Oregon Star Party Level 3 / Advanced Observing List

2023

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Welcome back!

Each of the objects on this list has its own page itemizing what it is, why it's interesting to observe, and the criteria for a successful observation. Also included are the constellation of each object, coordinates, and a photo showing what the object looks like - all you have to do is find, observe, and record your observations. I hope you enjoy the challenge.

Note – you will need your own detailed finder charts for these objects. Paper or computer charts are equally acceptable. *You'll also need to research some of this year's objects to be sure you're observing exactly what's being asked for.*

Star hopping, push-to and goto are all appropriate ways to find these objects.

Stretch your skill and imagination - see something new, something unimaginably old, something unexpected

- Even though this is a challenging list, you don't need twenty years of observing experience or a 20-inch telescope to successfully observe ten of these objects. The only way to know if you can see these objects is to have a look for yourself.
- The visibility of each object assumes dark, transparent, steady and non-smoky OSP observing conditions.

Requirements to receive a certificate

1. **To receive the observing certificate, you need to have descriptive notes and/or sketches that clearly show you observed any ten (10) of the objects on this year's list**.
2. Simply noting that you saw ten objects doesn't count.
3. Observers who successfully observe ten objects also receive a cool observing pin.

Cygnus Loop = Veil Nebula

What is it? A supernova remnant.

Why you want to see it: The Cygnus Loop / Veil Nebula is the result of a supernova shockwave slamming into existing interstellar dust and gas clouds with so much force that the dust is being destroyed. This process produces a lot of light in the OIII wavelength of 500.7nm, which is why an OIII filter works so well on this object. Amazingly, the shockwave started to reach these interstellar dust and gas clouds less than 1000 years ago.

Cygnus and Vulpecula: RA 20 51 18, Dec +30 58 34 (center of the Cygnus Loop)

Observe any three of these portions of the Cygnus Loop:

1. The faint patches of nebulosity that continue the overall curve of NGC 6960 south toward the Southern Blowout Region.
2. Full length of ~~Pickering's~~ Fleming's Triangle – follow the tail as it gets thinner and thinner as it flows southward.
3. NGC's 6974 and 6979 and full length of the Fourth Veil – the northern portion is pretty bright, and the rest is quite faint.
4. The eastern arc of the Southern Blowout Region – this portion of the Loop is in Vulpecula.
5. Southeastern Knot – the supernova shockwave has just started to reach this interstellar dust and gas cloud.

Extra tip – if you have a short focus telescope, observe the complete Cygnus Loop in one field of view with an OIII filter. You'll need a true field of view of at least 3.5 degrees.

Minkowski's Footprint, M 1-92

What is it? A protoplanetary nebula

Why you want to see it: Not only does this small protoplanetary nebula have a cool shape that's readily apparent during steady seeing, it's only about 1200 years old. At low power it may look like a slightly out of focus star

Cygnus: RA 19 38 18, Dec +29 33 00

Magnitude 11.7

Observe both lobes of the "footprint".

