

# Oregon Star Party

## Advanced

# Observing List

2018

### Welcome to the OSP Advanced Observing List

In a sincere attempt to lure more of you to try the Advanced List, each object has a page telling you what it is, why it's interesting to observe, and the minimum size telescope you *might* need to see it. I've included coordinates, the constellation each object is located in, and a photo showing what the object looks like. All you have to do is observe and enjoy the challenge.

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

- Even though this is a challenging list, you don't need 20 years of observing experience or a 20 inch telescope to be successful – although in some cases that will help. The only way to see these cool objects for yourself is to give them a go.
- The minimum aperture listed for each object is a rough estimate. The idea is to show approximately what size telescope might be needed to successfully observe that particular object. The range is 4 to 18 inches this year.
- The visibility of each object assumes decently good OSP observing conditions.

### Requirements to receive a certificate

1. There are 14 objects to choose from. Descriptive notes and/or sketches that clearly show you observed **10** objects are needed to receive the observing certificate. For instance, you can mark up these photos and charts with lines and arrows, and add a few notes describing what you saw. Or make a sketch on the back of each page, and add a few notes. Or go with whatever method you normally record your observations.
2. You must meet the stated "**Criteria for successful observation**" for the **10** objects you choose. Simply noting that you saw the objects doesn't count.
3. Observers who successfully observe **10** objects also qualify to purchase a cool observing pin.

## Arp32, VV89 A and B – the Propeller Galaxy

**What is it?** Two interacting galaxies.

**Why you want to see it:** Although it looks like a single spiral galaxy, Arp 32 is actually two galaxies in the early stages of colliding, and from our vantage point they look like a propeller. The galaxy at the top of the image is VV89b and is magnitude 16.2, while the brighter galaxy on the bottom is VV89a at magnitude 14.4. Together they span about 1.9 arc minutes.

**Minimum aperture needed:** 18 inches.

**Criteria for successful observation:** See both galaxies.

**Draco RA 17 h 13m 07s Dec +59 degrees 19 m 23s**



## Andromeda's Parachute, a quadruply lensed quasar, J014709+463037

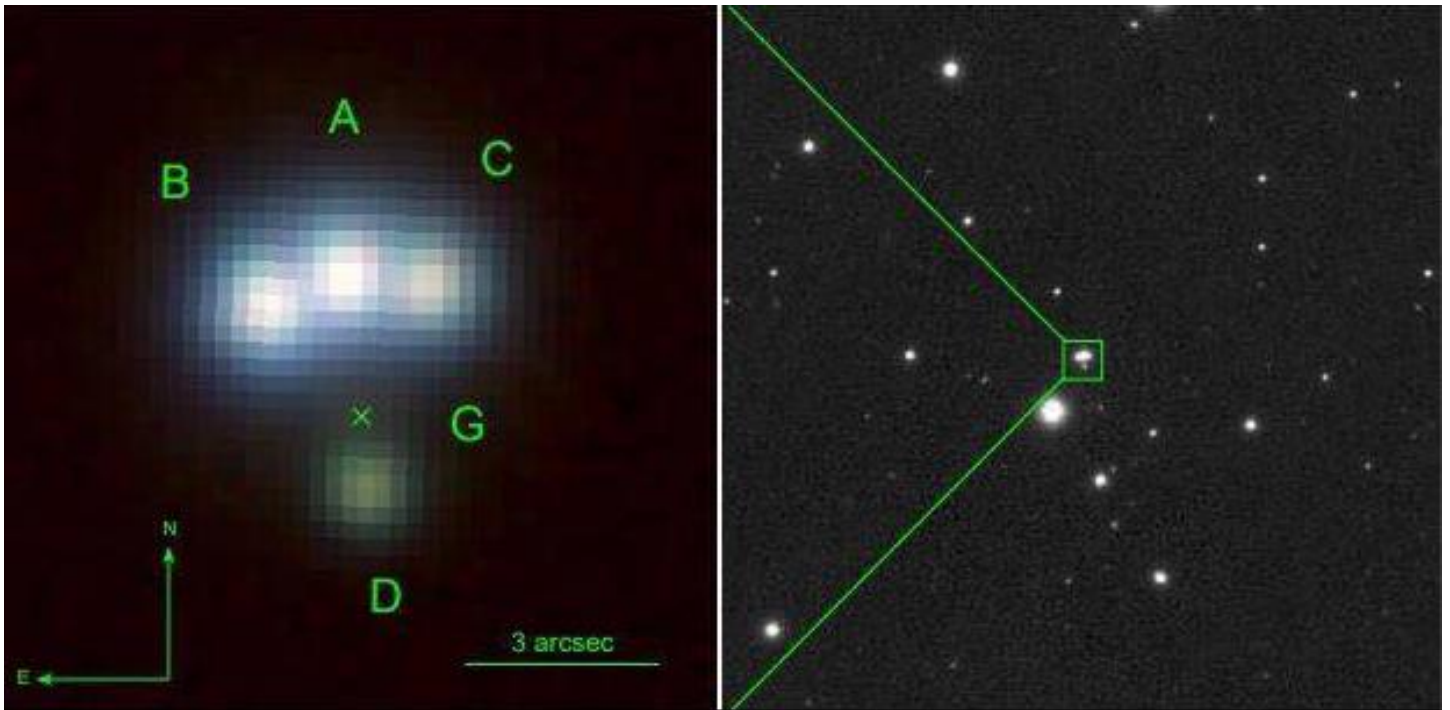
**What is it?** Gravitationally lensed quasar.

