

Double Down, Double Trouble, Two for the Money, etc.

An Observing List for Central Texas Star Party, June 11th – 12th 2010

This observing list is laid out in pairs or larger groupings. The paired objects have some relationship to each other. The relationship for some may be tenuous, but for most of the objects, we're talking about proximity, juxtaposition, close-to-each-other-ness. We went looking for interesting objects that could fit together in one telescopic or binocular field. One benefit is you get to examine twice as many objects! Some of these pairs will be hard to fit depending on your rig. In a lot of cases you'll be using low power. Feel free to examine the individual objects with as much mag as you can muster. If you have trouble fitting in a pair, walk on over to your friendly neighbor with the fast f-ratio and wide angle eyepieces and share a gander.

There are a lot of objects here and some won't be visible until the wee hours. If you observe at least 20 pairs, bring your observing notes sheet over to Terry Phillips and we'll take your name down for the observing certificate.

CTSP 2010 Observing List "Double Down, Double Trouble, Two for the Money, Twice as Nice"

| Object | Doppelgänger | AKA | Object Types | Const | Optimum | Fits Inside | Quick Note |
|-------------------|-------------------|-----------------------------------|-------------------|-----------|---------------|-------------|---|
| Venus | Earth | | | Gem | 22:00 | | Observe Venus, then to observe it's twin, look down at your feet. |
| Mars | Antares | Roman and Greek God of War | Planet / Star | Leo / Sco | 22:10 | 98° | Antares - against Ares (Mars) due to similarity in appearance |
| Saturn | NGC 7009 | Saturn Nebula | Planet / PLN | Vir / Aqr | 22:20 / 04:40 | 136° | Observe the planet after sunset, the nebula before sunrise |
| Jupiter | NGC 3242 | Roman Chief Deity and his Ghost | Planet / PLN | Psc / Hya | 04:50 / 22:10 | 150° | Observe the nebula after sunset, the planet before sunrise |
| M 95 | M 96 | | GLX + GLX | Leo | 22:10 | 41' | Pair of 7' mag 10 face-on spirals |
| M 105 | NGC 3384 | | GLX + GLX | Leo | 22:10 | 10' | 5' mag 10 elliptical paired with 5' mag 11 intermediate spiral |
| M 65 | M 66 | 2/3 of the Leo Trio | GLX + GLX | Leo | 22:20 | 23' | 8'x2' mag 10 & 8'x4' Mag 9 spirals. Also mag 10 NGC3628 is within 45' |
| NGC 4387 | M84 & 86 NGC4388 | The Nose in Markarian's Chain | Galaxy Cluster | Vir | 22:20 | 25' | The face at the end of Markairian's Chain + 4438, 4435, 4461, 4458, 4473, 4477 |
| M 60 | NGC 4647 | | GLX + GLX | Vir | 22:20 | 8' | 3' mag 12 NGC4647 overlaps 8' mag 9.8 elliptical M60. Are they interacting? |
| NGC 4567 | NGC 4568 | The Siamese Twins | GLX + GLX | Vir | 22:40 | 3' | Overlapping mag 12 Spirals 3'x2' and 4'x2'. Also mag 12 NGC4564 within 12' |
| M 81 | M 82 | Bode's nebula / Cigar Galaxy | GLX + GLX | UMa | 22:20 | 47' | Bright face-on spiral paired with bright disrupted edge-on spiral |
| M 97 | M 108 | Owl Nebula | PLN + GLX | UMa | | 48' | Mag 10, 5'x2' spiral paired with Mag 11 3' planetary. Challenge add Hickson 50 |
