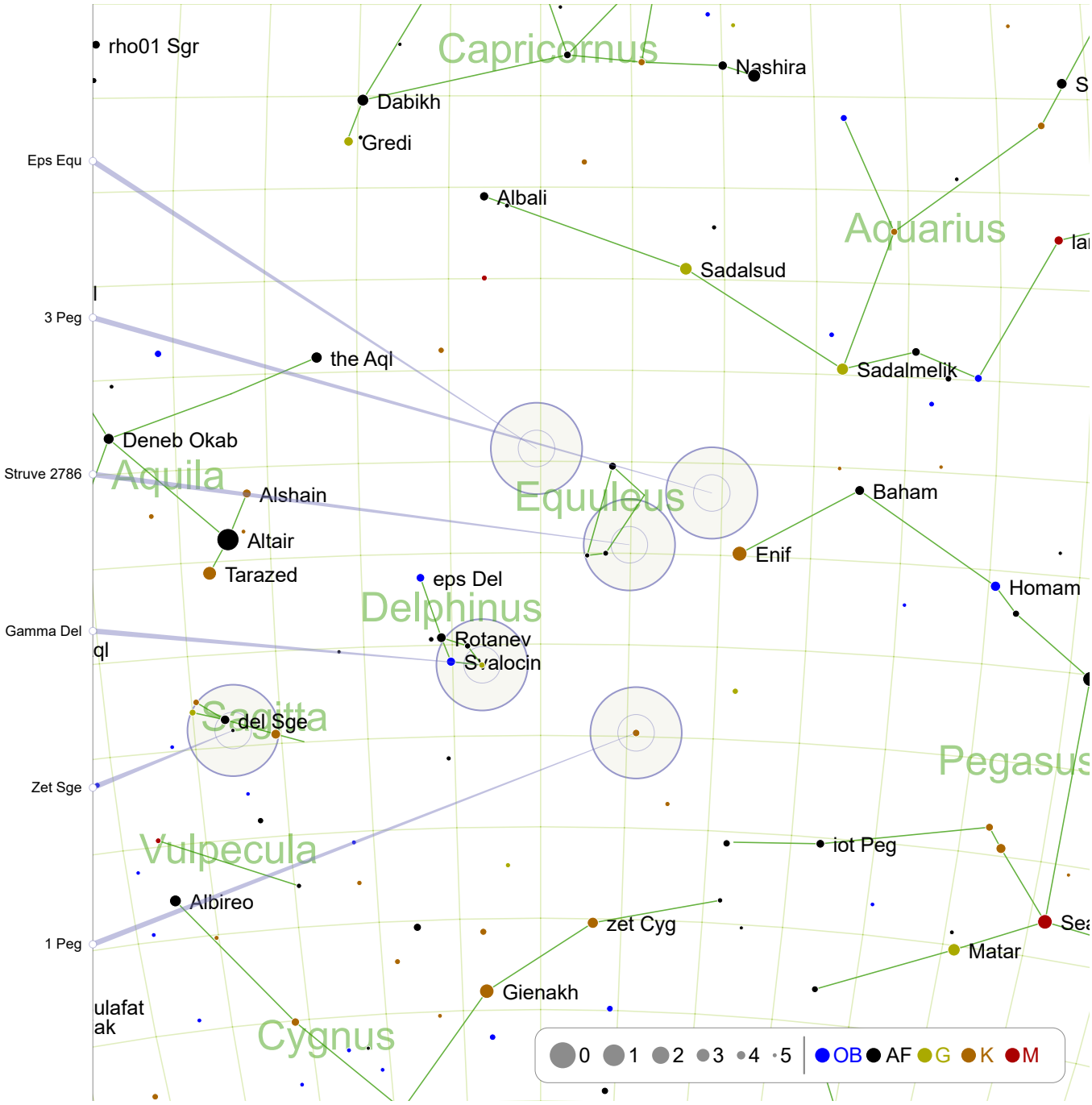
Late Winter - Northern Horizon (1)