**Why you want to see it:** The overall magnitude of the four lensed images of the quasar and the lensing galaxy is magnitude 14.4, which is remarkable because the light travel time for the quasar's light is approximately 10.9 billion years. Magnitudes for the four images of the quasar are A = 15.6, B = 15.72, C = 16.45, D = 18.09.

**Minimum aperture needed:** 12 inches

**Criteria for successful observation:** See the brightest three components blurred together in a shallow arc, and if the seeing is steady enough, see the two brightest images.

**Andromeda RA 01h 47m 09s Dec +46 degrees 30m 37s**



W.M. Keck Observatory

## KTG-71 galaxy trio, NGC 6956, UGC 11620 and UGC 11623

**What is it?** Three galaxies apparently close together in space.

**Why you want to see it:** These three relatively bright galaxies form a nearly equilateral triangle and are seen through a rich Milky Way starfield. NGC 6956 is magnitude 12.3, UGC 11620 is magnitude 13.8 and UGC 11623 is magnitude 13.9.

**Minimum aperture needed:** 10 inches

**Criteria for successful observation:** See all three galaxies and the spiral shape of NGC 6956.

**Delphinus RA 20h 43m 54s Dec +12degrees 30m 42s (NGC 6956 coordinates)**





## IC 1365 compact galaxy group

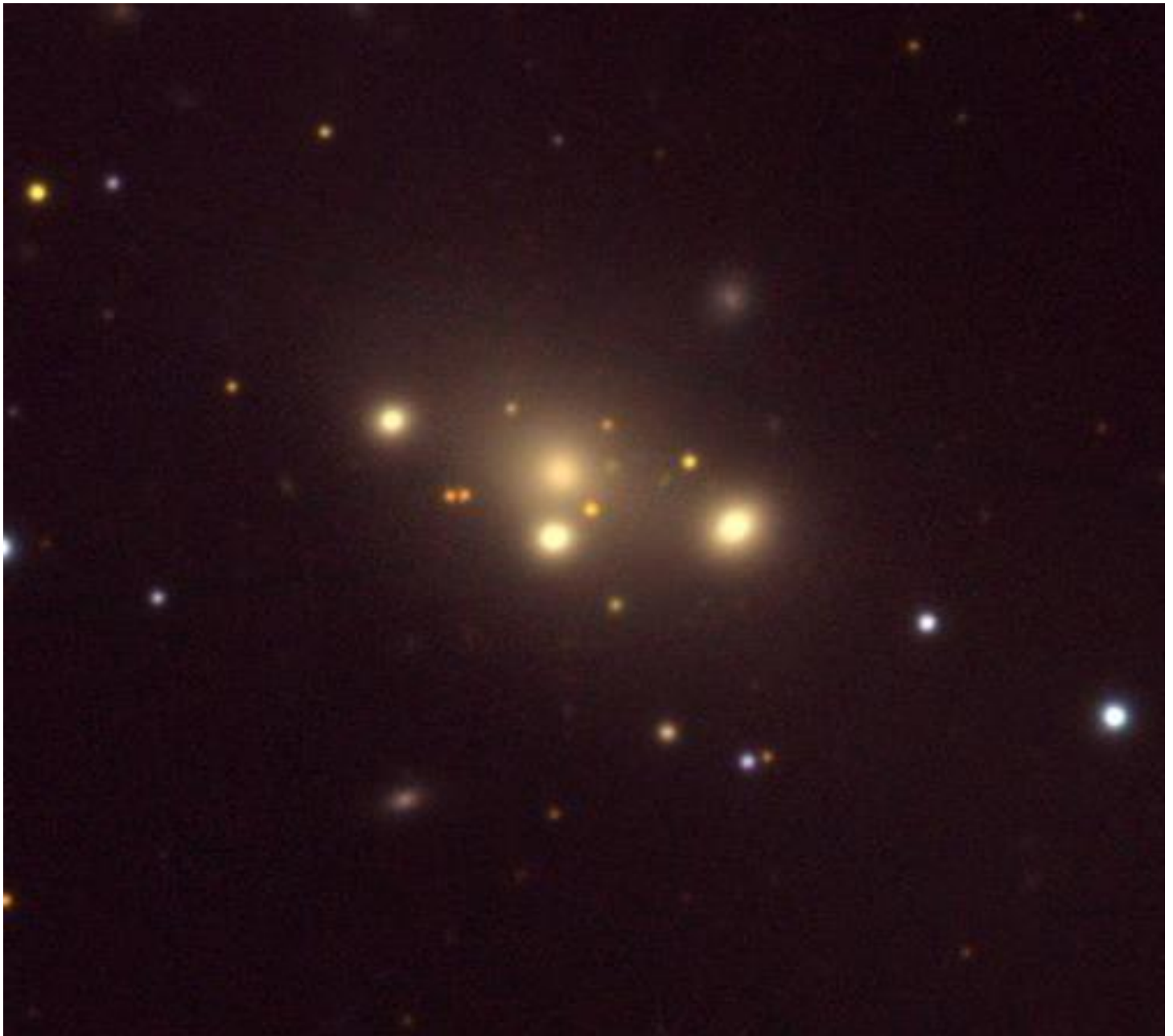
**What is it?** A compact group of four galaxies.