| Kappa Boötes | Iota Boötes | Asellus Tertius / 21 Boo | Pair of Dbl Stars | Boo | 22:30 | 36' | Easily split doubles each pair mag 4 & 7 |
| Izar (A) | Izar (B) | Epsilon Boötes | Double Star | Boo | 22:50 | 3" | Mag 2 primary, mag 5 secondary, 3" separation, Color contrast orange & Blue |
| Nu Scorpius (AB) | Nu Scorpius (CD) | Jabbah the Hot | Quad Star | Sco | 0:20 | 1' | More challenging than Eps Lyra. |
| M 4 | NGC 6144 | | GLB + GLB | Sco | 0:40 | 57' | M4 close globular 36' mag 5 paired with 7.4' mag 9 globular |
| Antares | Antares (B) | Alpha Scorpius | Double Star | Sco | 0:40 | 2.13" | Splittable in 4" or larger when seeing is steady. Companion appears green |
| Rasalgethi (A) | Rasalgethi (B) | Alpha Hercules | Double Star | Her | 1:20 | 4.63" | Like Antares, M type Red Giant with hot blue companion, Easier to split though |
| M13 | NGC 6207 | Keystone Cluster | GLB + GLX | Her | 0:50 | 39' | mag 11.9, 3'x1.3' spiral NE of M13 |
| M9 | NGC 6342 & 6356 | | GLB + GLB + GLB | Oph | 1:30 | 1.1° | Equilateral triangle of globular clusters |
| NGC 6522 | NGC 6528 | | GLB + GLB | Sgr | 2:00 | 24' | Nice pair of globular clusters. Both mag 9, 6528 is 5', 6522 is 10' in a rich field |
| NGC 6633 | IC 4756 | Tweedle Dum and Tweedle Dee | OCL + OCL | Ser / Oph | 2:10 | 3° | Two fine Open Clusters. Use binoculars to capture both in a single field. |
| PK 359-01 | Hubble 5 | Hubble's Double Bubble | Bipolar PLN | Sgr | 2:00 | 19" | Challenge Object mag 13.6, 19" Can you make out the bipolar structure? |
| NGC6441 | JaFu2 | PN G353.5-05.0 | GLB + PLN | Sco | 2:00 | 12' | Globular containing Planetary nebula. Field also contains PLN HE 2-289 |
| HD 164492 (AB) | HD 164492 (DEF) | Trifid Nebula central star (M 20) | Multiple Star | Sgr | 2:10 | 1' | Like trapezium in M42, there are multiple stars to be found in there. |
| Epsilon Lyra (AB) | Epsilon Lyra (CD) | The Double Double | Quad Star | Lyr | 2:50 | 4' | Everyone's favorite quad star |
| HD 178911 | HD 178849 | The Double Double's Double | Pair of Dbl Stars | Lyr | 3:30 | 12' | Similar to Epsilon, but dimmer and more spread out |
| M 57 | IC 1296 | Ring Nebula | PLN + GLX | Lyr | 3:00 | 6' | Faint face-on barred spiral 4' North of the Ring Nebula |
| NGC 6826 | 16 Cygni | Blinking Planetary | PLN + Double Star | Cyg | 3:10 | 28' | Also 2 MCG Galaxies just north of 16 Cyg |
| NGC 7008 | PK 093-5.1 | Egg, Embryo, Fetus, Brain nebula | PLN + PLN | Cyg | 4:30 | 2' | PK 093-5.1 & PK 093-5.2 two Planetaries or one? |
| NGC 7000 | IC 5070 | North American / Pelican | Neb + Neb | Cyg | 4:30 | 2° | Two large diffuse nebula. Filter recommended. |
| Gamma Delphinus | HD 197913 | Nose of the Dolphin | Pair of Dbl Stars | Del | 4:40 | 14' | 9" mag 3 & 5 double paired with 6" mag 7 & 8 double 14' away |
| Jupiter | Uranus | | Planet / Planet | Aqr | 5:00 | 36' - 41' | 36' Saturday morning, 41' Sunday morning |

CTSP 2010 Observing List

Evening of 2010 Jun 11 at Austin, Texas

Sunset 20:35, Twilight ends 22:09, Twilight begins 04:52, Sunrise 06:26, Moon rise 06:26, Moon set 20:10
 Completely dark from 22:09 to 04:52. New Moon. All times local (CDT).

