



PISGAH
ASTRONOMICAL
RESEARCH INSTITUTE

Astro Advisory

*Notice of an upcoming
astronomical event.*

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SMALLEST FULL MOON OF 2017

Rosman, NC (May 30, 2017) – In view of all the recent hype over super moons, astronomers at the Pisgah Astronomical Research Institute (PARI) point out that the upcoming June full moon will be the smallest of 2017, i.e., a mini-moon.

Why do we have full moons of different sizes throughout the year? The moon is a solid body, an almost perfect sphere with a diameter of 3475 kilometers/2159 miles that doesn't change as it orbits the earth. However, what does change is its distance from the earth. All celestial bodies orbiting with another around their common center of gravity, like a moon and planet do, follow a path that is an *ellipse*, a mathematical figure that is sort of a squashed down circle. Some bodies like the dwarf planet Pluto travel in very elongated ellipses. Others like the beautiful planet Venus follow a path that is almost a perfect circle. An ellipse is characterized by several properties one of which is its *eccentricity*. A perfect circle has an eccentricity of 0.00. The eccentricity of Venus' orbit is only 0.007, very circular but not perfectly so. The eccentricity of Pluto's orbit is a whopping 0.244.

So, where does that leave the moon? The eccentricity of the moon's orbit is 0.055, which means it is significantly non-circular. Each time the moon orbits the earth it passes through a point called *apogee* where it is farthest from the earth and a point called *perigee* on the opposite side of its orbit where it is at its closest. The moon can pass through these points at any time of the month but, if it does so near full moon, we sometimes take notice of it. If full moon occurs close to perigee, the moon will appear a bit larger than average since it is closer to us. If full moon occurs near apogee, the moon will appear smaller than average. This is what is occurring in June. At 4 p.m. EDT on Thursday, June 8 the moon will be at apogee, only 406,401 kilometers/252,526 miles from us. Then, at 9:10 a.m. EDT the next morning we have full moon (We won't see it at that exact moment in the daytime sky but we'll notice it that evening.) So, we have apogee and full moon about 17 hours apart, the closest this will occur in 2017. So, we will see the smallest full moon of the year!

About PARI - PARI is a public not-for-profit public organization established in 1998. Located in the Pisgah National Forest southwest of Asheville, NC, PARI offers STEM educational programs at all levels, from K-12 through post-graduate research. For more information about PARI and its programs, visit www.pari.edu.

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