

The Night Sky

Geminid Meteor Shower Should Be Strong

During the month of December 2015, one will have to wait until after midnight to see most of the bright planets. However this year we have an astronomical event in December that should be visible throughout the night. The Geminid meteor shower peaks on the nights of December 13-14 and 14-15, however one should be able to spot a few of these meteors a few nights before to a few nights after this time period. Since the moon will be setting early in the evening on these days, this year's Geminids are expected to be spectacular. This meteor shower arises as the earth moves through debris shed from asteroid 3200 Phaethon. Meteor showers are typically associated with icy comets and not asteroids. Even though 3200 Phaethon is classified as an asteroid, it is likely an extinct comet. It orbits the sun every 1.43 years in a very elliptical orbit ranging from 1/3rd the distance from the sun to Mercury to twice the sun-Mars distance. The Geminids are unique in that they can be seen during evening hours and often show very bright meteors called bolides. Most meteors are caused by particles in space about the size of sand grains burning up in the Earth's atmosphere. Meanwhile, bolides result from objects the size of a small stone as they fall through the atmosphere.

For those of you with an unobstructed western horizon, some of you may be able to spot planet Mercury low in the southwest sky 45 minutes after sunset during the last week of the month. Meanwhile at the beginning of the month, Jupiter rises around 12:30 a.m. in the northeast, and by the end of the month, Jupiter rises around 10:30 p.m. We now have wait a few hours to experience the rising of Mars around 2 a.m. Mars continues to brighten as it approaches opposition with the sun next May. Next year's opposition of Mars is a special one – Mars will appear the brightest and biggest it has been since 2005.

Venus then rises almost 3 hours before the sun on Dec 1st, however it remains relatively low in the southeastern sky throughout the month. Saturn is in conjunction with the sun on November 30th, but by mid-month, the ringed planet rises about an hour before the sun in the southeast. During the last week of the year, watch the gap between Venus and Saturn shrink, leading to an extremely close conjunction between these two planets on January 9, 2016.

The winter solstice occurs at 11:48 p.m. on December 21st. This marks the sun's lowest point on the sky in the northern hemisphere and corresponds to the fewest number daylight hours of the year. This also marks the first day of winter in the northern hemisphere. This month's full moon will occur Christmas morning at 6:11 a.m. EST, giving Santa ample light to make his deliveries. According to folklore, the December full moon is known either as the Full Cold Moon or the Full Long Nights Moon. Since the moon is opposite the sun on the sky when full, this means that our Christmas moon will be very high in the sky throughout the night.

The free public astronomy open houses at the ETSU Powell Observatory take a hiatus over the holiday break. They will resume on February 13, 2016. Further information about these open houses and directions to the observatory can be found on the web at <http://www.etsu.edu/cas/physics/observatory/default.php>.

This month's Night Sky was written by Dr. Donald G. Luttermoser, Chair of the Department of Physics and Astronomy at ETSU. He can be reached at lutter@mail.etsu.edu. Astronomy-related information for the public, including a link to the ETSU Powell Observatory, can be found at <http://www.etsu.edu/cas/physics/> by selecting the Public Outreach pull down menu at the top of this web page.