

# The Night Sky

## Venus Starts its Evening Apparition

---

At both the beginning of the month and the end of the month, the Moon, Jupiter, and Mars form a picturesque grouping. On July 1<sup>st</sup>, look towards the eastern horizon 45 minutes before sunrise and you will find the brightest star in Taurus, Aldebaran, Jupiter, and Mars form a skinny triangle low above the horizon. The red giant star Aldebaran is the lowest of the three with brilliant Jupiter just to the upper left of Aldebaran. The red planet Mars is the highest of this triplet, sitting about 25 degrees to the upper right of Jupiter. In addition to this triplet, a waning crescent Moon lies just above Mars. Over the next 2 days, watch Mars skirt past the Taurus star cluster, the Pleiades, on the 2<sup>nd</sup> of the month, then pass above Jupiter on July 3<sup>rd</sup>.

Throughout the month of July, keep a watch on the Jupiter and Mars pairing in the morning sky. Using Aldebaran as the anchor, watch how Jupiter slowly moves eastward (towards the left) of Aldebaran. Although this planetary movement is noticeable over the month, you will be dazzled at the speed which Mars moves along the background stars over the month. The separation between Jupiter and Mars shrinks from approximately 25 degrees on July 1<sup>st</sup> down to 10 degrees on July 31<sup>st</sup>.

Just as we had during the first 3 days of July, the last 3 days of July repeats the visitation of the Moon with the Pleiades, Mars, and Jupiter. On July 29<sup>th</sup>, the waning crescent Moon is to the upper right of the Pleiades, then on the 30<sup>th</sup>, the Moon skirts above Mars. Finally, on the 31<sup>st</sup>, the thin crescent Moon is well to the left of Jupiter, sitting just to the right of Beta Tauri, the second brightest star in Taurus. Beta Tauri is a relatively unique star, since it is officially in the constellation of Taurus, but it is also included in completing the “pentagon” of the constellation of Auriga, the Charioteer. As a matter of fact, in the past, Beta Tauri was also known as Gamma Aurigae – dual citizenship in two constellations.

We have gone a few months with no bright planets visible in the evening sky, but that changes this month. On the evening of July 7<sup>th</sup>, look low above the west-northwest horizon ½ hour after sunset to try and catch a thin waxing crescent Moon – binoculars might help you find it. Once you have spotted the Moon, look to its lower right. There you may spot a “star-like” object in the bright twilight. This is the planet Mercury. Once you catch Mercury, keep on scanning to the lower right down to the horizon (it will have to be an unobstructed view), and you might catch the planet Venus (though it will be difficult to spot it, even with binoculars). This starts the evening apparition of our sister planet. We haven’t seen Venus in a while, since being lost in the morning solar glare in early April as the planet moved behind the Sun. In each successive night in July, Venus climbs higher and higher and will be very prominent in the evening sky by the end of the month. Be prepared for a whole slew of UFO sightings towards the latter half of

July. Venus appearance in the evening sky during the summer is rather abrupt, which often results in people reporting UFO sightings.

Let's hope for a clear sky the night of July 13<sup>th</sup>. A little after 11:30 p.m. EDT, the dark side of the Moon will occult (cover up) Virgo's brightest star, Spica. Spica is the 16<sup>th</sup> brightest star in the night sky and lies 250 light years from Earth. Spica is a relatively interesting star, since this pinpoint of light actually is composed of two massive stars, the primary being 11 times more massive than the Sun and the secondary being 7 solar masses. The Moon will remain in front of Spica for about 1 hour, when it pops back out on the bright side of the Moon.

As Saturn approaches opposition on September 8<sup>th</sup>, the ringed planet rises earlier and earlier. Saturn is currently in the constellation of Aquarius and rises at 12:27 a.m. EDT on July 1<sup>st</sup>. Then by the end of the month, Saturn rises nearly 2 hours earlier at 10:28 p.m. Since Aquarius has no bright stars, the brightest being Beta Aquarii at a magnitude of 2.87, Saturn will be easy to spot since it is much brighter at a magnitude of 1.05. For those of you unfamiliar with the astronomical magnitude scale, the smaller the number, the brighter the object. Note that the brightest Saturn can get is -0.4 when its rings are at maximum tilt from our line-of-sight (26.7 degrees). However, currently the tilt is only 3.7 degrees, hence Saturn is relatively faint compared to its maximum brightness. I'll have a full discussion of the orientation of Saturn's rings as seen from Earth next March (2025), when the Earth crosses Saturn's ring plane.

As many of you know, the Earth does not orbit the Sun in a perfect circle. Instead, as is the case with all of the planets in the solar system, its orbital shape is an ellipse. The Earth is closest to the Sun (perihelion) in early January, and is farthest from the Sun (aphelion) in early July. This year, the Earth is at aphelion on July 5<sup>th</sup> at 1:06 a.m. EDT at a distance of 94.5 million miles from the Sun.

The Moon will reach full phase on July 21<sup>st</sup> at 6:17 a.m. EDT. The July Full Moon was often called the Full Buck Moon by Native Americans since a male deer's antlers were in full growth mode around this time.

The ETSU Powell Observatory open houses and the monthly planetarium shows are on hiatus until September. Later this summer, the 2024-2025 schedule for our Astronomy open houses can be found on the web at <https://www.etsu.edu/cas/physics/observatory/starparty.php>, and planetarium shows posted at <https://www.etsu.edu/cas/physics/outreach/planetarium.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@etsu.edu](mailto:lutter@etsu.edu). Any students wishing to pursue a career in Physics or Astronomy are encouraged to contact him at this email address. 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 on the lower-left side of this web page.