M16's Pillars of Creation

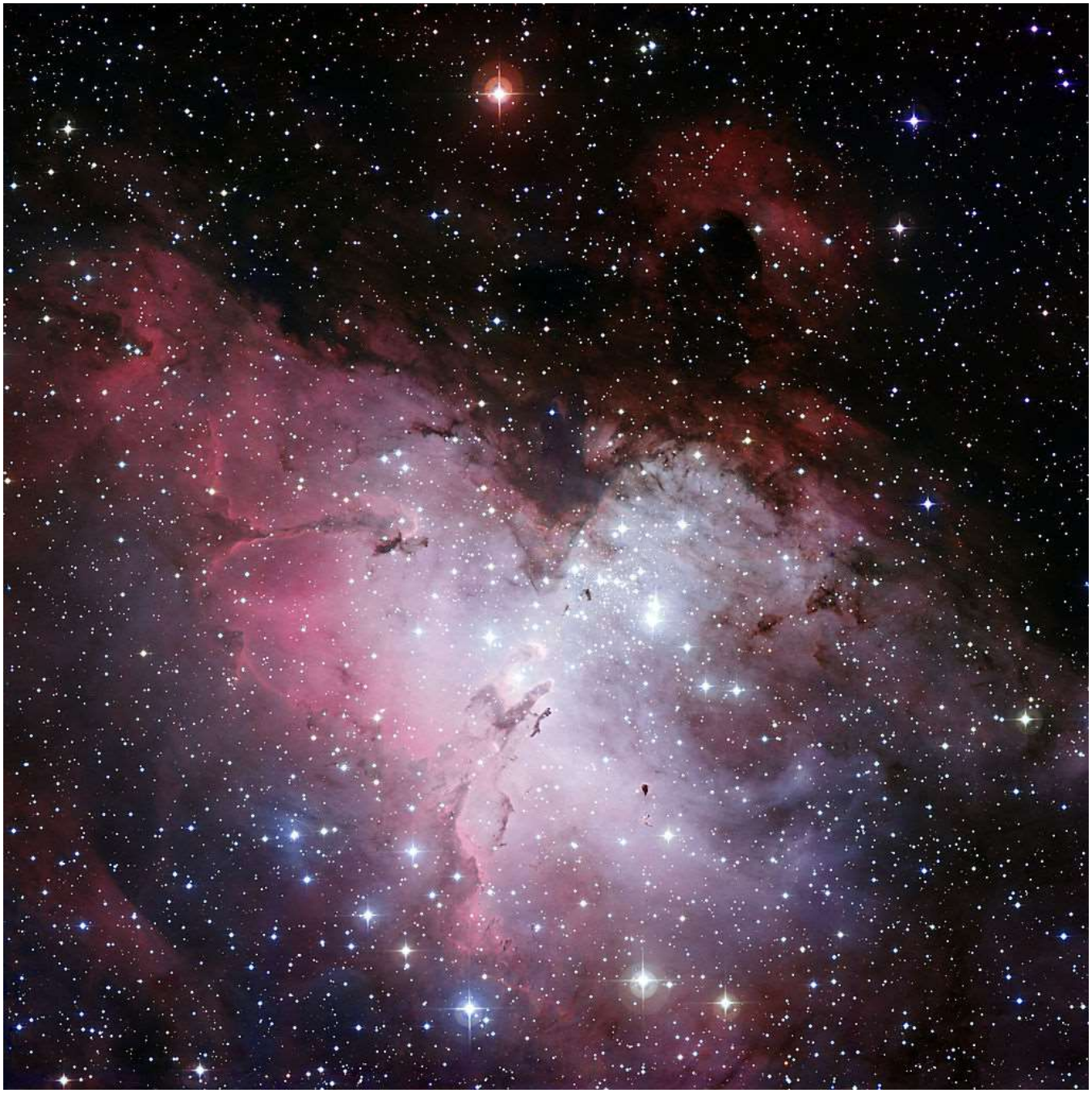
What is it? Star formation region.

Why you want to see it: Made famous by the Hubble Space Telescope (HST) image, the pillars are areas of active star formation. Also, it fun to observe an object imaged by the HST.

Serpens: RA 18 18 43, Dec -13 48 00

Magnitude 6.0

Observe the dark silhouettes of the Pillars of Creation, and the Black Spire to their northeast.