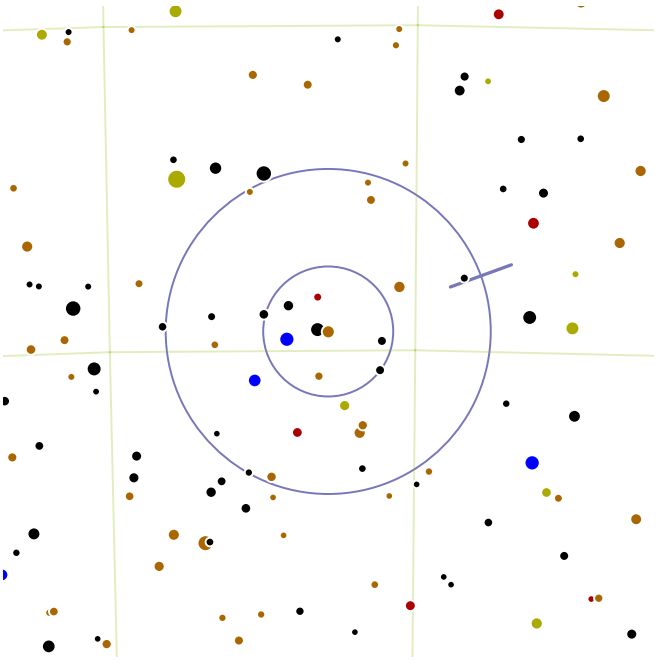
Struve 2841: page 205 | Zeta Sge: page 205 | H N 84: page 206 | Struve 2725: page 206

Lamda Equ: page 207 | Struve 2848: page 207 | Struve 2532: page 208

Late Winter - Northern Horizon (2)



1 Peg: page 208 Zet Sge: page 209 Gamma Del: page 209 Struve 2786: page 210
3 Peg: page 210 Eps Equ: page 211



Struve 2841

RA: 328.58° | 21h 54.29' — DEC: 19.72° | 19° 43'

Magnitude: 6.4 | 7.9

Separation: 22.3"

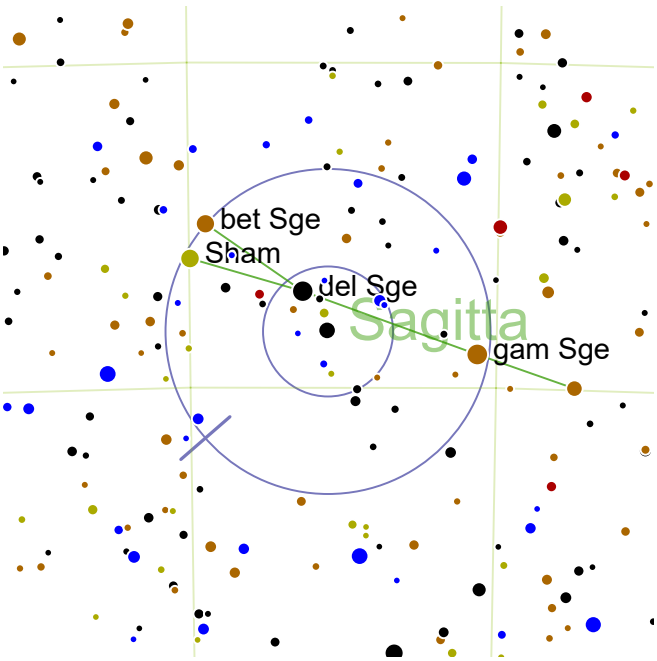
Position Angle: 110°

SAO 107489 | HIP 108119 | GDR2 05784806784

A wide yellow-blue pairing. Some see some green in the secondary.

Pan two and a half finder circles north and slightly east of magnitude 2.35 Enif in Pegasus. The finder should have many brightish stars, with Struve 2841 within 0.2 degrees east of a slightly brighter star.

The system lies 336 light-years from the Sun.



