

Journey to the Center of the... Galaxy!

In August, our southern night sky faces the center of our home galaxy, The Milky Way. However, unlike the bright spot at the center of our solar system (you know, the Sun!), the stars, star clusters, and the supermassive black hole that live at the center of our galaxy are obscured by 25,000 light years of thick gas and dust. This month, we will travel from the sun to the center of the galaxy (and back again).

Solar System: You may have heard about a partial solar eclipse on Saturday, August 11. Unfortunately, unless you find yourself in northern Europe or Russia that day, you won't be able to see it.

The next **new moon** on August 11. This means that it will be nice and dark on August 12th for the **Perseid Meteor Shower!** This occurs every August as the earth passes through the debris left by comet 109P/Swift-Tuttle. Grab a lawn chair and find a dark place to watch. The next **full moon** is August 26.

All 5 bright planets are again visible this month. **Mercury**, becomes a morning "star" (planet) at the end of the month, and on August 27 it reaches "greatest elongation west" (It is rising in the east, but it is *west* of the sun, hence the name.) Meanwhile, **Venus** reaches its "greatest elongation east" (i.e. farthest *east* of the sun from our vantage point) on August 17. Venus also reaches "dichotomy" or "1/2 phase" on August 15 (see previous newsletters for a discussion of Venus' phases).

Mars is starting to shrink as the Earth moves ahead in our orbital race around the sun, but it's still shining bright and orange in the south by midnight. **Jupiter** and **Saturn** are still prominent in the southern sky all night. Check out Saturn's beautiful rings and cloud-bands in a telescope.

This is a great month for deep sky objects. The Milky Way appears to flow from the "teapot" (in Sagittarius) on the southern horizon, through the summer triangle overhead, and into Perseus on the northern horizon. It's a DSO Superhighway for small telescopes, along which you will find countless nebulae and open and globular star clusters.

Open clusters are "schools" of young stars just leaving their stellar nurseries before adventuring out into space. They are almost exclusively in the plane of the Milky Way. **M8** (The "Lagoon Nebula"), lying just above the "spout" of the teapot, is a beautiful example of these. M8 consists of an open cluster of stars (NGC 6530) still surrounded by its gaseous stellar nursery (NGC 6523). In a small scope, the interrupted patches of gas look like an island lagoon, hence the name. (See the website for my drawing of M8 as seen through a 12" scope). Below M8, find **M6** and **M7**. These two open clusters which lie near the center of the galaxy.

Globular clusters are giant, ancient mini-galaxies rotating in a spherical cloud around the galactic center. Dozens of these can be seen with a telescope in the constellations Ophiuchus (Oph) and Sagittarius (Sgr). One of my favorite summertime observation activities is to follow the GC's which lie on the connect-the-dot lines that trace the teapot. Start at **M54** (near zeta-Sgr) and move counterclockwise around the teapot. How many can you spot?

Tracking these globular clusters allowed astronomers to pinpoint the center of the galaxy. We can't see it visually because light from it is blocked by the gas and dust that make up the spiral arms between us and the center. But infrared and radio astronomy has discovered that Sagittarius A*, a supermassive black hole, lies at the center of the galaxy. It is surrounded by an open star cluster of so-called "S-stars." The gravity is so strong around Sgr A* that these stars orbit the black hole at speeds exceeding 10% the speed of light!

So, we can't "see" the center of the galaxy, but we can at least look *towards* it. You'll get close if you draw a line between bright stars gamma-2-Sgr (the spout of the teapot) and theta-Oph. The center of the galaxy lies roughly at the midpoint of this line. If you want to get closer to the "exact point," grab a telescope and some planetarium software. Star-hop to GHE 46, a 12th magnitude double star in Sgr, which is very close to a point marking the galactic center. Not visually interesting, but mind-blowing when you think about it!

- Jim

CAAA UP-dates

The August meeting will feature “Backyard Astronomy” with Travis Farmer.

On September 24, 2018, Astronaut and former ISS Commander Terry Virts will present “View From Above” at the Peace Center in Greenville, including a live discussion about the videos and photos he took from the ISS. If the CAAA can get 15 or more tickets together, we can reserve a block of seats and get \$5 off the \$20 per ticket price. Please let Bill West know ASAP if you want to go! Debbie and I are going!!

Check out the website! Stan has made a number of useful, educational, and frankly entertaining additions to the site, including a live star map, a calendar of astronomical and CAAA events, and a gallery (my fav!). We hope to make the website THE go-to site (pun intended for all you go-to scope cheaters out there) for anyone interested in space in the upstate and elsewhere!

Stay tuned to the group email and the website for further updates.

Monthly Observation Challenges

Unaided Eye



- Venus at greatest elongation east
- Mercury in the morning (greatest elongation west)
- Perseid Meteor Shower
- Mars, Saturn, and Jupiter in the southern sky
- Galactic center between Sagittarius and Ophiuchus

Binoculars / Small Telescopes



- Venus at dichotomy
- Saturn’s Cassini Division and cloud bands
- M6, M7, M8
- The teapot globular clusters: M54, etc...
- Galactic Center behind GHE46 (Sgr)