NGC 523, Arp 158

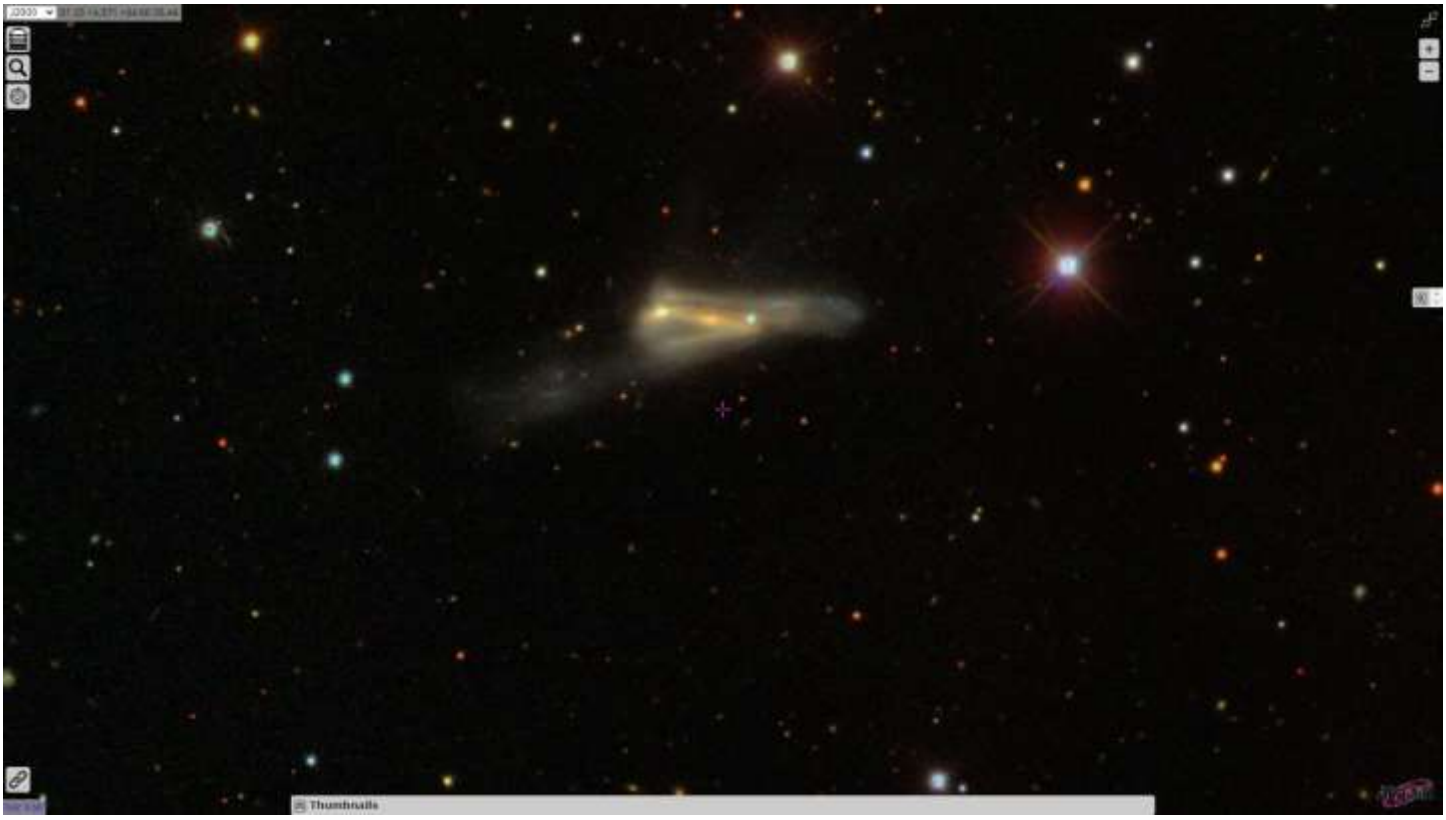
What is it? A late-stage triple galaxy merger.

Why you want to see it: Three galaxies are the final stages of merging into one galaxy is a rare sight!