**Why you want to see it:** This small group of four galaxies is only about 10 arc minutes in apparent length, with IC 1365 in the center and also the brightest at magnitude 14.6.

**Minimum aperture needed:** 12 inches.

**Criteria for successful observation:** See the three brightest galaxies in this group.

**Equuleus RA 21h 13 55m s Dec +02 degrees 33m 53s**



## IC 1015

**What is it?** Triple galaxy merger.

**Why you want to see it:** This triple galaxy merger is a rare sight – it's much more common to see only two galaxies in the process of merging. Together they make a magnitude 15.2 smudge that's only 0.7' x 0.4" in apparent size.

**Minimum aperture needed:** 14 inches.

**Criteria for successful observation:** See the elongated shape of the three merging galaxies.

**Bootes RA 14h 28m 19s Dec +15degrees 25m 05s**



## Arp 118 - NGC 1143 and NGC 1144

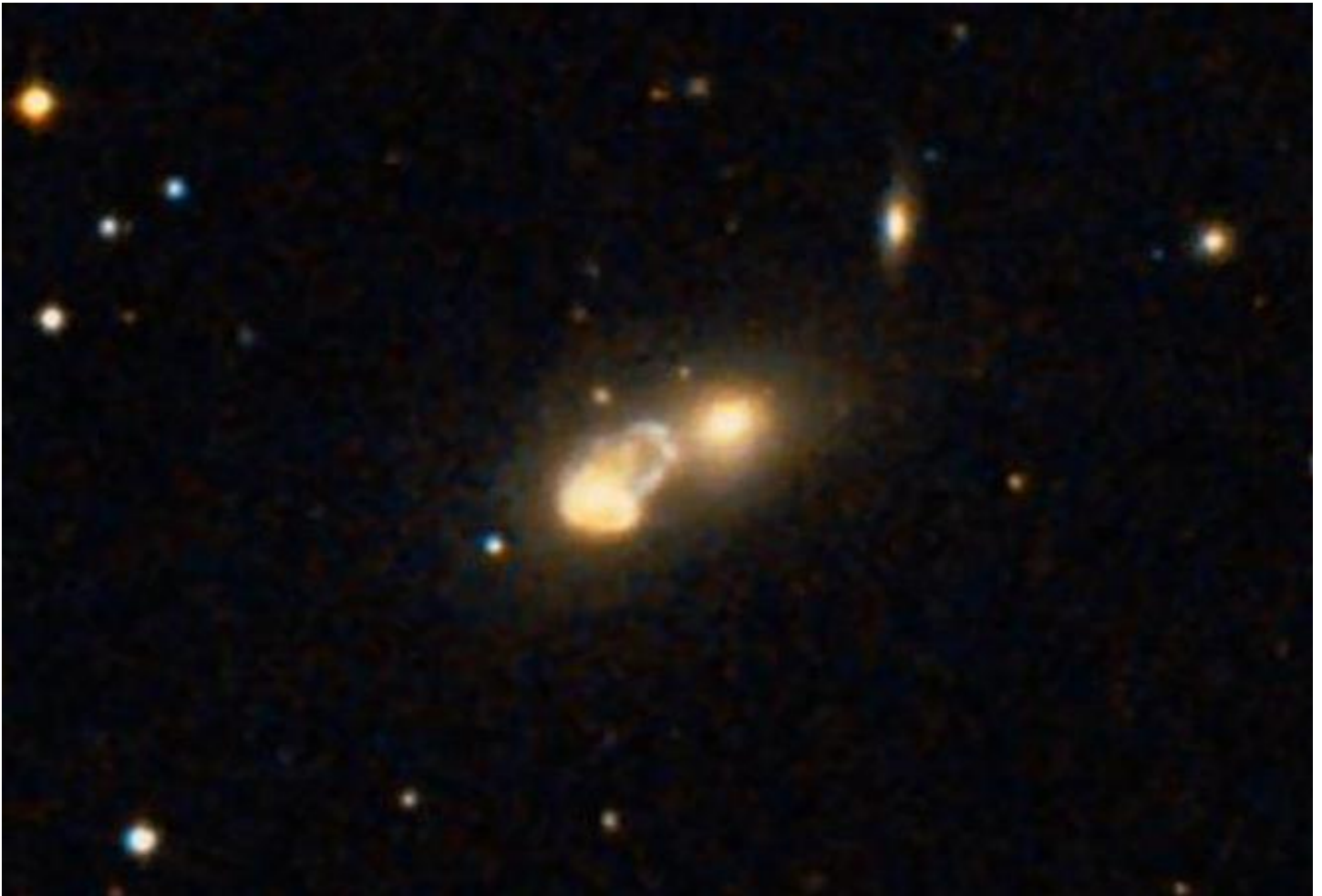
**What is it?** Merging galaxies.

**Why you want to see it:** This galaxy trio may look something like IC 1015 did before all three galaxies began to merge. In addition to the two NGC galaxies, the third galaxy is MAC 0255-0009, which at magnitude 15.5 is the faintest of the three. NGC 1143 is magnitude 14.1 and NGC 1144 is magnitude 13.8.

**Minimum aperture needed:** 12 inches.

**Criteria for successful observation:** See the two NGC galaxies and the bridge of material connecting them, along with MAC 0255-0009.