Zeta Sge

RA: 297.25° | 19h 49.0' — DEC: 19.15° | 19° 9'

Magnitude: 5.5 | 8.7

Separation: 8.6"

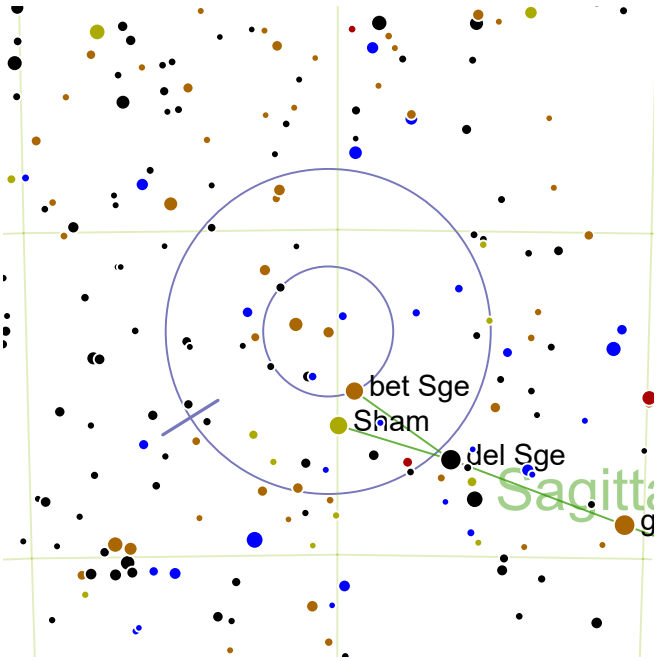
Position Angle: 311°

SAO 105298 | HIP 97496

A bright yellow primary with a much fainter blue secondary.

Located a degree north east of magnitude 3.68 Delta Sagittae. Find Delta Sagittae two finder circles north of Altair.

Globular cluster Messier 71 is in the same finder circle as Zeta Sagittae, lying 1.5 degrees SEE.



H N 84

RA: 294.85° | 19h 39.4' — DEC: 16.57° | 16° 34'

Magnitude: 6.5 | 8.9

Separation: 28.2"

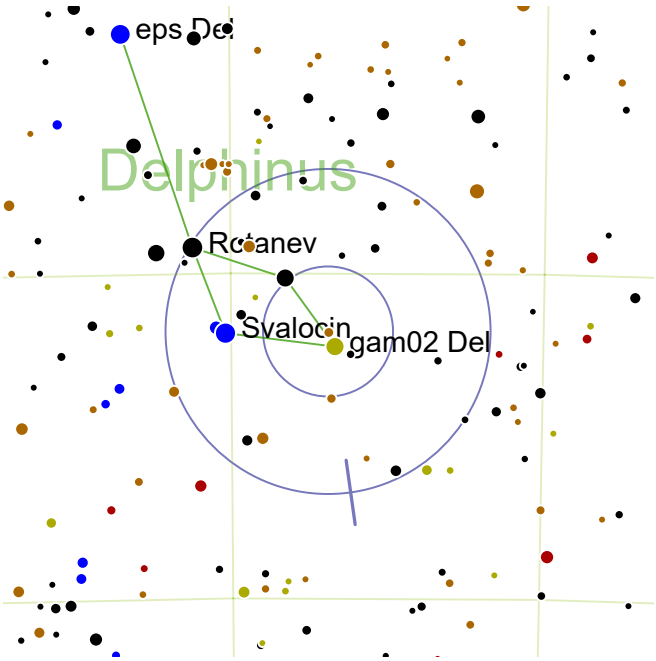
Position Angle: 302°

SAO 105104 | HIP 96688 | GDR2 51899730432

A wide pair with a strongly orange primary and fainter blue companion.

Just short of three degrees to the south west of magnitude 3.68 Delta Sagittae. If Sagitta is too faint to make out in your area, start from brilliant Altair and go two finder circles north and very slightly west.

From William Herschel's New list of doubles compiled in the 1820s, hence the "H N" nomenclature.