Andromeda: RA 01 25 20, Dec +34 01 28

Magnitude 14.5

Observe the merger plus the tidal tail.



NGC 67-72, Arp 113

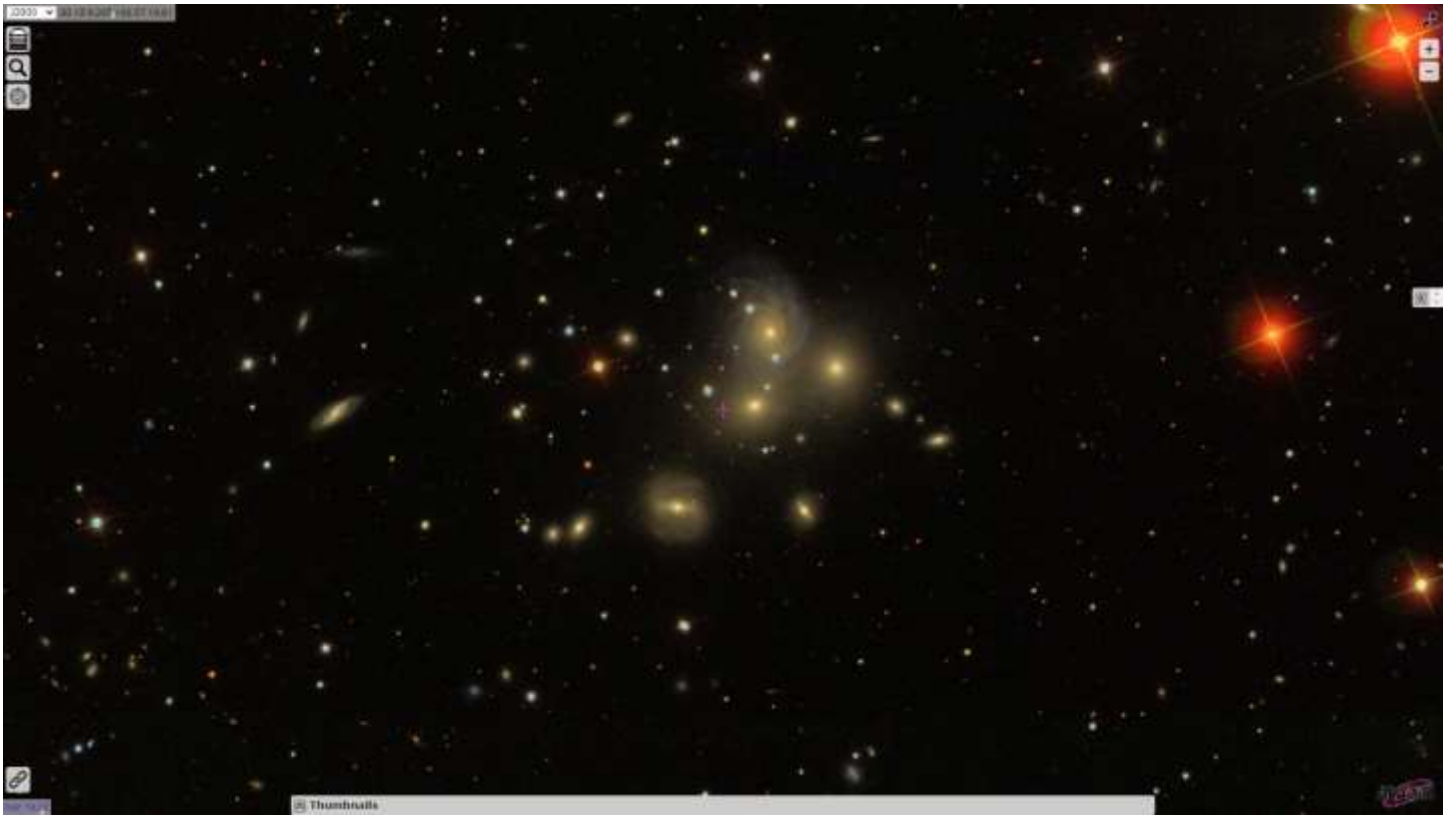
What is it? A tightly bunched Galaxy cluster.