**Cetus RA 02h 55m 12s Dec -00degrees 10m 59s**





## IC 5076, Barnard 351 and NGC 6991

**What is it?** Reflection nebula

**Why you want to see it:** This is a beautiful juxtaposition of a magnitude 5.7 star (HD 199478), a reflection nebula (IC 5076) that it illuminates, and a dark nebula (Barnard 351) bordering the reflection nebula. The very sparse open cluster NGC 6991 is on the other side of the dark nebula.

**Minimum aperture needed:** 10 inches.

**Criteria for successful observation:** See the bright star, reflection nebula, dark nebula and the open cluster.

**Cygnus RA 20h 55m 38s Dec +47degrees 24m 17s**





## UMi dwarf galaxy (UGC 9749) and IC 1110

**What is it?** Dwarf Spheroidal galaxy (UGC 9749) and edge on galaxy (IC 1110).

**Why you want to see it:** The UMi Dwarf is a satellite galaxy of the Milky way. Because it's so close – about 200,000 light years - it has a huge apparent size of 30.4' x 19.1' which makes its stated magnitude of 11.9 misleading. This is much larger and fainter than you might expect. An RFT is the perfect instrument for seeing it. Although much easier to see, IC 1110 is rather small (1.3' x 0.3') and faint (magnitude 15) making it a challenge for a 12-inch scope.

**Minimum aperture needed:** 4 inches to 12 inches.

**Criteria for successful observation:** See both UGC 9749 and IC 1110 – feel free to use different scopes for each object.