Struve 2725

RA: 311.55° | 20h 46.2' — DEC: 15.9° | 15° 54'

Magnitude: 7.6 | 8.4

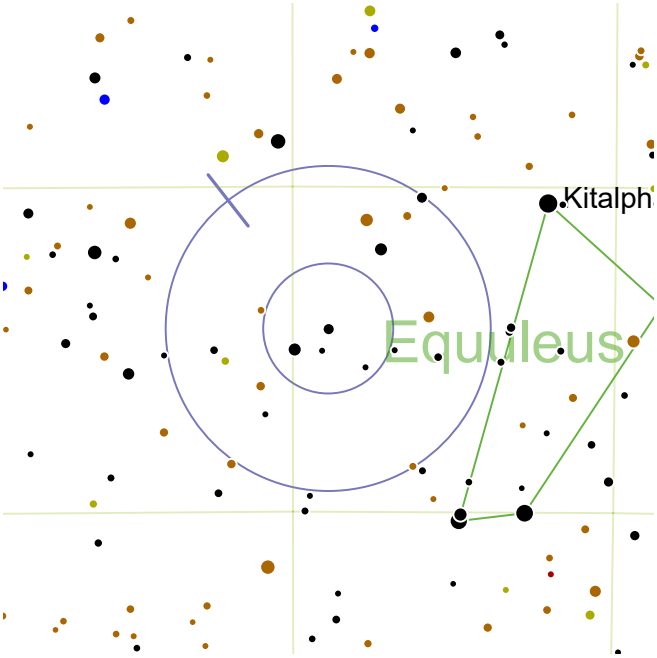
Separation: 5.8"

Position Angle: 8°

SAO 106466 | HIP 102490 | GDR2 94080694016

A close yellow and blue pair.

A quarter of a degree south west of Al Salib, the magnitude 4.25 nose of Delphinus.



Lamda Equ

RA: 315.55° | 21h 2.2' — DEC: 7.18° | 7° 11'

Magnitude: 7.4 | 7.4

Separation: 2.8"

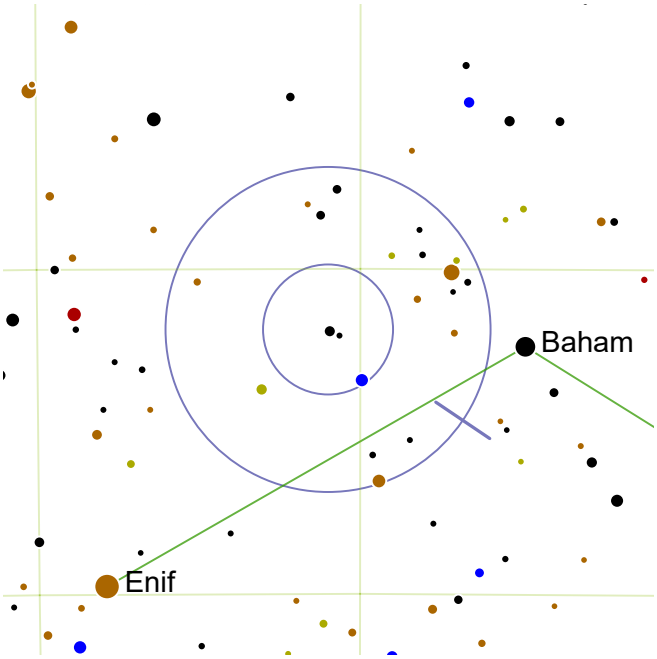
Position Angle: 218°

SAO 126482 | HIP 103813 | GDR2 58187956224

An extremely tight and exactly equal pair of yellow stars.

Find Lamda Equuleus one finder circle south west of Struve 2786.

From Lamda Equuleus, you can make more challenging hops to 12 Aqr, Epsilon Equuleus, and Gamma Delphinus.



Struve 2848

RA: 329.5° | 21h 58.0' — DEC: 5.93° | 5° 56'

Magnitude: 7.2 | 7.5

Separation: 10.7"