Why you want to see it: This galaxy cluster is not only tightly bunched, it's also rather bright as these things go.

Andromeda: RA 00 18 15, Dec +30 03 48

Brightest galaxy magnitude 13.4 (NGC 72)

Observe any ten galaxies within this galaxy cluster.



ESO 456-38

What is it? Highly obscured globular cluster near NGC 6520/B86.

Why you want to see it: Although ESO 456-38 looks like a faint knot of stars buried in Milky Way stardust, the extra treat of nearby NGC 6520 and B86 make this an unforgettable sight.

Sagittarius: RA 18 01 49, Dec -27 49 33

No listed magnitude

See the faint glow of the globular within the dense Milky Way starfield.

Nova Nebula in M22

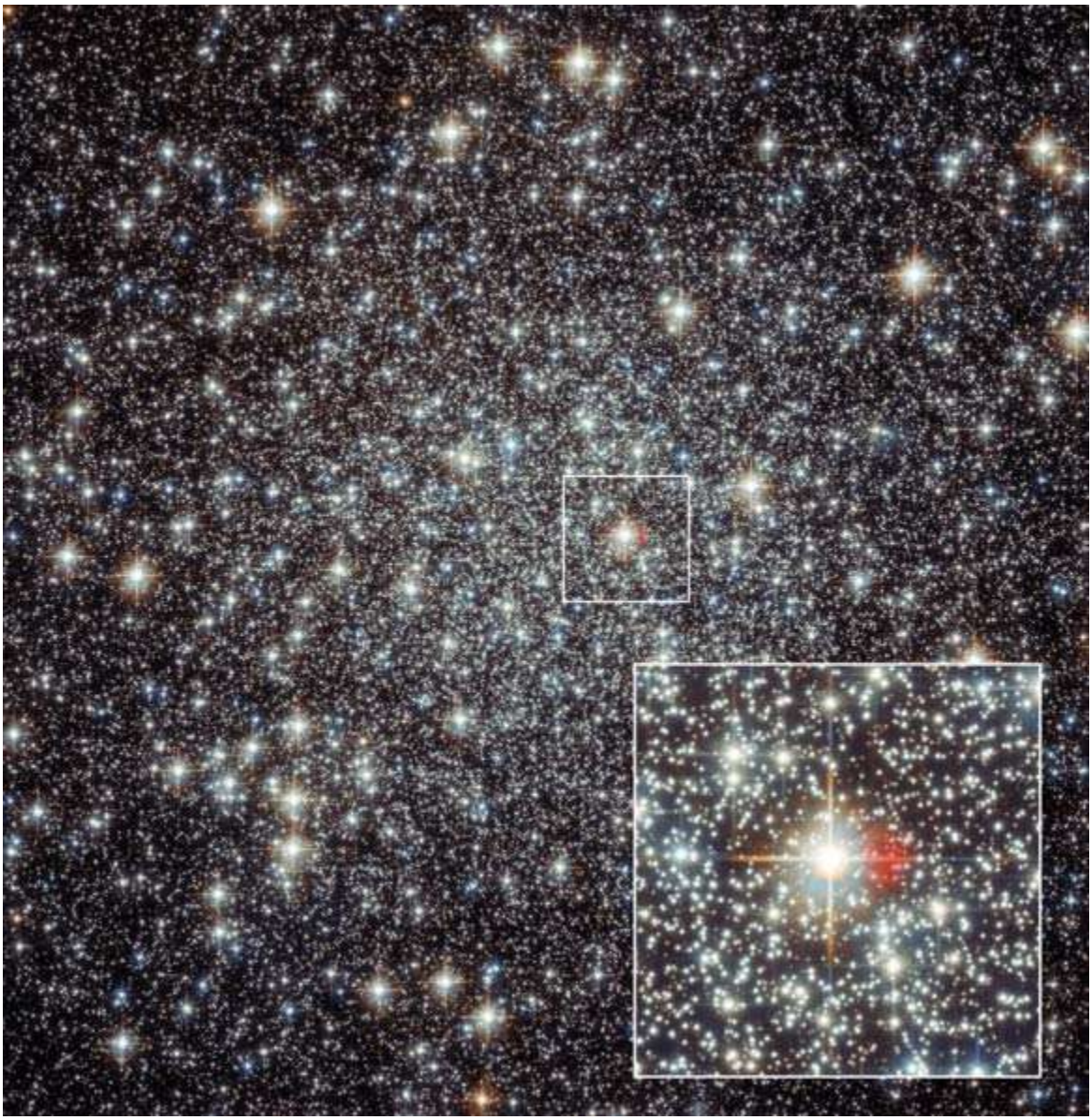
What is it? A newly discovered nebula created by a nova within M22