**Ursa Minor RA 15h 12m 05s Dec +67degrees 21m 45s** (coordinates are for IC 1110 because it's much easier to see)



## UGC 12281

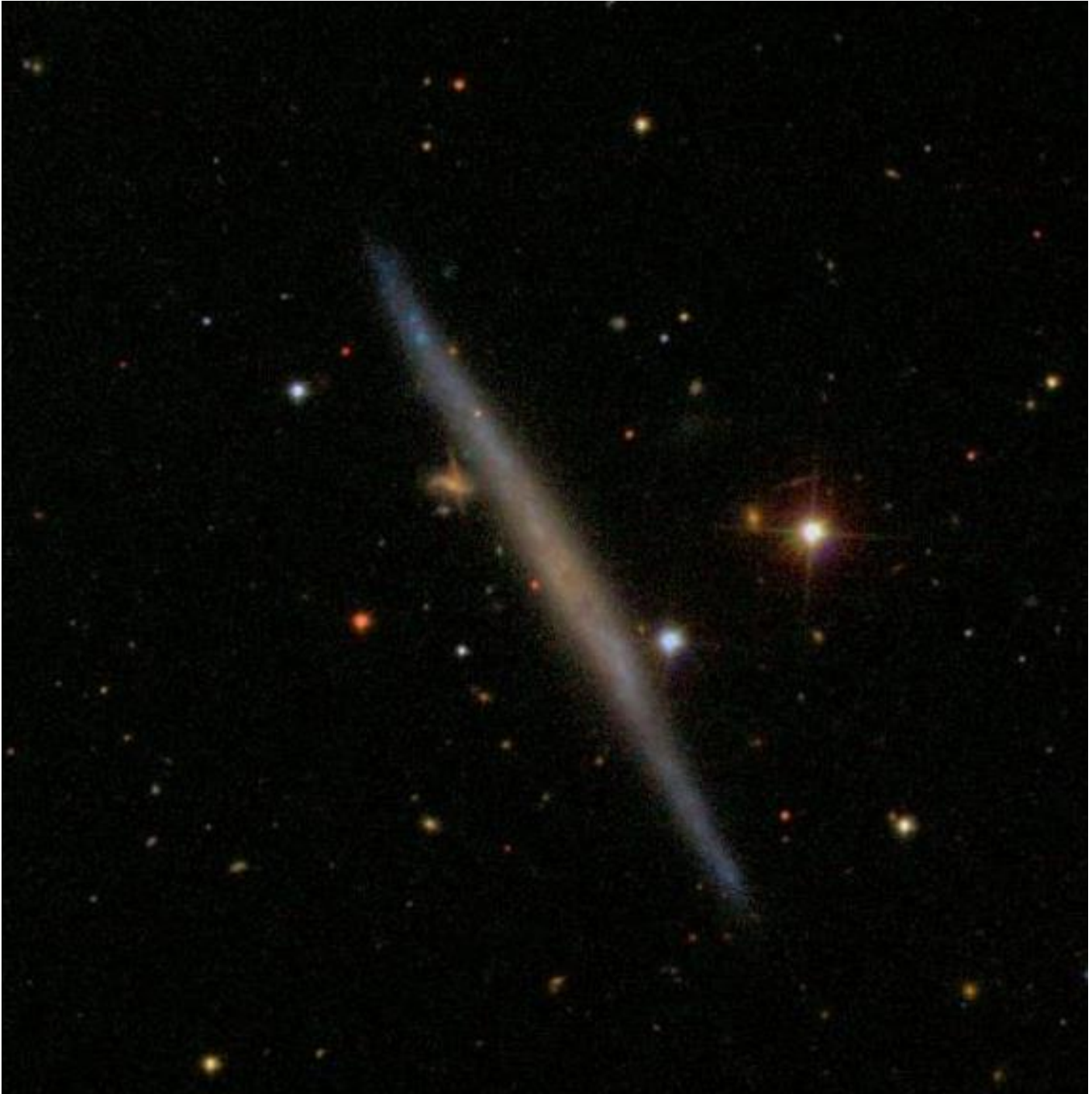
**What is it?** Super-thin edge on galaxy

**Why you want to see it:** Super-thin edge on galaxies look really cool!

**Minimum aperture needed:** 14 inches.

**Criteria for successful observation:** See the entire 3.4' apparent length of the magnitude 14.8 galaxy.

**Pegasus RA 22h 59m 13s Dec +13degrees 26m 23s**



## NGC 7026, the Cheeseburger Nebula

**What is it?** A planetary nebula.

**Why you want to see it:** This magnitude 11.0 planetary nebula is unusual because of its overall rectangular shape, and at high power, a distinctive dark lane splits it in two, strongly suggesting its nickname.