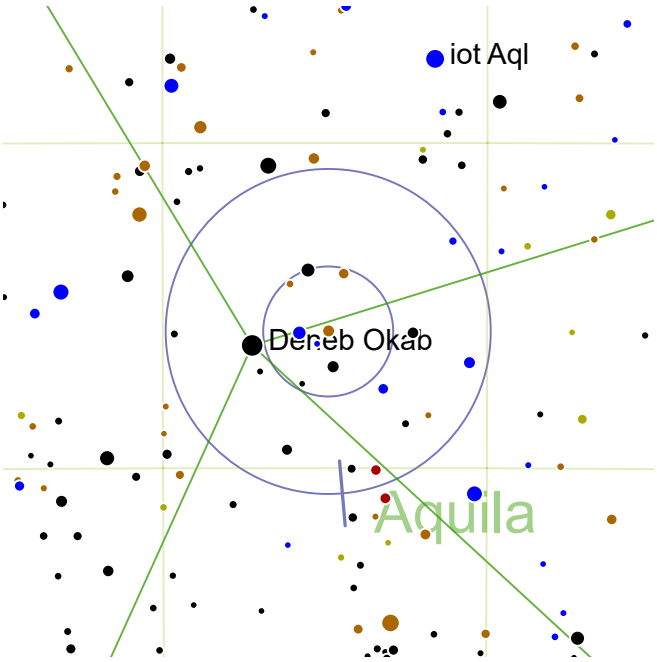
Position Angle: 56°

SAO 127196 | HIP 108439 | GDR2 2697317737667726976

An equal and easily split pair of yellow stars.

One and a half finder circles south east of magnitude 2.35 Enif, three degrees due west of magnitude 3.50 Baham (Theta Pegasi).

Enif is a fascinating orange-red supergiant, which can vary irregularly in brightness between magnitudes 0.7 and 3.5.



Struve 2532

RA: 292.55° | 19h 30.2' — DEC: 2.9° | 2° 54'

Magnitude: 6.1 | 10.3

Separation: 33.7"

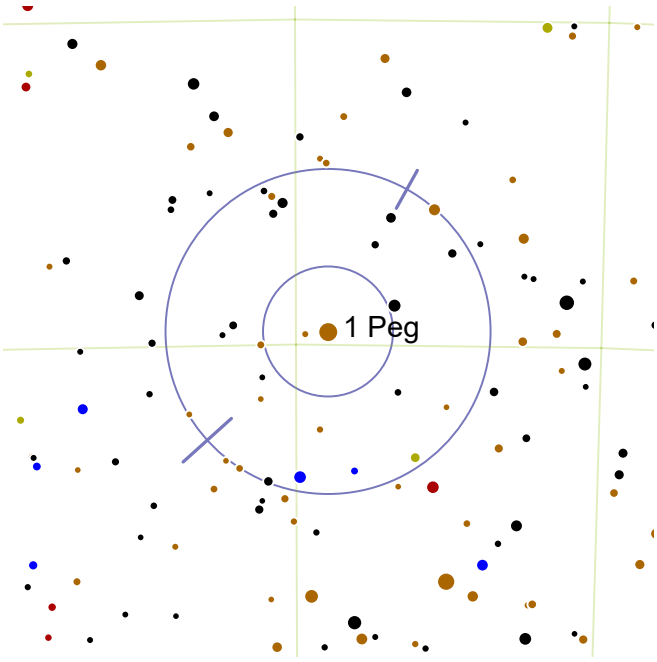
Position Angle: 5°

SAO 124698 | HIP 95898 | GDR2 37626681728

A very widely separated orange-blue duo, but the blue component is very faint.

Easily found one degree due east of Delta Aquilae, the central star of the Eagle.

In the same finder circle of as Delta Aquilae and Struve 2532, you can find NGC 6790 (2 degrees south and slightly west of Delta), a small planetary nebula with high surface brightness.



1 Peg

RA: 320.52° | 21h 22.09' — DEC: 19.8° | 19° 48'

Magnitude: 4.2 | 9.3 | 9.6

Separation: 36.1" | 5.3"

