


# Northern Berkshire Astronomical Society

Founded 2023 | North Adams Public Library | North Adams, MA

## This Month

Star forming regions: clusters plus nebulae!

## The Moon

 - Mar 3: Full Worm Moon

 - Mar 11

 - Mar 19

 - Mar 25

## Planets

Mercury: behind the Sun

Venus: sets just after sunset

Mars: behind the Sun

Jupiter: in Gem, up all evening

Saturn: behind the Sun

Uranus: in Tau, evening

Neptune: behind the Su

## Deep Sky Objects

**Easy** (binoculars): NGC 2244, Cr 70, NGC 2169, M 44, M 37

**Moderate** (small telescopes): B 35/FU Ori, NGC 2269, NGC 1980, NGC 2024

**Challenges**: NGC 1964, NGC 2841, NGC 1909, IC 2167

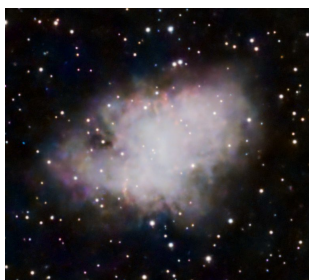
## Stellar Remnants

Looking at the late winter sky, it's easy to be attracted to the bright stars of the Winter Hexagon and their associated constellations, but there's some interesting developments that can be seen. Remembering that massive giant stars like Betelgeuse and Rigel are short lived, we can reflect on what happens "next" to stars as they use up their nuclear fuel. Here are a few objects to examine:

**Sirius B and Procyon B:** both are actually the less-massive siblings in systems that once hosted a brighter component, and have since become white dwarfs. Of the two, the white dwarf companion to Sirius is a challenging - but doable - target (the separation for Procyon and its white dwarf is tiny, and out of reach for most amateurs). In fact, Sirius's two stars are close to their maximum separation in their 50-yr orbit at present (about 10"). Sirius B, at mag +8.6 is 10,000 times fainter than A.

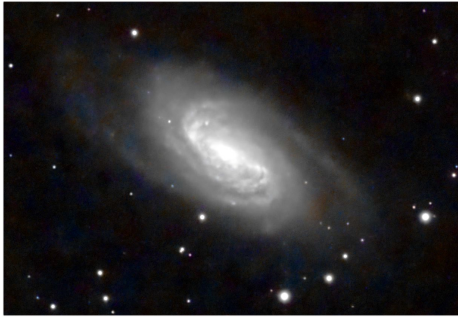


Sirius B once was a hot blue star almost 3x the mass of Sirius A. It lost its atmosphere just over 100 Myr ago: ~1 Gyr from now, both stars will have become a faint white dwarf binary stars.



### **Crab Nebula Pulsar:**

In 1054 CE, a star that once was about 8-10x the mass of the Sun exploded as a supernova (though only about mag +8 before then), expelling its atmosphere and leaving a *pulsar* - a neutron star with beams of radiation coming from its magnetic poles. The M 1 remnant spins at 30x/sec, but at mag 16.5 you'll want imaging to detect it.



## This Month's Image

Spring is coming! And that means Galaxy Season! One of the first springtime galaxies to come up in the late evening sky is NGC 2903 in Leo (just off the lion's nose). Somehow this bright and large galaxy evaded Messier (and for that matter Caldwell). It's about 30 Mly away and an outlying member of the Virgo Supercluster.

## Interacting

Check out our Facebook Group

<https://www.facebook.com/groups/nberkastro>

and join us at our next meeting:  
**April 1st at 6 PM** at the North Adams Public Library

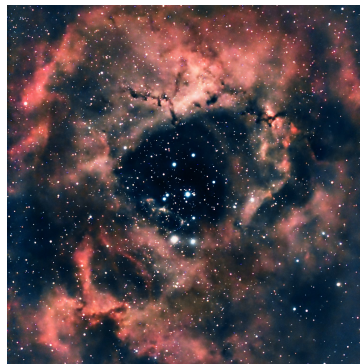
## ... and Protostars

On the other side of stellar evolution, we can look at several hotbeds of star formation in these same constellations! Stellar nurseries show hot young stars, pre-Main Sequence stars, and nebula features indicating as-yet unseen infant stars about to shine

**Orion Nebula:** the obvious place to start is the Trapezium cluster at the heart of M 42. These four stars occupy a space of only 1.5 ly: but the entire cluster (of ~1000 stars) is crammed into a space only about 3-4 ly across! These stars are incredibly young - some estimates



place them at only ~300 kyr! Their winds carve out a bubble in the nebula that allow us to see them: other protostars are still contained within proto-planetary disks awaiting their ignition. This intense star formation will continue for a few million years, over which time Betelgeuse and Rigel will undergo significant changes. Orion on the whole is changing before our eyes!



### **Rosette Nebula/Harp Cluster:**

a few degrees to the East, we find the Rosette Nebula in Monoceros that's a little further along than the Orion Nebula in its evolution. Here, the stars have carved out a "hole" in the center of nebula (which is about 100 ly across). This system is about 5 kly away.

### **Cone Nebula and "Christmas Tree" Cluster:**

travel ~4.5° North towards the feet of Gemini, and we find yet-another intense region of star formation. This cluster + nebula is at an intermediate distance between Orion and the Rosette (about 2.5 kly), and similar age. The Cone feature is about 7 ly long, and the other two, hosts new hot stars just a few Myr old.