**Minimum aperture needed:** 12 inches.

**Criteria for successful observation:** See the dark lane that visually separates the two lobes.

**Cygnus      RA 21h 06m 18s      Dec +47 degrees 51m 08s**





## Arp 81 - NGC 6621

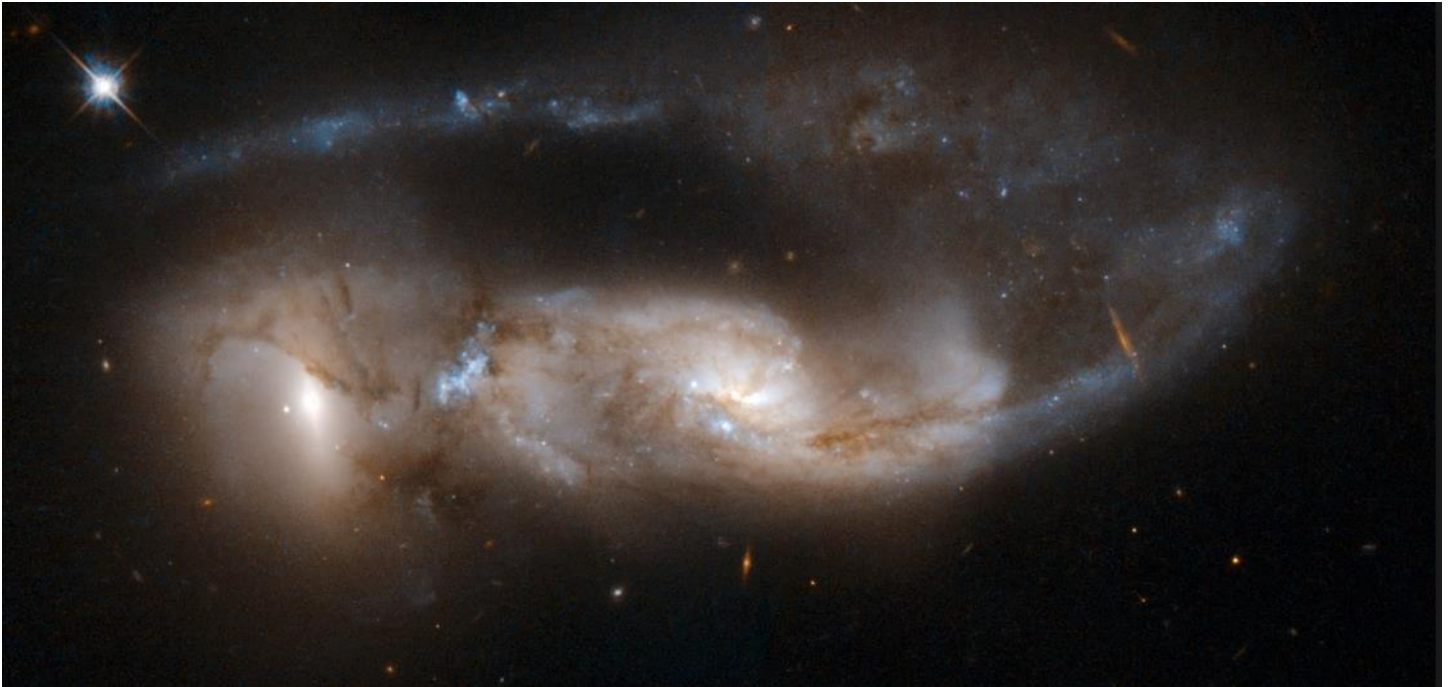
**What is it?** Merging galaxies.

**Why you want to see it:** These two galaxies have created a huge, highly curved tidal tail that wraps 180 degrees around their bright, interacting cores. Their integrated magnitude is 13.6.

