

## Heavenly News: Uranus at Opposition

This may be the planet with the name most likely to generate snickers when it is spoken, but there are also some unique features about the seventh planet that might make you want bring it up at your next cocktail party. To help you avoid embarrassment with the pronunciation, keep the emphasis on the first syllable: "YOOR-an-us."

Uranus is "at opposition" during September. When any celestial object is at opposition, it means the Earth is between the Sun and the object (with the moon, this happens once each month and is called the "full moon"). During September, when the Earth is between the Sun and Uranus, the Sun will set when Uranus rises, giving maximum night viewing time. It is also when Uranus is closest to the Earth and appears largest. On a very dark night, it can be seen with the naked eye, but it can be difficult to identify. It is best seen with an 8"+ telescope, then the disc and color are identifiable. On September 25th, Uranus will be at its closest approach to Earth. This is the best time to view and photograph the planet. ☞

Uranus was discovered by William Herschel while systematically searching the sky with his telescope on March 13, 1781. It had actually been seen many times before but ignored as simply another star. The earliest recorded sighting was in 1690 when John Flamsteed cataloged it as 34 Tauri. Herschel named it the "Georgium Sidus" (the Georgian Planet) in honor of his patron, the infamous King George III of England; others called it "Herschel". The name "Uranus" was first proposed by Bode in conformity with the other planetary names from classical mythology but didn't come into common use until 1850.

Uranus is the seventh planet from the Sun and the third largest (by diameter). It has an equatorial diameter of 32,190 miles (more than 4 times Earth's diameter) and orbits the Sun once every 84.01 Earth years. It has a mean distance from the Sun of 1.78 billion miles. Uranus is larger in diameter but smaller in mass than Neptune.

Uranus' axial orientation makes it unique in the solar system: Most of the planets spin on an axis nearly perpendicular to the plane of the ecliptic (apparent path of the Sun), but, Uranus' axis is almost parallel to the ecliptic. In effect, Uranus is spinning on its side. The extreme tilt of Uranus' axis creates pronounced "seasonal" temperature fluctuations, but overall the temperature at the top of Uranus' atmosphere is extremely cold (-353 °F or so) due to its great distance from the Sun.

The planet is composed primarily of rock and various ices, with only about 15% hydrogen and a little helium. Uranus' atmosphere is about 83% hydrogen, 15% helium and 2% methane. Uranus' blue color is the result of absorption of red light by methane in the upper atmosphere. There may be colored bands like Jupiter's but they are hidden from view by the overlaying methane layer. Uranus has 27 named moons, all but five of the moons have been discovered recently and 11 of the moons were discovered in the mid 1980's by the Voyager 2 spacecraft and the rest by other observation means (Hubble and ground based telescopes).

In 1977, the first nine rings of Uranus were discovered. During the Voyager encounters, these rings were photographed and measured, as were two other new rings and ringlets. Uranus' rings are distinctly different from those at Jupiter and Saturn. The

outermost *epsilon* ring is composed mostly of ice boulders several feet across. A very tenuous distribution of fine dust also seems to be spread throughout the ring system.

To learn more about our solar system and the mysteries of the universe visit the Cameron Park Rotary Club Community Observatory at Folsom Lake College, El Dorado Center, 6699 Campus Drive in Placerville. For more information go to [communityobservatory.com](http://communityobservatory.com). Open Friday, Saturday & Sunday 8:30 P.M. - 10:30 P.M.