Listing All Classes before 23:59.

| Cls | Primary ID | Alternate ID | Con | RA (Ap) | Dec (Ap) | Mag | Size | SBr | Begin | Optimum | End | Best Difficulty |
|-----|------------------|--------------|-----|-------------|------------|------|--------------|------|-------|---------|-------|-----------------|
| MSS | Venus | | Gem | 07h59m23.7s | +22°38'39" | -4.0 | 14" | | 21:18 | 21:51 | 22:37 | obvious |
| PNe | Ghost of Jupiter | NGC 3242 | Hya | 10h25m16.9s | -18°41'57" | 8.6 | 40" | 16.3 | 21:36 | 21:56 | 22:36 | obvious |
| MSS | Mars | | Leo | 10h19m53.1s | +11°41'20" | 1.2 | 5.7" | | 21:23 | 22:01 | 22:38 | obvious |
| Gal | NGC 3384 | MCG 2-28-12 | Leo | 10h48m50.8s | +12°34'21" | 10.9 | 5.4'x 3.2' | 22.1 | 21:48 | 22:06 | 22:52 | detectable |
| Gal | M 105 | NGC 3379 | Leo | 10h48m23.5s | +12°31'33" | 10.2 | 5.0'x 4.6' | 21.7 | 21:46 | 22:06 | 23:03 | detectable |
| Gal | NGC 3389 | MCG 2-28-13 | Leo | 10h49m01.9s | +12°28'37" | 12.5 | 2.6'x 1.1' | 21.8 | 21:51 | 22:05 | 22:38 | difficult |
| Gal | M 96 | NGC 3368 | Leo | 10h47m19.6s | +11°45'50" | 10.1 | 7.6'x 5.0' | 22.2 | 21:48 | 22:06 | 22:55 | detectable |
| Gal | M 95 | NGC 3351 | Leo | 10h44m31.6s | +11°38'52" | 10.6 | 7.1'x 4.3' | 22.4 | 21:49 | 22:05 | 22:46 | detectable |
| MSS | Saturn | | Vir | 11h56m19.1s | +02°59'57" | 1.0 | 18"x 16" | | 21:21 | 22:05 | 23:53 | obvious |
| Gal | M 65 | NGC 3623 | Leo | 11h19m29.4s | +13°02'03" | 10.1 | 8.1'x 2.1' | 21.3 | 21:46 | 22:08 | 23:18 | detectable |
| Gal | M 66 | NGC 3627 | Leo | 11h20m48.6s | +12°56'01" | 9.7 | 8.9'x 4.0' | 21.7 | 21:47 | 22:08 | 23:20 | detectable |
| Gal | Cigar Galaxy | M 82 | UMa | 09h56m44.2s | +69°38'00" | 9.0 | 9.3'x 4.4' | 21.2 | 21:49 | 22:12 | 23:45 | easy |
| Gal | Bode's Galaxy | M 81 | UMa | 09h56m24.3s | +69°01'09" | 7.8 | 21.9'x 10.5' | 21.8 | 21:49 | 22:12 | 23:43 | easy |
| Gal | M 108 | NGC 3556 | UMa | 11h12m08.5s | +55°37'12" | 10.7 | 5.4'x 1.9' | 21.3 | 21:49 | 22:12 | 00:00 | detectable |
| PNe | Owl Nebula | M 97 | UMa | 11h15m24.9s | +54°57'53" | 11.0 | 3.4' | 22.3 | 21:56 | 22:12 | 23:02 | difficult |
| Gal | NGC 4458 | MCG 2-32-82 | Vir | 12h29m30.7s | +13°11'00" | 12.9 | 1.6'x 1.5' | 22.0 | 21:50 | 22:12 | 23:31 | difficult |
| Gal | NGC 4387 | MCG 2-32-39 | Vir | 12h26m14.8s | +12°45'06" | 13.0 | 1.7'x 1.0' | 21.7 | 21:49 | 22:11 | 23:30 | difficult |
| Gal | NGC 4388 | MCG 2-32-41 | Vir | 12h26m20.0s | +12°36'12" | 11.9 | 5.5'x 1.4' | 22.2 | 21:51 | 22:11 | 23:21 | difficult |
| Gal | NGC 4461 | MCG 2-32-84 | Vir | 12h29m36.1s | +13°07'31" | 11.9 | 3.7'x 1.6' | 22.0 | 21:50 | 22:12 | 23:35 | detectable |
| Gal | NGC 4435 | Arp 120 | Vir | 12h28m13.6s | +13°01'13" | 11.5 | 3.0'x 2.0' | 21.6 | 21:47 | 22:12 | 23:56 | detectable |
| Gal | NGC 4438 | Arp 120 | Vir | 12h28m19.0s | +12°57'01" | 10.9 | 8.9'x 5.1' | 23.2 | 21:52 | 22:12 | 23:19 | difficult |
| Gal | M 86 | NGC 4406 | Vir | 12h26m45.3s | +12°53'13" | 9.8 | 10.0'x 7.4' | 22.6 | 21:48 | 22:12 | 23:48 | detectable |
| Gal | M 84 | NGC 4374 | Vir | 12h25m37.1s | +12°49'41" | 10.1 | 6.3'x 5.5' | 22.1 | 21:46 | 22:12 | 23:59 | detectable |
| Gal | NGC 4647 | Arp 116 | Vir | 12h44m05.6s | +11°31'27" | 12.1 | 2.8'x 2.3' | 22.3 | 21:49 | 22:13 | 23:44 | detectable |