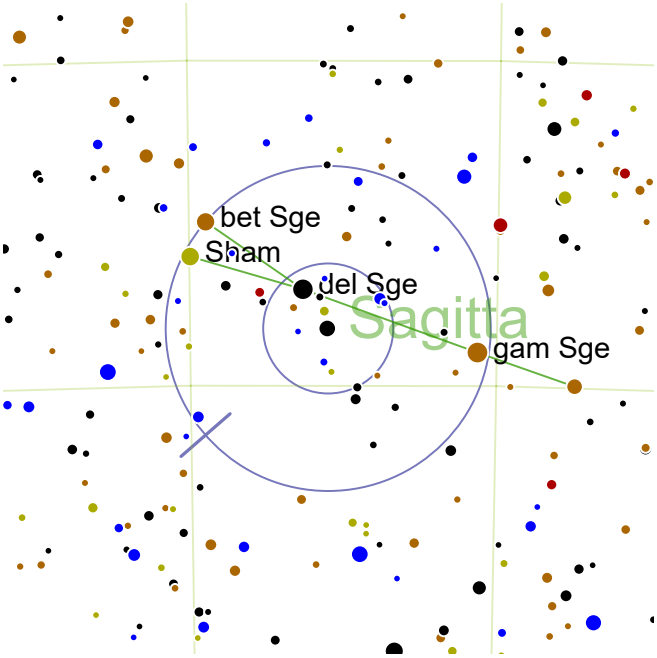
Position Angle: 312° | 151°

SAO 107073 | HIP 105502 | GDR2 65372381056

A triple system, with a brilliant orange primary with two faint companions, one very close and the other quite widely separated.

Two finder circles SSE from magnitude 3.4 zet Cyg. Two finder circles NEE from magnitude 3.86 Svalocin.

The system lies 156 light-years from the Earth.



Zet Sge

RA: 297.25° | 19h 49.0' — DEC: 19.13° | 19° 8'

Magnitude: 5.0 | 8.3

Separation: 8.3"

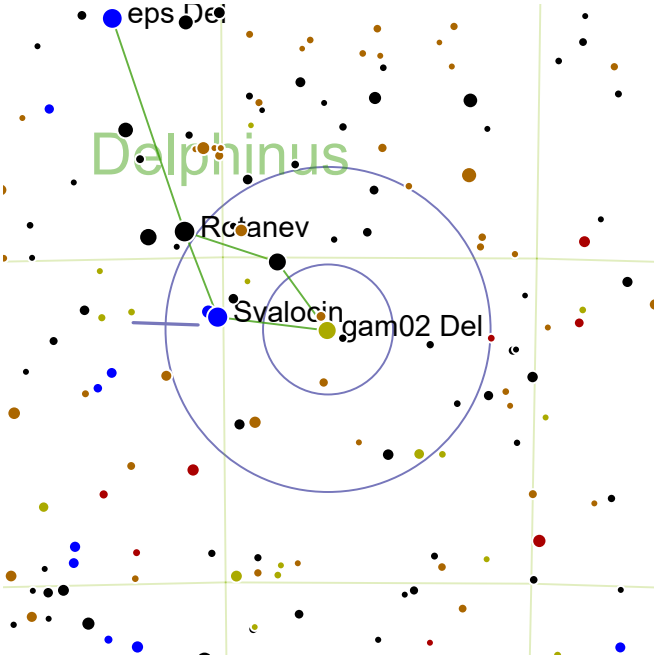
Position Angle: 311°

SAO 105298 | HIP 97496

A bright white star with a relatively dim companion, closely separated.

Less than half a degree NNE from magnitude 3.78 del Sge. Less than half a degree NNE from magnitude 3.78 del Sge.

The white primary is actually an extreme double (a balanced pair with separation 0.19", separation angle 150°).



Gamma Del

RA: 311.68° | 20h 46.7' — DEC: 16.12° | 16° 7'

Magnitude: 4.5 | 5.5

Separation: 9.6"

