

Catching asteroid 3 Juno at its best

November 14 2018, by David Dickinson



Credit: Harvard-Smithsonian Center for Astrophysics.

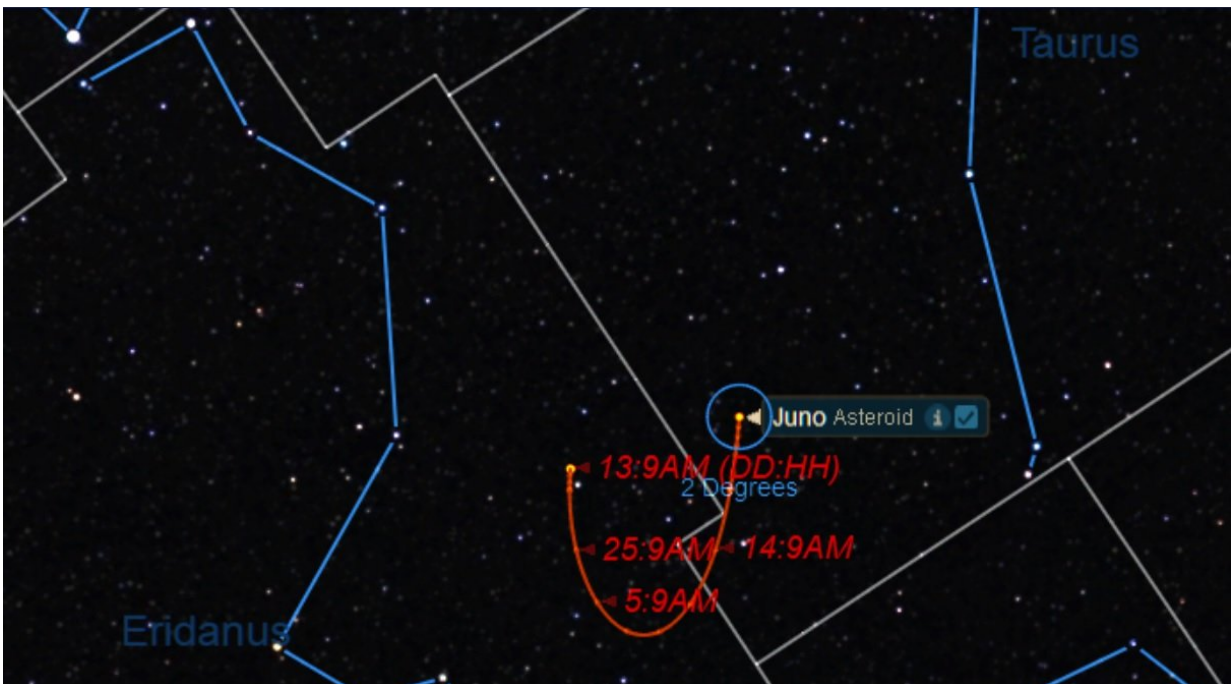
Not all oppositions are created equal. This week's sky target offers a good case in point, as asteroid 3 Juno reaches its most favorable viewing position for the decade.

Juno in 2018

Juno reaches opposition on Thursday, November 16th, 2018 at around

22:00 Universal Time (UT) or 5:00 PM U.S. Eastern Standard Time (EST). This means the asteroid rises opposite to the setting sun this week, riding highest in the sky as it transits due south. It also makes its closest approach to the Earth about 14 hours prior on the same date, at 159 million kilometers distant. From mid-northern latitudes, the asteroid transits 45 degrees above the southern horizon at its highest. The asteroid loops slowly through the constellation of Eridanus the River through the last half of 2018, before entering the southern section of Taurus the Bull in early 2019.