| Cls | Primary ID | Alternate ID | Con | RA (Ap) | Dec (Ap) | Mag | Size | SBr | Begin | Optimum | End | Best Difficulty |
|------|---------------------|----------------|-----|-------------|------------|------|-------------|------|-------|---------|-------|------------------|
| Gal | M 60 | NGC 4649 | Vir | 12h44m13.1s | +11°29'40" | 9.8 | 7.4'x 6.3' | 22.1 | 21:46 | 22:13 | 00:12 | detectable |
| Gal | Siamese Twins | NGC 4568 | Vir | 12h37m07.4s | +11°10'48" | 11.7 | 4.4'x 2.3' | 22.4 | 21:50 | 22:12 | 23:35 | detectable |
| Doub | Kappa 1 Boo | 17 Boo | Boo | 14h13m52.5s | +51°44'26" | 6.6 | | | 21:34 | 22:31 | 03:37 | obvious |
| DVar | Iota Boo | 21 Boo | Boo | 14h16m34.4s | +51°19'14" | 4.8 | | | 21:32 | 22:33 | 03:39 | obvious |
| Doub | Izar | Epsilon Boo | Boo | 14h45m28.6s | +27°01'49" | 2.4 | | | 21:22 | 22:55 | 03:32 | obvious |
| Doub | Jabbah | Nu Sco | Sco | 16h12m38.7s | -19°29'21" | 4.0 | | | 22:02 | 00:22 | 02:41 | obvious |
| Glob | M 4 | NGC 6121 | Sco | 16h24m17.1s | -26°33'03" | 5.4 | 36.0' | | 23:13 | 00:33 | 01:55 | detectable |
| Glob | NGC 6144 | | Sco | 16h27m55.0s | -26°02'47" | 9.0 | 7.4' | | 23:10 | 00:37 | 02:03 | difficult |
| DVar | Antares | Alpha Sco | Sco | 16h30m05.6s | -26°27'23" | 1.0 | | | 23:18 | 00:39 | 02:01 | obvious |
| Glob | Keystone Cluster | M 13 | Her | 16h42m05.8s | +36°26'24" | 5.8 | 20.0' | | 21:50 | 00:51 | 04:54 | easy |
| Gal | NGC 6207 | MCG 6-37-7 | Her | 16h43m28.4s | +36°48'46" | 11.9 | 2.9'x 1.3' | 21.5 | 21:55 | 00:52 | 04:19 | detectable |
| Doub | Rasalgethi | Alpha 1 Her | Her | 17h15m09.7s | +14°22'41" | 3.1 | | | 21:26 | 01:25 | 05:35 | obvious |
| Glob | M 9 | NGC 6333 | Oph | 17h19m51.3s | -18°31'41" | 7.8 | 12.0' | | 23:26 | 01:29 | 03:31 | detectable |
| Glob | NGC 6342 | | Oph | 17h21m49.6s | -19°35'51" | 9.5 | 4.4' | | 23:28 | 01:31 | 03:34 | detectable |
| Glob | NGC 6356 | | Oph | 17h24m14.1s | -17°49'25" | 8.2 | 10.0' | | 23:27 | 01:33 | 03:40 | detectable |