Why you want to see it: You'll probably be the first person to see it visually through a telescope! Finding the exact position of the nova nebula is much easier though.

Sagittarius: RA 18 36 26, Dec -23 54 35

No magnitude

Find the exact location of the nebula.



NGC 6745, the Bird Galaxy

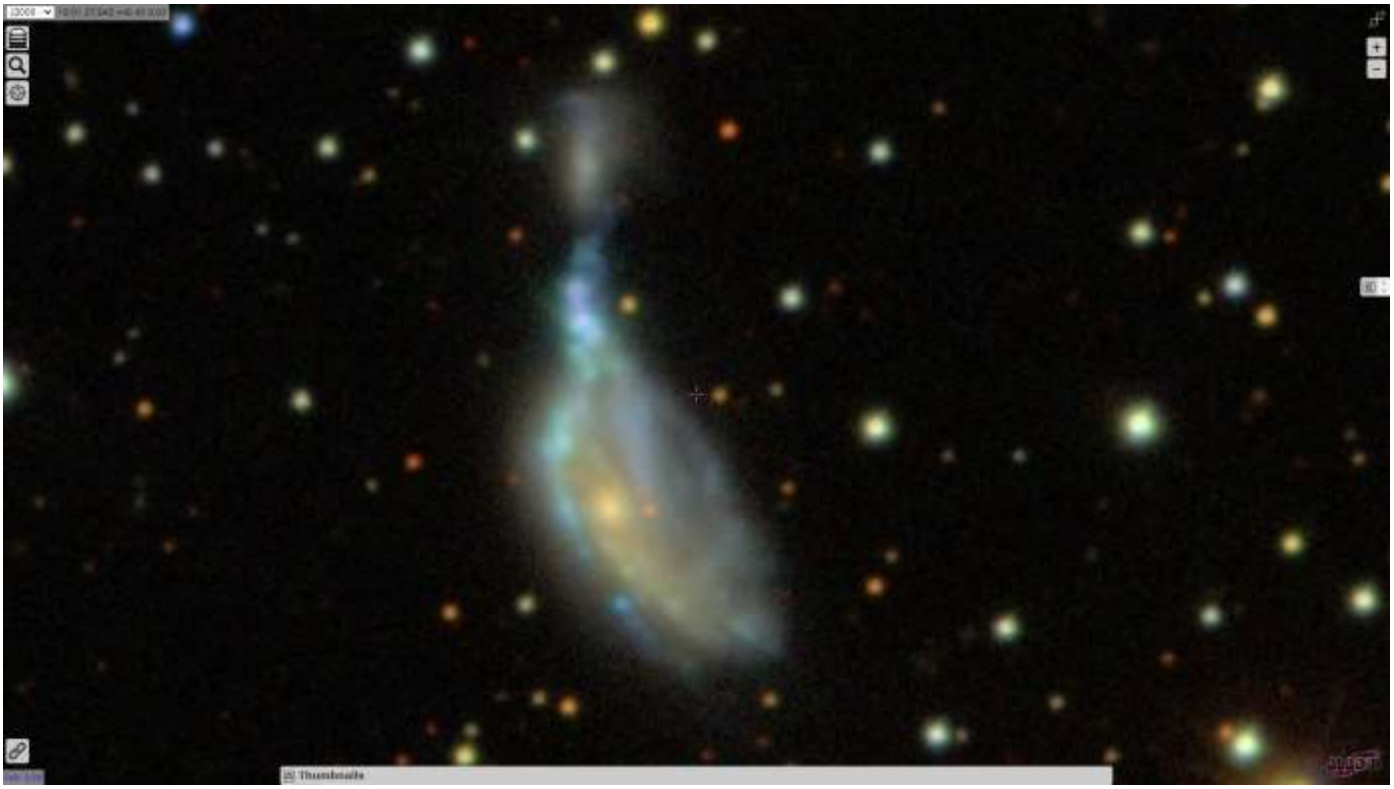
What is it? Wait a minute – this is another triple galaxy merger!

