

The Night Sky

Eclipses Abound in October

October sees a busy month for the moon. There will be a total lunar eclipse before sunrise on the morning of October 8th. The moon will be low in the western sky when the partial lunar eclipse begins at 5:15 a.m. EDT. Totality starts at 6:25 a.m. just as morning twilight begins and ends at 7:24 a.m. just prior to sunrise which occurs at 7:30 a.m. on that date. Since the moon is opposite to the sun on the sky on that date, 7:30 a.m. marks the time the moon will set as well. As such, this will make a wonderful sight on the western horizon where a faint orangish moon hangs low above the western horizon on the morning of the 8th. Since the moon will be just two days past its perigee point (i.e., closest point to earth in its orbit) when this eclipse occurs, the moon will be quite large as compared to its average size in the sky. Note however that this is not a “supermoon,” since we only call it a supermoon if there is only a day or less between the full phase and the date of perigee.

Two weeks later in the late afternoon on October 23rd, the sun will be partially eclipsed by the moon. This solar eclipse will begin at 5:54 p.m. EDT with the sun low in the southwestern sky and reach maximum partial eclipse around 6:40 p.m. However, the sun sets at 6:44 p.m. on this date which means the sun will be just on the horizon when the maximum partial eclipse occurs. At sunset, about ¼ of the sun’s disk will be covered by the moon. **It is important that you do not look directly at the sun at any time, even when the sun is at the horizon!** You can permanently damage your eyes by doing so. Tips for observing solar eclipses safely can be found at <http://www.mreclipse.com/Totality2/TotalityCh11.html> on the web.

Saturn starts the month very low in the west-southwest sky an hour after the sun has set. By the end of October, Saturn will be too low in the evening twilight to spot without optical aid. Mars, on the other hand, will remain at nearly the same altitude all month in the evening in the west-southwestern sky as it paces the sun as they both move along the sky. Mars sets 3 hours after the sun all month long. Mars has a near miss with Comet Siding Spring on October 19th – this comet will come to within 82,000 miles of the red planet on that date. One should be able to spot this comet near Mars through a telescope on the evenings of October 19th and 20th. If you get away from city lights, you might also be able to spot this comet near Mars through binoculars on these dates as well.

Although one will need either binoculars or a telescope to see it, planet Uranus reaches opposition (i.e., opposite to the sun on the sky) on October 7th, one day before the lunar eclipse. See if you can spot this faint planet while you are observing the lunar eclipse. Bluish-green Uranus will be about two lunar diameters to the lower left of the moon.

Jupiter rises around 2:30 a.m. EDT at the start of October, and around 1 a.m. by the end of the month. By morning twilight, bright Jupiter will be high in the southeast sky. On the morning of October 18th, a waning crescent moon will be just south of Jupiter.

Planet Mercury makes an early morning appearance during the last week of the month reaching greatest elongation from the sun on November 1st. Mercury will be about 10 degrees above the east-

southeast horizon 45 minutes before sunrise on Halloween morning. Planet Venus might be visible low on the east-southeast horizon ½ hour before sunrise on the first few days of October. However by the second week, it will be lost in the solar glare as this planet swings in back of the sun.

While you're out before dawn during the first week of October and again during the last 10 days of the month, you might be able to spot a huge pyramid of faint light extending from the horizon out to Jupiter a few hours before sunrise. This glow is called the zodiacal light since the glow follows the zodiac constellations. It is caused by dust particles in the inner solar system scattering sunlight. No special equipment is needed to view the zodiacal light – one only needs to look towards the eastern horizon in a clear dark sky. While you are out in the early morning viewing the zodiacal light from October 20th through the 22nd, you may be able to spot a few meteors zipping through the sky. If so, you will have seen meteors associated with the Orionid meteor shower.

The next free public astronomy open house at the ETSU Powell Observatory will occur on Saturday, November 1st from 8 to 10 p.m. At these open houses, the public can view objects in the sky through telescopes and hear talks by faculty of the Physics and Astronomy Department. At this November 1st open house, I will be presenting the talk. Note that the open houses are cancelled if the sky is cloudy. 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.aspx>.

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/outreach/astronomy.aspx>.