| PNe | Hubble's Double Bub | He 2-286 | Sgr | 17h48m39.1s | -29°59'55" | 13.6 | 19" | 19.7 | 23:29 | 01:58 | 04:25 | challenging |
| Glob | NGC 6441 | | Sco | 17h50m58.6s | -37°03'16" | 7.2 | 9.6' | | 00:23 | 02:00 | 03:36 | detectable |
| PNe | PN G353.5-05.0 | PNG 353.5-05.0 | Sco | 17h50m56.7s | -37°03'37" | | | | 00:19 | 02:00 | 03:40 | unknown |
| DVar | HD 164492 | SAO 186145 | Sgr | 18h03m04.2s | -23°01'50" | 7.2 | | | 00:18 | 02:11 | 04:07 | obvious |
| Glob | NGC 6522 | | Sgr | 18h04m18.0s | -30°02'03" | 9.9 | 9.4' | | 23:52 | 02:14 | 04:35 | very challenging |
| Glob | NGC 6528 | | Sgr | 18h05m32.0s | -30°03'20" | 9.6 | 5.0' | | 00:51 | 02:15 | 03:36 | difficult |
| Open | NGC 6633 | Collinder 380 | Oph | 18h27m47.8s | +06°30'52" | 5.6 | 20.0' | | 23:00 | 02:36 | 05:15 | easy |
| Open | IC 4756 | Collinder 386 | Ser | 18h39m33.0s | +05°27'33" | 5.4 | 39.0' | | 23:32 | 02:48 | 05:12 | easy |
| Doub | Epsilon 1 Lyr | 4 Lyr | Lyr | 18h44m43.4s | +39°40'48" | 4.7 | | | 21:57 | 02:54 | 05:36 | obvious |
| PNe | Ring Nebula | M 57 | Lyr | 18h54m00.6s | +33°02'29" | 9.4 | 1.4' | 18.8 | 22:43 | 03:03 | 05:17 | easy |
| Gal | IC 1296 | MCG 6-41-22 | Lyr | 18h53m44.3s | +33°04'43" | 15.3 | 1.0'x 0.6' | 22.9 | 22:45 | 03:03 | 05:19 | not visible |
| Doub | HR 7272 | HD 178911 | Lyr | 19h09m29.5s | +34°37'00" | 6.7 | | | 22:28 | 03:18 | 05:28 | obvious |
| Doub | HD 178849 | SAO 67870 | Lyr | 19h09m10.2s | +34°46'34" | 7.0 | | | 22:28 | 03:18 | 05:26 | obvious |
| Doub | 16 Cyg | HR 7503 | Cyg | 19h42m07.9s | +50°32'51" | 5.9 | | | 22:38 | 03:50 | 05:29 | obvious |
| PNe | Blinking Planetary | NGC 6826 | Cyg | 19h45m07.3s | +50°32'55" | 8.8 | 27" | 15.7 | 22:41 | 03:53 | 05:24 | obvious |
| PNe | NGC 7008 | PN G093.4+05.4 | Cyg | 21h00m52.6s | +54°34'54" | 12.0 | 1.4' | 21.4 | 02:15 | 04:38 | 05:07 | difficult |
| Neb | Pelican Nebula | IC 5070 | Cyg | 20h51m29.9s | +44°29'23" | 8.0 | 30.0'x 8.0' | | 02:59 | 04:37 | 05:04 | challenging |