Why you want to see it: It's easier to see the three galaxies that are merging, plus the shape is somewhat evocative of a bird.

Lyra: RA 19 01 41, Dec +40 44 37

Magnitude 13.3

Observe the main galaxy clump, and the faint extension off its northern tip.



M57

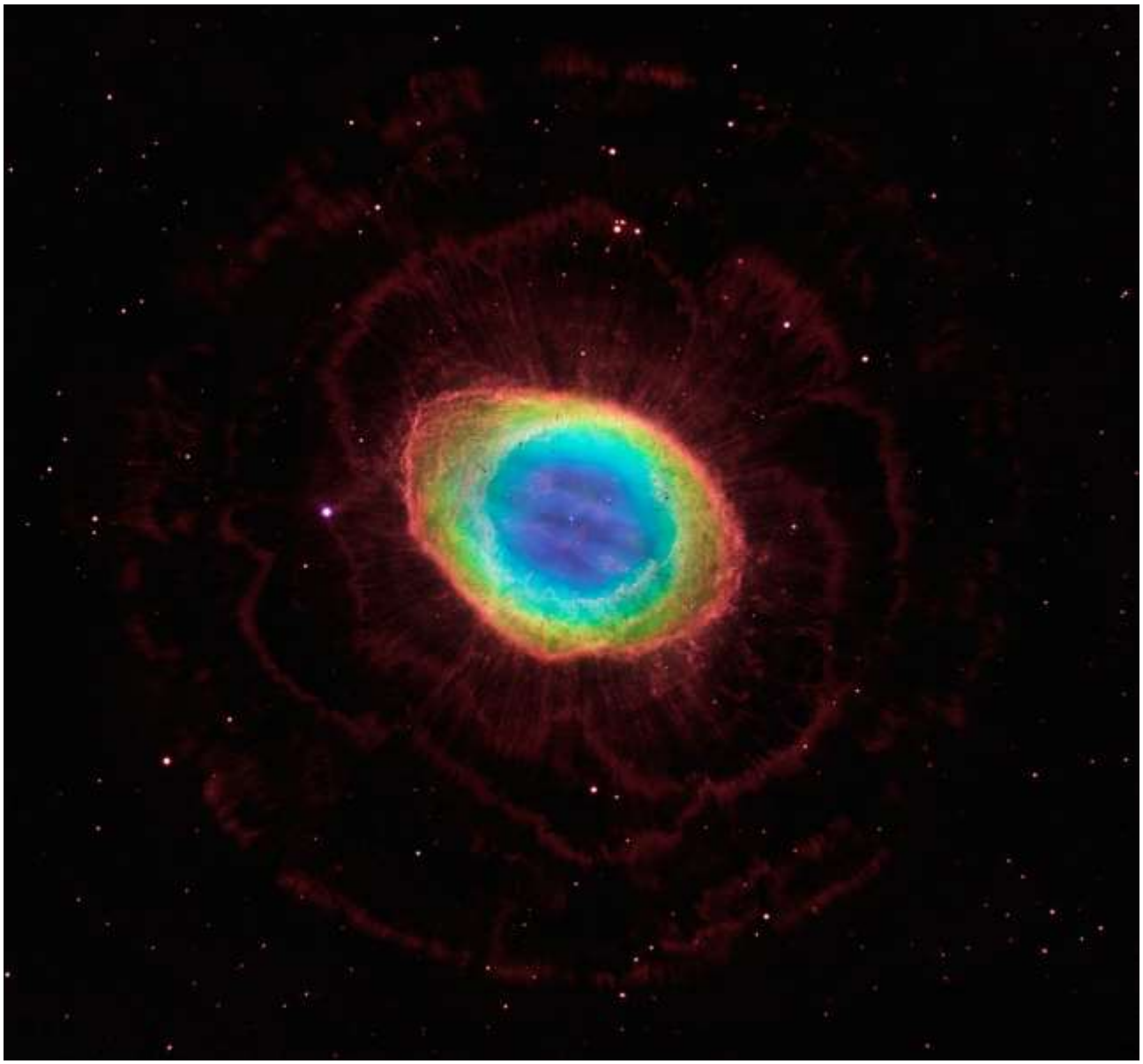
What is it? Planetary nebula

Why you want to see it: You've seen M57 a million times, but have you seen the "second" central star, the subtle colors of the main ring, or the outer halo?

Lyra: RA 18 53 35, Dec +33 01 44

See any two of:

1. Second star (magnitude 16.2)
2. Colors (look directly at M57 at your lowest power)
3. Outer halo (use an OIII filter)



M8

What is it? Emission nebula

Why you want to see it: Although M8 is an old favorite, this challenge is about observing details within it.

Sagittarius: RA 18 04 03, Dec -24 18 00

See any two of:

1. Any three Bok globules
2. The streamer running through the dark lagoon
3. The eastern “handle”

Sancho's Object

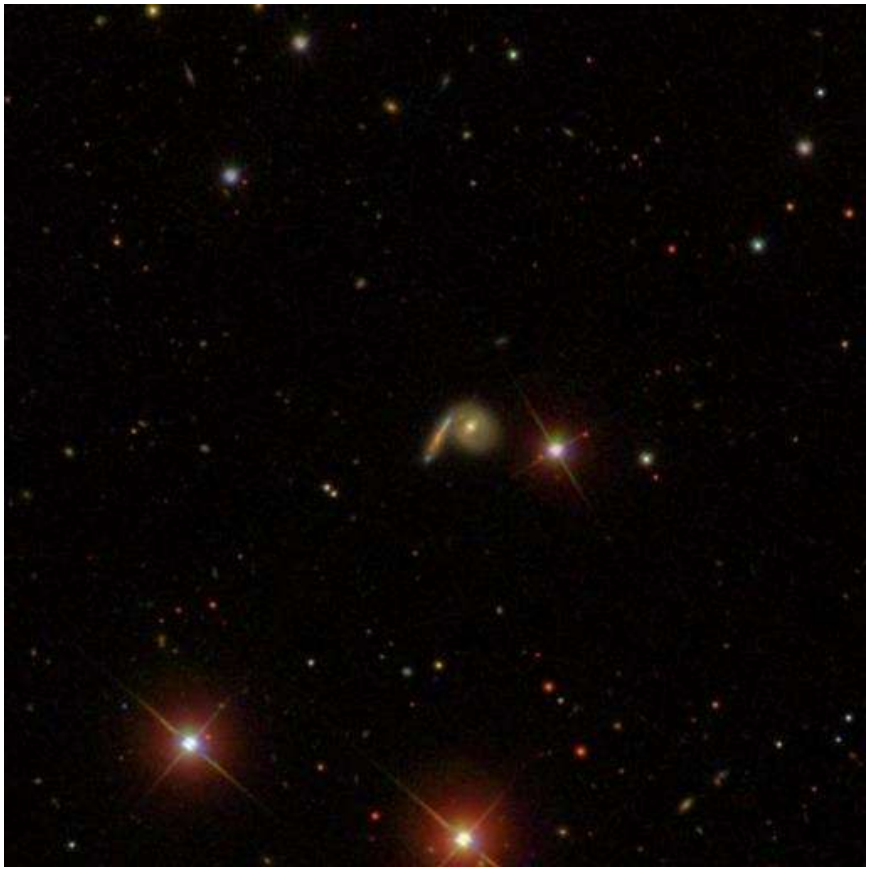
What is it? Interacting galaxies LEDA 3136298 / SDSS J151017.80+581037.2

Why you want to see it: This is a face-on and an edge-on galaxy in the beginning stages of merger.

Draco: RA 15 10 17, Dec +58 10 39

Magnitudes 15.0 and 17.0

See both galaxies.



