

## The Beauties of Saturn

By Nicole Gauthier, Chief Docent CPRC Community Observatory

This month Saturn, second largest planet in the Solar System, is one of the planets we can see in the evening sky. It is the sixth planet from the Sun and has been called the 'jewel of the solar system' because of its beautiful rings. Saturn has at least 62 moons. Titan, the largest, comprises more than 90 percent of the mass in orbit around Saturn, including the rings. Saturn's second largest moon Rhea may have a tenuous ring system of its own. Many of the other moons are very small: 34 are less than 10 km in diameter, and another 14 less than 50 km. In 2004, a probe from Earth landed on Titan, the solar system's second largest moon.

Saturn has the most spectacular rings of any planet in the solar system. They are made of billions of small chunks of ice and rock. The chunks can be as small as a grain of sugar or as big as a house. Scientists think the rings formed when moons and other objects were torn apart by Saturn's powerful gravity. The rings would look mostly white if you looked at them from the cloud tops of Saturn because they are ice particles.

About every 15 years as Saturn orbits the Sun, the tilt of Saturn's axis causes its rings to appear "edge on" as viewed from Earth. Because Saturn's rings are very thin, only about 1 kilometer thick, during this interval they seem to disappear from Earth's vantage. This phenomenon is called "ring plane crossing" and on the evening of September 4, 2009 the rings were at the apex of this event -- completely edge on making it look as if the rings vanished. To learn more about this phenomenon go to [www.communityobservatory.com](http://www.communityobservatory.com) and select "News" where you will find an article written by one of the Observatory Docents about Saturn's rings (among numerous articles about the night sky). Even now when viewed with the 14 inch reflector telescopes at the Community Observatory, Saturn's rings appear to be quite elliptical because they are viewed at an oblique angle as viewed from the Earth.

So what's it like on Saturn? Well it is a lot like the solar system's largest planet - Jupiter. It is made up mostly of gas, including hydrogen, helium and methane. It doesn't have a solid surface. It has clouds, stripes and storms like Jupiter, but because Saturn is more distant, they are harder to see. Beneath the clouds we can see from Earth, Saturn's tremendous mass and its resulting strong gravitational field creates enough pressure -- the same kind you feel when you dive into the deep end of a pool-- so powerful it squeezes gas into liquid. Even a metal spacecraft entering Saturn's atmosphere would be crushed as a result of the tremendous atmospheric pressure. It is not a nice place for humans.

Want to get a closer look at Saturn and its rings? You are most welcome to visit the CPRC Community Observatory any Friday, Saturday or Sunday evening from 8:30PM – 10:30PM (weather permitting). Go to [www.communityobservatory.com](http://www.communityobservatory.com) for the observatory's driving directions and open/closed status. You may also phone the observatory itself at (530) 344-5707 any Friday, Saturday or Sunday evening to make sure they are open before you get in your car!