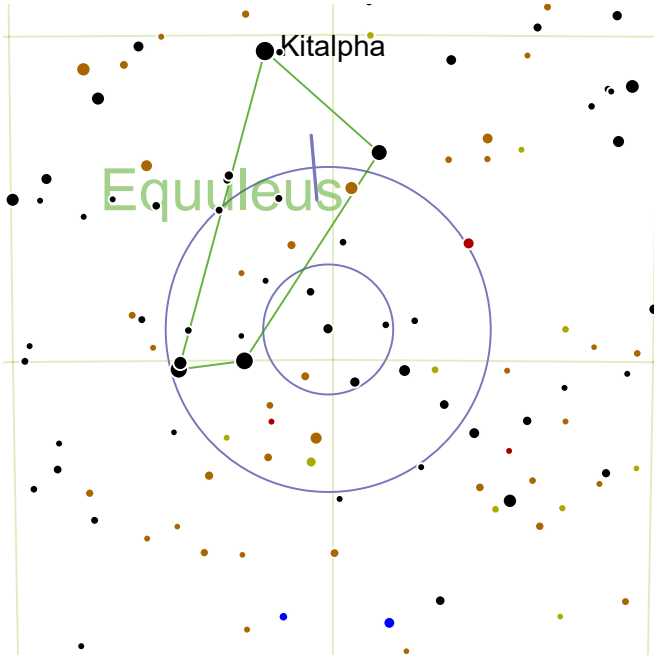
Position Angle: 268°

SAO 106476 | HIP 102532 | GDR2 13341086464

A very bright yellow primary close to a bright blue secondary.

This system is the nose of the (for me) invisible dolphin. It's also very far from any bright signposts. Either wait for a dark night, or first find Lamda Equuleus, and then track two finder circles north.

Some claim to to see a bit of green in the secondary but green is not widely accepted as a possible star color.



Struve 2786

RA: 319.93° | 21h 19.7' — DEC: 9.53° | 9° 32'

Magnitude: 7.2 | 8.3

Separation: 2.5"

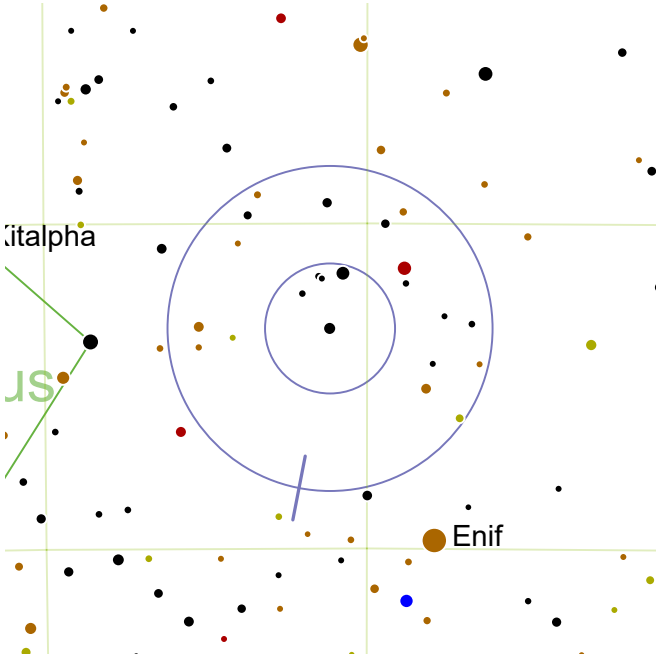
Position Angle: 185°

HIP 105295 | GDR2 99899784320

An extremely close and fairly balanced pair of white stars.

An entry point to many doubles in a dim region of the sky. From magnitude 2.35 Enif in Pegasus, track one and half finder circles west.

From Struve 2786, move one finder circle south west to Lamda Equuleus. From Lamda Equuleus, you can make more challenging hops to 12 Aqr, Epsilon Equuleus, and Gamma Delphinus.



3 Peg

RA: 324.43° | 21h 37.7' — DEC: 6.62° | 6° 37'

Magnitude: 6.2 | 7.5

Separation: 38.7"