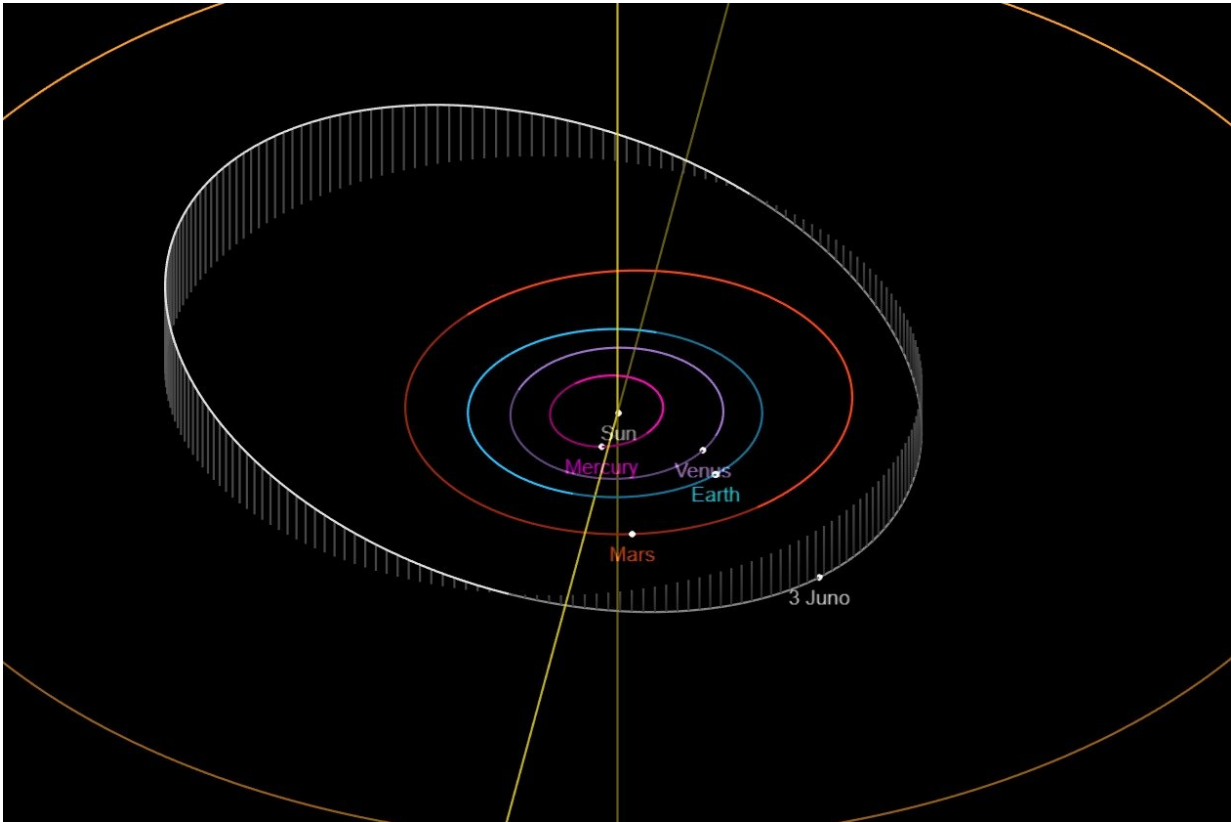
3 Juno shines at magnitude +7.5, a shade brighter than usual, making it a fine telescopic or binocular object. Though the asteroid orbits the sun once every 4.4 years, it ranges from a perihelion of just shy of 2 astronomical units (AU) from the sun, out to an aphelion of 2.7 AU in the [asteroid belt](#). With an orbit inclined 13 degrees relative to the ecliptic, bashful Juno only reaches a favorable opposition once every 13 years. Witness last year's unfavorable opposition, when Juno shined two full magnitudes (over six times) fainter, at magnitude +9.8.



The path of 3 Juno from mid-November 2018, through the end of January 2019.
Credit: Starry Night

This is the best viewing season for 3 Juno since 2005, and the best until its favorable 2031 pass. In fact, at 1.036 distant, the 2018 apparition is one of the best for the 21st century, nudging out 2005 (1.063 AU) and 2031 (1.044 AU).

