Saturn

The ring with a planet inside

For a lot of astronomers Saturn is the eye candy that hooked them on the hobby. In 12 years of running my observatory I never saw anyone walk away from the telescope without gushing superlatives. Saturn is definitely a planetary gemstone.

But let's cut to the quick, where did Saturn's gorgeous rings come from and what are they made of?

The Cassini Mission has spent 6 years orbiting the ringed thing. It has imaged the rings up close, analysed their composition and flown through them.

The conclusion is that they are made of plain old water ice. That's right you could plunk a chunk in your glass of Coke.

The origin of the ice rings is linked to a moon that no longer exists. Scientists think the missing moon's surface was covered in ice. But the unwary moon drifted too close to giant Saturn and was pulled in towards the planet. Eventually its icy covering cracked and broke into numerous pieces. They began drifting around Saturn. The planet continued

Quick Smarts

Classification – Gas Giant
Composition – Hydrogen & Helium
Location – 6th planet out from the Sun
Distance from Sun – 1. 4 billion km
Distance from Earth – 1.2 billion km
Size – 800 times larger than Earth
Rank – solar system 2nd largest planet
Moons – 63 total. 53 named.
Rings – 8
Average Temperature - -178°C
Wind Speed – as high as 1,800 km/h
Rotational period – 10h 39m
Orbital period – 29 years
Diameter – 142,750 km

to orbit closer and closer to Saturn. Eventually it was pulled in to Saturn's cloud layers and vanished.

The ice chunks continued to orbit Saturn. Today we see them as a series of rings. Some are as big as a house while others are no larger than grains of sand or bits of gravel. They are also thin and delicate.

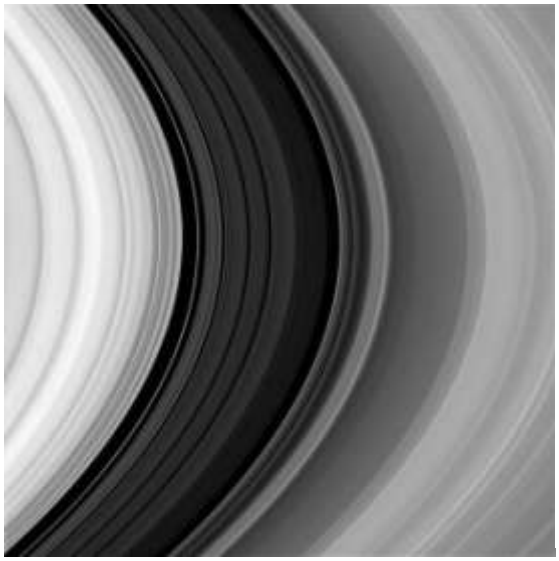
If you measured the diameter from the outside edge of one side to the outside edge opposite it you'd have a total distance of 270,000 km. Yet at their thickest they are only 100m (330 ft) deep. When we look at Saturn we're not just seeing one ring. Instead there are three main rings and five smaller, less visible ones.

Saturn is also a lot like Jupiter. It is big and composed mainly of hydrogen with just a pinch of helium gas ammonia and methane thrown in. There is some oxygen and nitrogen, but just trace elements.

Yet another trait Saturn shares with Jupiter is that no one knows for sure what is at its core. What you and I can see of the planet is just the upper strata of a deep layer of clouds. Speaking of clouds, the weather on Saturn is anything but beautiful.

The average temperature is -178°C. Wind speeds can reach 1,800 km/h. If you could stand on Saturn, our Sun would look 10 times smaller. So sunscreen isn't a must for Saturn visitors.

Saturn is also a moon hoarder. All told there are 62 moons orbiting it, out of which 53 have been named. Most noteworthy are Titan and Enceladus. We'll get to them in our chapter on the solar system's Odd Balls.



Saturn's ring system is complex and ever changing.

Saturn is about the density of cork. So it floats.

Saturn's highly visible rings make it unique in our solar system. Jupiter, Uranus and Neptune also have rings, but they are not visible to the backyard astronomer. Out of the 2,000 extra solar planets discovered so far, only one has a ring system. So enjoy Saturn when ever you can. Seeing it once is not enough. I can promise you that.