**Minimum aperture needed:** 12 inches.

**Criteria for successful observation:** See both of the merging galaxies and the highly curved tidal tail.

**Draco RA 18h 12m 55s Dec +68degrees 21m 48s**



## NGC 7732, Zwicky's Pierced Galaxy and its companion, NGC 7731

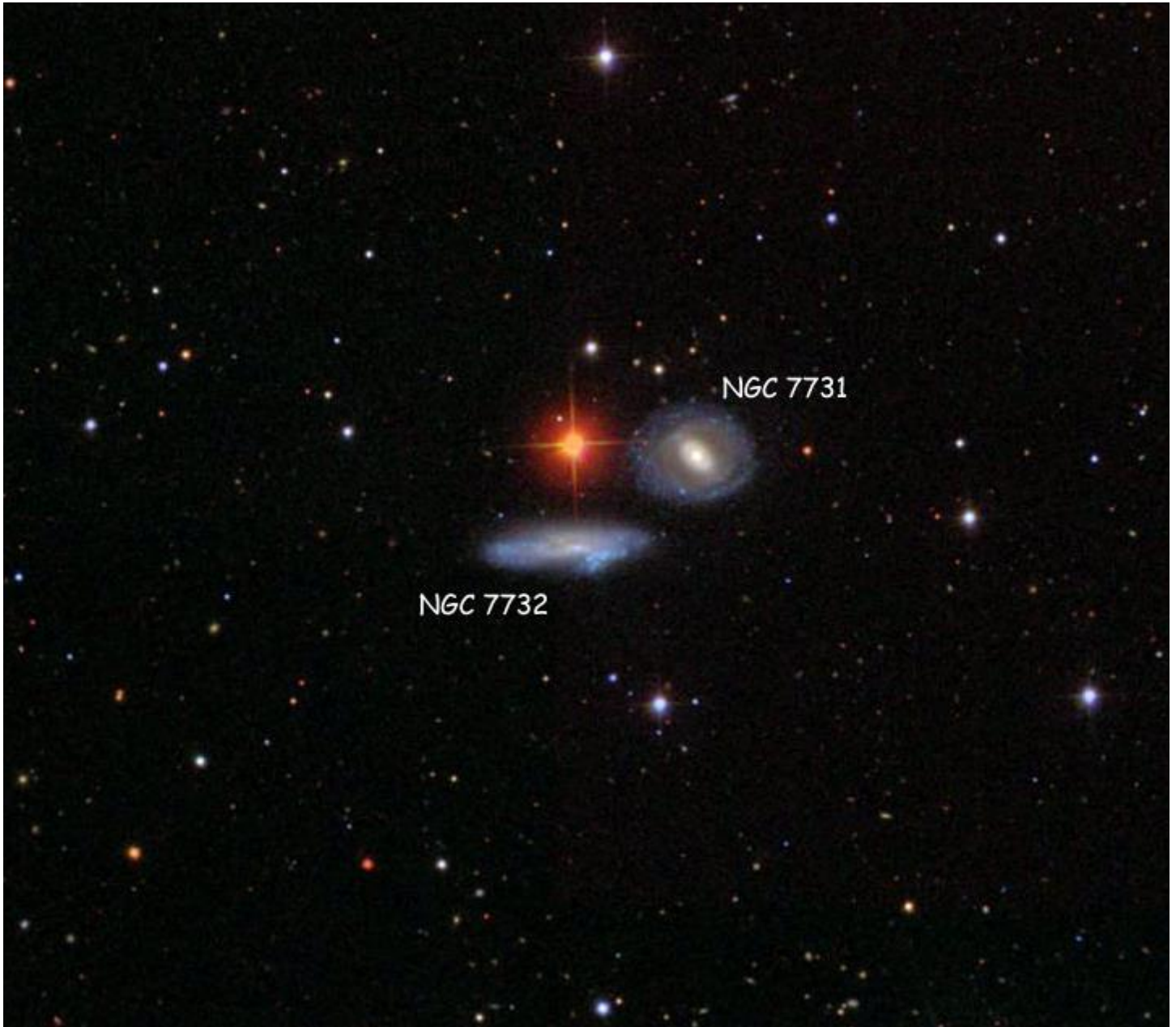
**What are they?** A gravitationally bound pair of galaxies.

**Why you want to see it:** A galaxy with the name Zwicky's Pierced Galaxy simply must be observed at least once even though its visual appearance through a telescope doesn't live up to its exotic name. NGC 7732 apparently gets its name from the disturbed end of its southern spiral arm, which creates a small notch in the side of the galaxy. NGC 7731 is slightly brighter (13.5 vs. 14.3) and both are right next to a magnitude 11.3 star.