3 Juno was discovered by astronomer Karl Ludwig Harding on the night of September 1st, 1804, using a small 5-centimeter refracting telescope at the Lilienthal Observatory in Bremen, Germany. That pass was also a favorable perihelion view at 1.17 AU distant, leading to an early discovery of the 11th largest asteroid. Strange but true: in the early 19th century, the large asteroids Ceres, Vesta, Pallas and Juno were all briefly considered planets in their own right.



3 Juno's orbit around the Sun. Credit: JPL-Horizons

Observing Juno

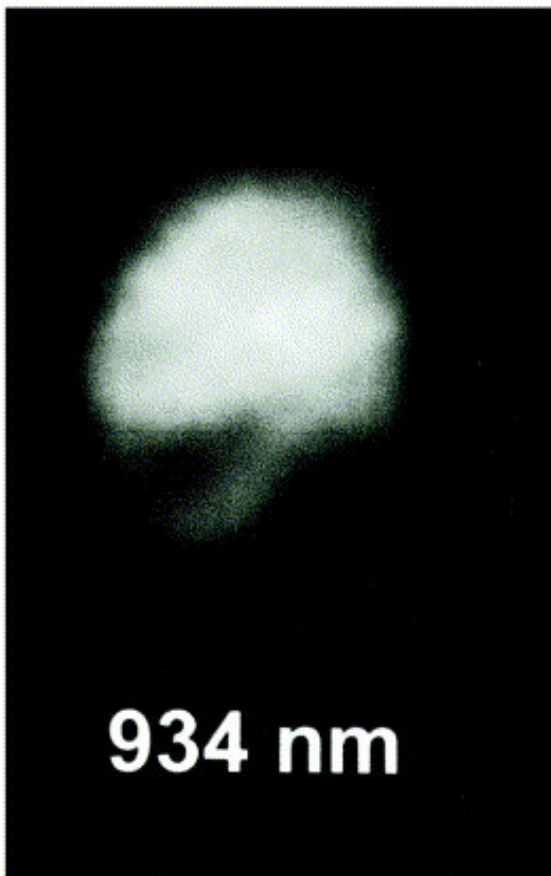
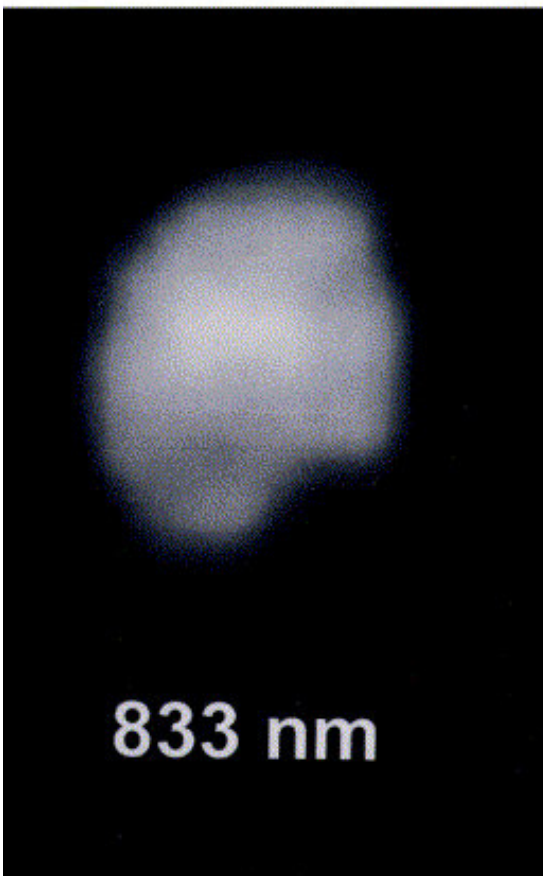
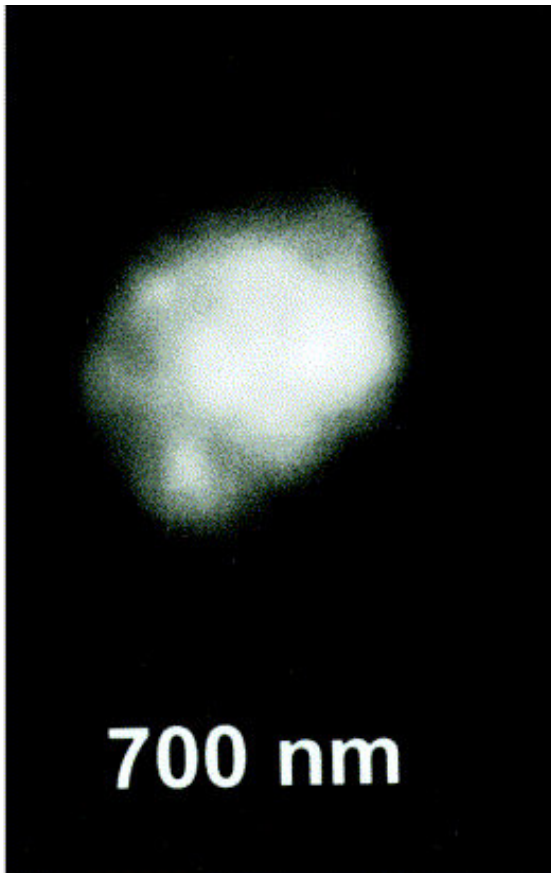
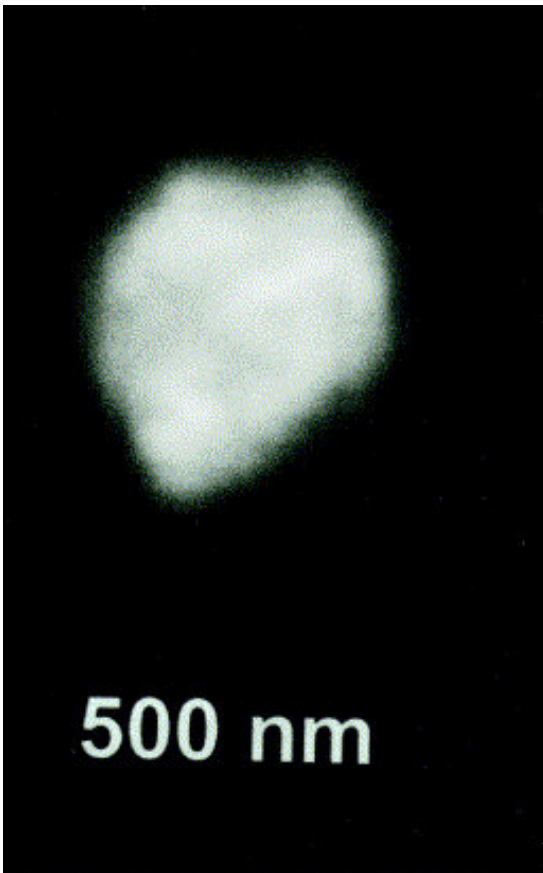
Watch for 3 Juno just over a degree (two full moon diameters) from the +4.5 star 32 Eridani on the night of opposition, moving about $15'$ (a quarter of a degree) a day. The asteroid is far too small to show a visible disk; instead, watch for its movement against the starry background on successive nights.

3 Juno seems to have an interesting tale to tell, as well. It has a relatively high surface reflectivity (known as albedo) of 24 percent, brighter than most stony-chondrite type asteroids. Just 233 kilometers in diameter,

2003 observations done by Sallie Baliunas of the Harvard-Smithsonian Center for Astrophysics using adaptive optics on the 100-inch Hooker telescope based at the Mount Wilson observatory show that 3 Juno has a curious 'bite' taken out of one side. Rotating once every 7.2 hours, it would seem that 3 Juno suffered from a large impact in the not very distant past. This lopsided feature is in line with occultation observations of 3 Juno chronicled by amateur observers. 3 Juno was actually part of the very first occultation of a background star caught by amateurs on February 19th, 1958.



3 Juno: looking west at about an hour before sunrise in mid-November from 30 degrees north latitude. Credit: Stellarium



Humanity's best view of 3 Juno yet, courtesy of the Hooker telescope. Credit:
The Harvard-Smithsonian Center for Astrophysics

Source Universe Today

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