| <u>Cls</u> | <u>Primary ID</u> | <u>Alternate ID</u> | <u>Con</u> | <u>RA (Ap)</u> | <u>Dec (Ap)</u> | <u>Mag</u> | <u>Size</u> | <u>SBr</u> | <u>Begin</u> | <u>Optimum</u> | <u>End</u> | <u>Best Difficulty</u> |
|------------|---------------------|---------------------|------------|----------------|-----------------|------------|-------------|------------|--------------|----------------|------------|------------------------|
| Neb | North American Nebu | NGC 7000 | Cyg | 20h58m54.2s | +44°24'46" | 4.0 | 120.0' | | 02:30 | 04:39 ■ | 05:08 | difficult |
| Doub | Gamma 1 Del | 12 Del | Del | 20h47m09.7s | +16°09'42" | 5.2 | | | 00:38 | 04:39 ■ | 05:31 | obvious |
| Doub | HD 197913 | PPM 138981 | Del | 20h46m44.3s | +15°56'44" | 7.1 | | | 00:40 | 04:41 ■ | 05:34 | obvious |
| PNe | Saturn Nebula | NGC 7009 | Aqr | 21h04m46.8s | -11°19'12" | 8.3 | 28" | 15.3 | 02:13 | 04:46 ■ | 05:26 | obvious |
| MSS | Uranus | | Psc | 00h02m33.5s | -00°32'09" | 5.9 | 3.5" | | 04:34 | 05:01 ■ | 05:34 | obvious |
| MSS | Jupiter | | Psc | 00h04m48.6s | -00°47'04" | -2.4 | 39"x 37" | | 04:37 | 05:02 ■ | 05:44 | obvious |