**Minimum aperture needed:** 12 inches.

**Criteria for successful observation:** See both galaxies.

Pisces RA 23h 41m 34s Dec+03 degrees 43m 30s



## The Necklace Nebula, PN G054.2-03.4,

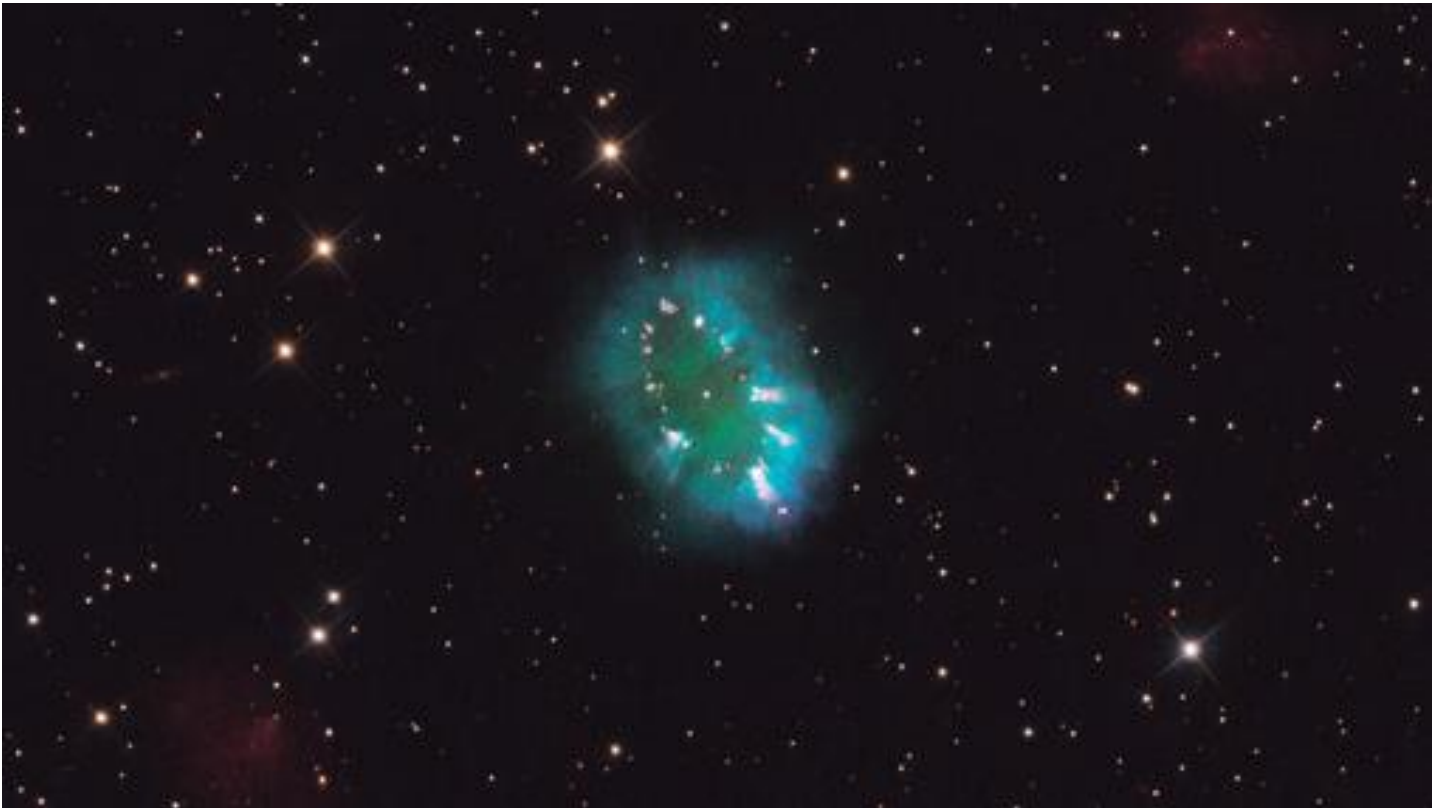
**What is it?** A planetary nebula

**Why you want to see it:** Although it gets its name from the Hubble image showing it's an oblong ring highlighted by a series of almost regularly spaced bright areas, through an amateur telescope the name applies more because of a series of stars that form a rough ring with the nebula near one end – like the pendant of a necklace.

**Minimum aperture needed:** 12 inches.

**Criteria for successful observation:** See the planetary nebula and its necklace of stars.

**Sagitta RA 19h 44m 00s Dec +17degrees 15m 00s (approximate)**





## WR 124 and Merrill's Star Nebula, Sh 2-80

**What is it?** A nebula expelled by a Wolf-Rayet star.

**Why you want to see it:** Wolf-Rayet stars are huge, extremely hot stars near the end of their lives, and typically have strong stellar winds that create a shell of nebulosity. It is thought that many Wolf-Rayet stars will become supernovae, which are exceptionally awesome. At a combined magnitude of 11.5, Sh 2-80 and its progenitor Wolf-Rayet star, WR 124, are a relatively bright example.

**Minimum aperture needed:** 12 inches.

**Criteria for successful observation:** See the star and nebula.

**Sagitta** RA 19h 11m 30s Dec +16degrees 51m 38s