I Zw 136, LEDA 3087279 and LEDA 2387685

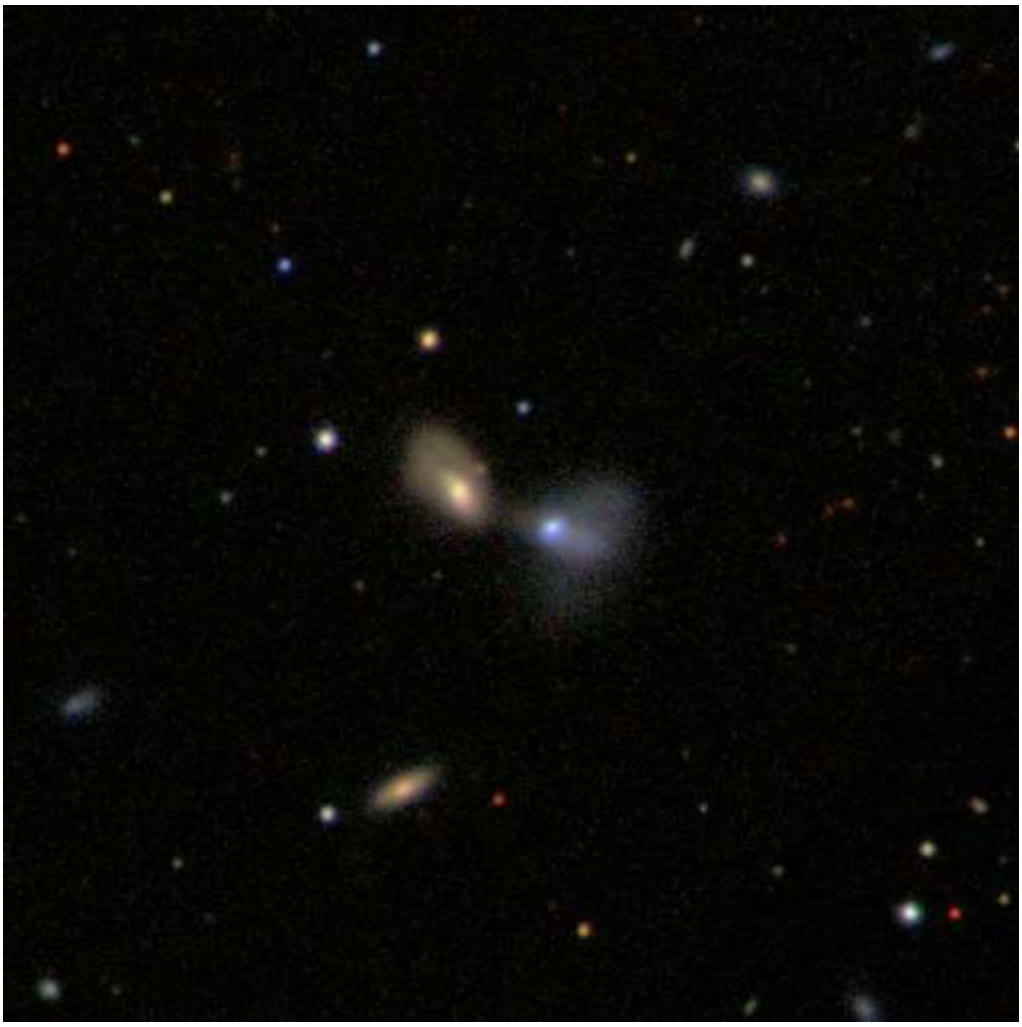
What is it? They look like two interacting galaxies - but are they?

Why you want to see it: The galaxy on the right (the blue one) has a redshift (z) of 1.35, which translates to a light travel time of about 9 *billion* years. The galaxy on the left has a redshift of 0.033, or a light travel time of 453 *million* years. If those figures are even roughly correct, this line-of-sight pair is remarkable. Or are the redshifts incorrect – why would the blue galaxy be that color if it's so far away? Either way, this is a must-see galaxy pair.

Hercules: RA 16 13 31, Dec +51 03 39

Magnitudes 15.4 and 15.7

See both galaxies.



Tulip Nebula = Sh2-101

What is it? Emission nebula

Why you want to see it: It actually looks like a tulip.

Cygnus: RA 19 59 55, Dec +35 21 00

Magnitude 10.07

Observe the two dark lanes.

Cygnus X-1

What is it? A stellar mass black hole.

Why you want to see it: This is the first confirmed black hole, and the object that Stephan Hawking famously lost his bet with Kip Thorne. What you'll actually see is the star (HD 226868) that's orbiting the black hole.

Cygnus: RA 19 58 21.7, Dec +35 12 06

Magnitude 8.95

Observe the star that's orbiting the black hole. Bonus - observe the bow shock of Cygnus X-1.