| Object | Dopplegänger | Notes | Observed Date/Time |
|------------------|------------------|---|--------------------|
| Venus | Earth | Twins based on size and location only. Surface conditions are vastly different. However, imagine a planetary conjunction between Earth and Venus seen under ideal conditions from the surface of Mars. They would make an impressive pair. | |
| Mars | Antares | Romans say Mars, Greeks say Ares for the god of war. The name Antares practically means "compare me to mars." The compare quite well tonight. Antares edges out Mars on brightness (mag 1.02 vs 1.22). Color wise they are close. Of course Mars's orange color comes from having a rusty surface while Antares is orange because its surface is 3.500K | |
| Saturn | NGC 7009 | Every 30 years or so, these bodies can come within about 5 degrees of each other. Currently they're on opposite ends of the zodiac. The nebula is a fine sight at Mag 8.0 with a bright mag 11 central star. It's only about 25" so high power is helpful if seeing permits - there is a good deal of internal structure. It's the equatorial "ansae" that make it look like our 6th planet. | |
| Jupiter | NGC 3242 | The ghost is 26° from the ecliptic and also pretty much opposite it's namesake. But it is a fine planetary worth seeking out. About 40" across, Mag 8.6, the central star at 13.3 is usually detectable if not obvious. Strong blue-green color. An outer halo can be seen in larger scopes under excellent conditions. | |
| M 95 | M 96 | Very well matched pair of nearly face on spirals. Both around mag 10 with similar surface brightness. These galaxies are in an association with about a dozen other galaxies including M105. The group is slightly over 30 million ly distant. You'll need about 3/4 degree true field to capture both. | |
| M 105 | NGC 3384 | M 105 lies about 48' from M 96. A field of 1.25° will net you all three M's in this cluster. M 105 forms a tight 12' triangle with NGC 3384 and NGC 3389. It will probably take an 8" scope to detect 3389. M 105 is a prototypical large elliptical. It has probably dined on many of its neighbors. It is belived to harbor a 50 million solar mass central black hole. | |
| M 65 | M 66 | M 65 & 66 are about the same size and brightness as M 95 & 96, but they are only half as far apart in angular separation and are oriented quite a bit more edge on. Both yield a fair amount of internal structure in larger scopes. NGC 3628 lies about 30' frpm the pair. It's even larger and more edge on with a prominate dust lane, but due to lower overall surface brightness, somewhat harder to detect in smaller scopes. | |
| NGC 4387 | M84 & 86 NGC4388 | Here we are in the heart of the Virgo cluster. If M84 and M86 are a pair of eyes, NGC 4388 is a thin lipped mouth, then NGC 4387 makes a good nose for this face. A pleathora of smaller galaxies down to the limits of your scope buzz around. A chain of brighter galaxies streams off to the NE upt to M88 and M91 lying 3° from the nose. M87 lies only 1.2° SE from the nose and M91 about a degree E of M87. All of the M galaxies are prominent mag 9 or 10 objects. | |
| M 60 | NGC 4647 | M60 lies about 4 degrees SE of the face in Markiarn's chain. This is another large elliptical mag 9.8. Overlapping it's outer regions is the face on spiral NGC4647. The galaxies do not appear to be interacting so probably lie at different distances. Can you make out which one lies in the foreground? | |
| NGC 4567 | NGC 4568 | This is a pair of spiral galaxies from the Virgo cluster that are definitely interacting as you'd expect from the Siamese Twins. These are ~ 3' long intermediate galaxies at ~ mag 12. NGC 4564 also mag 12 lies 10' N of the pair. | |
| M 81 | M 82 | Here are the brightest two galaxies on tonight's list. M81 shows some spiral structure in larger scopes. M82 show its mottled disrupted nature in almost any scope. The two are performing a gravitational tango similar to that between the Milky Way and Andromeda although perhaps a bit further along. M82 looks like it's having trouble digesting their last pass. | |
| M 97 | M 108 | Now we pair up some radically different objects - A large very diffuse Planetary nebula with a distant mostly edge on spiral galaxy about 48' apart. Seeing the eyes in the Owl nebula usually requires the help of a good filter, but this would tend to extinguish the galaxy. | |
| Kappa Boötes | Iota Boötes | Enough with the galaxies. Here is a pair of easily split double stars that fit within a 35' field. Both primaries are about mag 4 with mag 6-7 secondaries. There is subtle but interesting color contrasts with each pair being white with orange with the orange stars on opposite sides in each pair. | |
| Izar (A) | Izar (B) | Epsilon Boo. This is a lovely mag 2 & 4 pair with interesting color contrast. They are a bit tight at under 3" so will take over 100X for a complete split. | |
| Nu Scorpius (AB) | Nu Scorpius (CD) | If you find Epsilon Lyra to be too easy, here is a more challenging quad star on the upper claw of Scorpio. The two pair are separated by ~40" with the AB separation of 1.3 and the CD at 2.4, it will take good seeing and high power to cleanly split the AB pair. | |