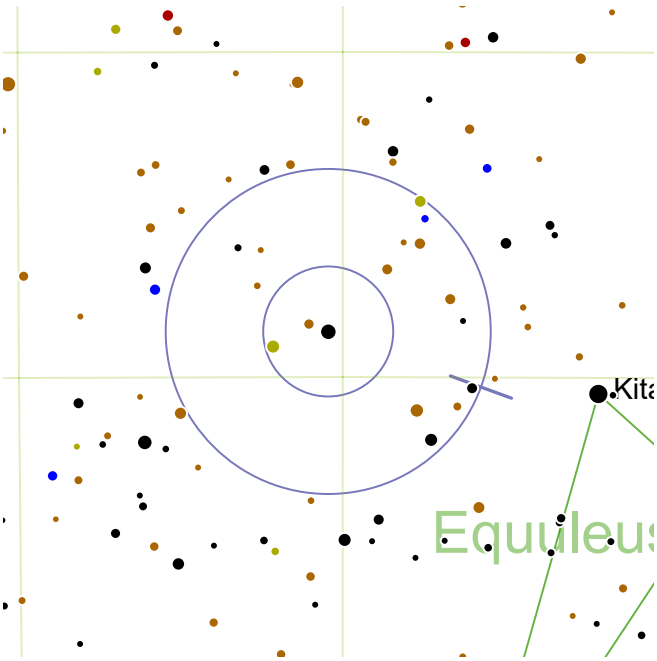
Position Angle: 349°

SAO 126940 | HIP 106783 | GDR2 61831057792

A bright white primary distantly separated from a reasonably apparent yellowish secondary.

Half a finder circle SSW from magnitude 2.54 Enif.

7 Pegasus, a very red giant, is just over a degree south east of this double.



Eps Equ

RA: 314.77° | 20h 59.09' — DEC: 4.3° | 4° 18'

Magnitude: 6.0 | 7.1

Separation: 11"

Position Angle: 70°

SAO 126428 | HIP 103569

A yellow-blue combination with a moderately bright secondary. Easy separation.

Located in a difficult region of the sky, find Lamda Equuleus and track south by half a finder circle.

10 degrees to the south-east of this double is the bright globular cluster Messier 2, while 8 degrees to the north-west is another bright globular cluster, namely Caldwell 47 (NGC 6934).

Acknowledgements

This book would not be possible without the prior work of many others, so I would like to offer my thanks here to a number of my main resources. Sadly there are other resources that I have used over the years to which I also owe thanks but which have become part of the furniture of my mind and have thus been overlooked on the following list.

Jim Kaler has provided rich information on many stars both in published works and also freely through the Internet:

http://stars.astro.illinois.edu/

The Washington Double Star Catalog is the prime resource for detailed data on double stars, and I referred to it via the following queryable online database:

https://www.stelledoppie.it/

Raw data for the Washington Double Star Catalog can be found here:

http://www.astro.gsu.edu/wds/

This is one of the most popular online observing lists for double stars, and got me started with serious double star observing:

http://users.compaqnet.be/doublestars/

The planetarium software Stellarium has been helpful, particularly in selecting double stars that are bright and easily locatable:

http://stellarium.org/

Wikipedia is a phenomenal resource and more trustworthy than many think - but double checking is always advisable, both for Wikipedia and any other online resource!

https://en.wikipedia.org/wiki/Main_Page

The Henry Draper catalog compiled by Annie Jump Cannon is the main resource for star positions in the charts. Some variables and high proper motion star have been manually corrected by me.

https://ui.adsabs.harvard.edu/abs/1993yCat.3135....0C/abstract

The charts would be labelled with incomprehensible Henry Draper numbers without the help of this catalog that cross references Flamsteed and Bayer designations with HD numbers.

https://cdsarc.unistra.fr/viz-bin/cat/IV/27A

In addition to the Bayer and Flamsteed designations, the IAU provides official and usually widely accepted names for a few stars:

https://www.iau.org/public/themes/naming_stars/

The Apache Software Foundation and the Apache FOP contributors provided the PDF and SVG rendering software required for this book. They said FOP 0.96 was dead, but 20 years later it is still going strong. Version 2.6 and counting!

https://xmlgraphics.apache.org/fop/

The World Wide Web Consortium developed the XSL FO and SVG standards used by Apache FOP. In this modern age of the shifting sands of "living standards", I want to give a shout out to good old fashioned standards hammered out by a committee and running to hundreds of pages. The work that went into creating these standards opened up technical publishing technology to the world.

https://www.w3.org/TR/xsl/

https://www.w3.org/TR/SVG2/

The cover image shows 11 and 12 Camelopardalis. The image was taken by David Ritter.

https://en.wikipedia.org/wiki/User:Dritter_wiki

This book received constructive input from the members of Stargazer's Lounge, which brought about many improvements, from diagram colors to indexing of information.

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