

Northern Berkshire Astronomical Society

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This Month

Orion, Jupiter, and the winter Milky

The Moon

-  - Jan 3: Wolf Moon
-  - Jan 10
-  - Jan 18
-  - Jan 28

Planets

- Mercury: behind the Sun
- Venus: behind the Sun
- Mars: behind the Sun
- Jupiter: in Gem, up all night
- Saturn: in Psc, sets ~10 PM
- Uranus: in Tau, up all night
- Neptune: in Psc, sets ~10 PM

Deep Sky Objects

Easy (binoculars): M 42/43 (Ori), M 41 (CMa), M 36, 37, and 38 (Aur), M 46, 47, and 93 (Pup)

Moderate (small telescopes): M 79 (Lep), NGC 2264

Challenges: B 22, C 49/50, B 33 (Horsehead), NGC 2024

The Supergiants of Orion

The two brightest stars in Orion look very different in the sky: very orangey-red Betelgeuse as Orion's shoulder, blue-white Rigel as his knee. But they're more alike than you think!

Both are supergiants: starting out as hot massive stars, quickly burning their hydrogen fuel and swelling up to their enormous present-day sizes.



	Betelgeuse	Rigel
Mass	15 x Sun	21 x Sun
Size	700 x Sun	74 x Sun
Age	10 Myr	8 Myr
Distance	700 ly	~850 ly

The different is that Betelgeuse had a bit of a head start by a few million years; it was briefly a blue supergiant star, and has cool to its red supergiant phase, now burning carbon (after depleting its helium). Rigel is following

the same evolutionary path, but it still burning helium, and has yet to cool like Betelgeuse (but it'll get there in a few million years). Both, however, share the same fate: after burning through their carbon and what little remains of heavier elements, they will go supernova, leaving either a neutron star or a black hole. By the time we'd be seeing a very red Rigel in the sky, Betelgeuse will just be a memory.

Evolution	Betelgeuse	Rigel
Started As	Hot O Star	Hot B Star
Blue Supergiant	8-10 Myr ago	Today
Red Supergiant	Today	few Myr from now
Fusing	Carbon	Helium
Supernova	~100 kyr?	few Myr



This Month's Image

The Pleiades is one of the oldest known deep-sky objects even though its stars are very young. But which star is the 7th star of the "Seven Sisters?" With simple imaging, the bright stars of the cluster are embedded in dust: unlike emission nebulae like M42 in Orion, the wispy structures are dust that the cluster stars are traveling through and illuminating through reflection, and not a part of the stellar nursery that spawned the cluster itself.

M 45 is important because accurate measurements of its distance (423 ly) is a fundamental rung in the "distance ladder" constructed to determine distances of objects in our Galaxy and far beyond!

Interacting

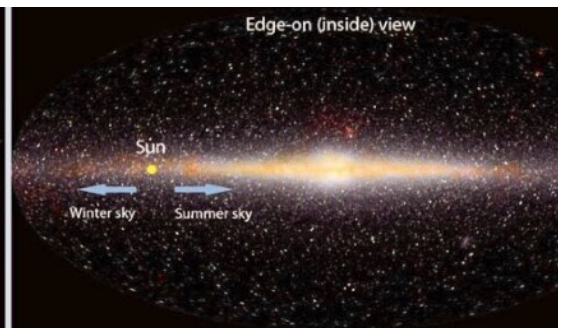
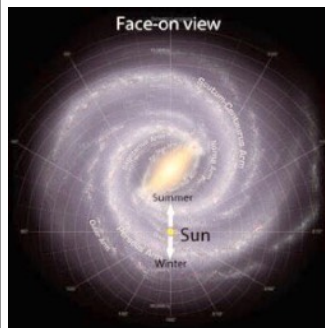
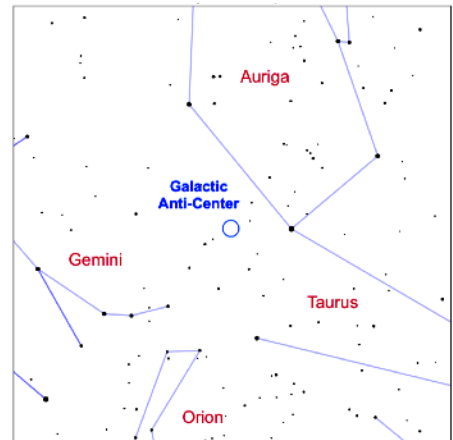
Check out our Facebook Group

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

and join us at our next meeting: **February 4th at 6 PM** at the North Adams Public Library

The Galactic "Anti-Center"

Whenever the Milky Way is above the horizon, there are plenty of things to discover! Stretching from Perseus and Auriga almost overhead, and all the way to the Southern horizon in Canis Major and Puppis, you don't need elaborate equipment and careful planning to casually discover many open clusters and brighter nebulae with binoculars or a small telescope: just point in that direction and casually scan!



In contrast to the Summer Milky Way we're now looking "out" and away from the Galactic Center (at the spout of the "Teapot" of Sagittarius); in fact the Galactic "Anti-Center" is in Auriga. Here it's the outer "Perseus" spiral arm we see and while it seems as if we're just peering into a much thinner section of our Galaxy, you wouldn't know it looking at the myriad of objects in Auriga, Gemini, Monoceros, Canis Major and Puppis. Orion — for all its magnificent objects — is really in the foreground, much closer to the Sun; both are in a minor spiral arm called the "Orion Spur". Still, no matter what part of our Galaxy you observe (even the outer halo with its globular clusters) - there are fantastic objects to discover and appreciate!