| | | | |
|--------------------------|----------------------------|--|--|
| M 4 | NGC 6144 | These clusters are not well matched The centers of these two globulars are 57' apart so it may be difficult to get the entirety of both in one field. NGC 6144 is over three times more distant than M4 which is one of the closest globs. M4 is a large sprawling globular while 6144 is quite compact and responds well to high power. | |
| Antares | Antares (B) | While in the neighborhood of M4 & NGC 6144, you should always take the time to see if the night is steady enough to permit splitting Antares. With only 2.13" separation and 6 mag brightness difference, it requires a pretty good night to see the companion. When visible however, the contrast is startling. Most observers see the companion as green next to the orange brilliance of the primary. | |
| Rasalgethi (A) | Rasalgethi (B) | Here we have a situation very similar to Antares -- An immense red giant primary with a much hotter, smaller companion. The separation here though is almost 5" so that one is almost always able to get a clean split. The brightness contrast is not as pronounced as that of Antares, but still the primary tends to make the companion appear greenish. | |
| M13 | NGC 6207 | This small galaxy makes a nice contrast with the huge globular. NGC 6207 is 27" NE of the center of M13. If you have trouble locating it, There are two 7 mag field stars in front of M13, one blue and one orange. The galaxy is 15 N of the orange field star. | |
| M9 | NGC 6342 & 6356 | Actually, while both the smaller globulars are within 1.1° of M9, they are almost 2° from each other, so the best chance of nailing all three together would be with a fast refractor that has enough light grasp to pull in mag 9.5 NGC 6242. The relative distances are 26, 36, & 130 thousand ly. So this is a good illustration of what large distances do to the appearances of globulars. | |
| NGC 6522 | NGC 6528 | A nicely matched pair of Globular clusters located less than a degree NW of Nash (Gamma 2 Sgr) the tip of the teapot's spout. The cluster centers are only 16' apart. NGC 6528 is only half the size and twice as far removed as NGC 6522, but the mag are similar, and the clusters look more like twins than their numbers suggest. They are a fine site. If you like you can also probably maneuver γ_1 γ_2 sgr into the field to contrast 4th mag stars with the cluster's dim stars. | |
| NGC 6633 | IC 4756 | Two fine open clusters both of similar age IC 4750 is larger and about 400 ly further away at ~ 1600 ly. 4570 is sometimes called the Summer Beehive. It's seen against the Milky Way therefore perhaps not as well known. Use binoculars to catch both clusters in one field, then enjoy each in detail through your main scope. | |
| PK 359-01 | Hubble 5 | The Hubble Double Bubble Planetary is only mag 13 and 19", so this is a challenge object for most of us. High magnification should show its bipolar structure. With a name like that it had to be included on this list. For an actual Hubble image see http://apod.nasa.gov/apod/ap980119.html | |
| NGC6441 | JaFu2 | Find the planetary needle in the globular haystack. AKA PNG 353.5-05.0 This is also a challenge object, one of only 4 known planetaries inside a globular. Here is the detailed challenge page: http://www.blackskies.org/JaFu_challenge.htm | |
| HD 164492 (AB) | HD 164492 (DEF) | This 7 member multiple is the star that ionizes the Trifid Nebula (M20) Depending on seeing, it is not too difficult for larger scopes to split this into a nice quad star. Can it be done in a 12"? If you can't don't worry, the Trifid is always a pleasure to behold by itself. A Hubble image of the star(s) can be found in the article at http://iopscience.iop.org/1538-3881/130/3/1171/fulltext | |
| Epsilon Lyra (AB) | Epsilon Lyra (CD) | Our favorite double double for public star parties, or for testing seeing conditions. Easily found as a wide double 1.5° NE of Vega. Pair 1 are mag 4.7 & 6.2 separated by 2.6". 3.5' away are pair 2, mag 5.1 and 5.5 separated by 2.3" The orientation of the two pairs are almost perpendicular. | |
| HD 178911 | HD 178849 | Only 7°SE of Epsilon Lyra, lies a similar "quad" dubbed the double double's double. Not as bright and with larger separations and probably not gravitationally bound, This seems a pale imitation. What do you think? | |
| M 57 | IC 1296 | 4' NE of the Ring, IC 1296 is a fairly challenging object. Look for a 1' elongated smudge of light surrounding a bright, starlike core. This core should be visible in modest sized instruments, but seeing the surrounding haze is much more difficult. You will need a clear, dark, and steady night with Lyra high in the sky. | |
| NGC 6826 | 16 Cygni | A closely matched pair of mag 6 stars separated by 40" lies 28' due W of the Blinking Planetary which is only 26" and mag 8.8 itself. A magnification that permits both in the field, might not show much detail on the planetary which likes high powers. Averted vision is used to make the nebula blink, but this may be impossible with the blazing double in the field. | |
| NGC 7008 | PK 093-5.1 | NGC 7008 is aka PK 093-5.2. Skytools shows PK 093-5.1 nearby. Is it really there? Rumors of a background planetary have persisted since I was first shown this object. Reference to the latest edition of the PK catalog will clear up the mystery. Regardless, 7008 is a very interesting planetary. Several names have been applied to this object with no clear consensus. I can no longer look at it without seeing a brain. Imagine the mag 9 double star on the edge of the nebula is a pair of eyes with the crenulated nebula rising up behind if looks very brain-like. | |

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| NGC 7000 | IC 5070 | Two large sweeping diffuse nebula 2° E of Deneb. A nebular filter is usually required to make them stand out. Both actually resemble their namesakes. The Pelican lies off the NE coast of the North American, staring balefully at the continent. The North American alone would fill a 2° x 2° rectangle, so you have to sweep over it to appreciate it. A wide filed eyepiece however should allow you to squeeze in at least the east cost with the Pelican. | |
| Gamma Delphinus | HD 197913 | Gamma Del is the nose of the dolphin a fine matched double. 14' South lies the mag 7 & 8 pair HD 197913. Both doubles are fairly wide, so it should be possible to split both together in a medium power eyepiece. | |
| Jupiter | Uranus | On the morning of 12 Jun, Jupiter's moons will be lined up with Callisto, Ganymede, and Eurpoa leading and Io trailing. Europa will be right on top of the mag 15 galaxy MGC 0-1-23. Uranus will be mag 5.8, 3.5" lying 37' NW of Jupiter. Ariel, Umbriel, and Oberon will be stacked N of Uranus at 10", 17" and 36" from the planet. Titania will be 10" SE. These moons are all mag 14-15. | |