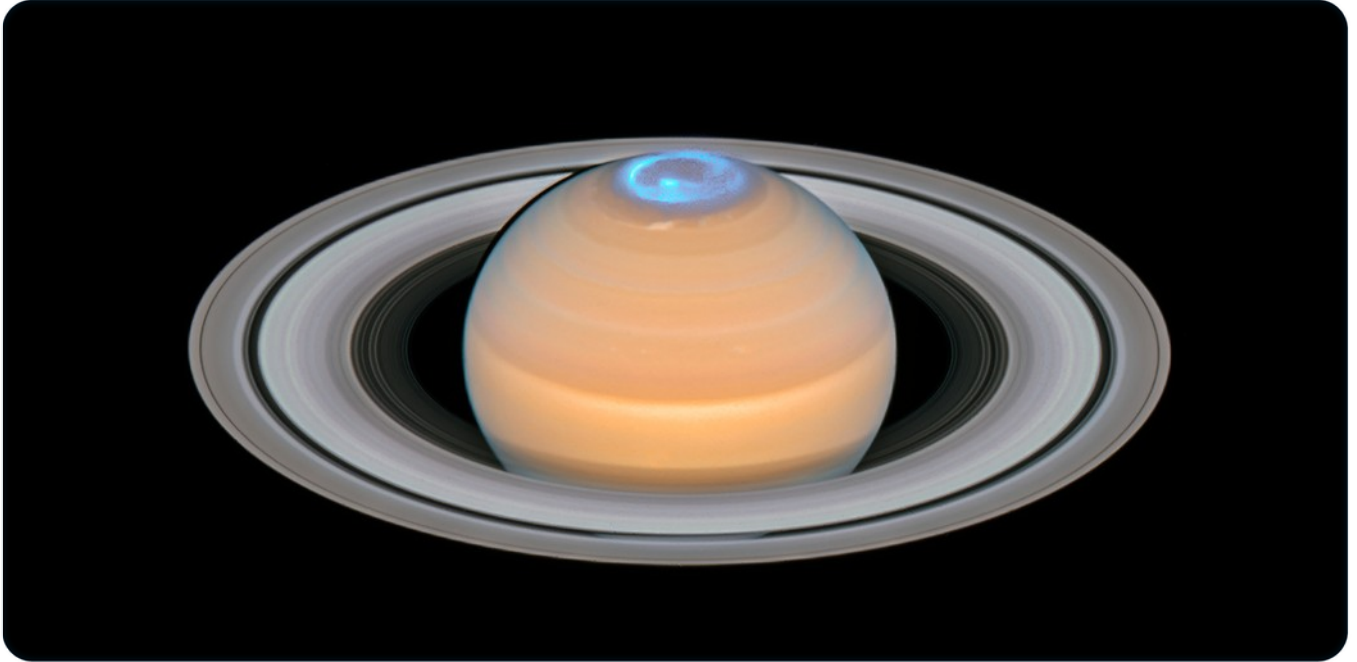




Saturn, Super Shields and Solar Storms



Every day, the Sun bombards our Solar System with millions of tons of high-energy, high-speed, super-hot particles moving at 500 kilometres a second (that's 1,000 times faster than a bullet!).

But don't worry, Earth and most other planets in our Solar System are protected by an invisible shield, one that's big enough to cover an entire planet! This cosmic armour is called a "magnetic field".

In a lot of ways, these super shields are the same as the bar magnets you might see in school, or on your fridge at home. The magnetic field starts at one pole (the planet's North or South pole) and loops around into the other pole, giving them a doughnut-like shape with small holes at the poles.

The most important role of the magnetic field is to stop the Sun from blasting the atmosphere or surface of a planet with harmful particles. Instead it reroutes the particles to the poles. Here the holes provide an opportunity for them to sneak down into the atmosphere below.

Finally, after travelling millions of kilometres across our Solar System, the sun's particles get to shine – literally. They can be seen on Earth as the dazzling nighttime light-shows we call the "auroras".

The auroras are not unique to Earth. Other planets in our Solar System have been found to have them too, including Saturn.

These pictures show the stunning aurora at Saturn's north pole, which were photographed by the Hubble Space Telescope. Auroras come in many colours, determined by the chemicals in a planet's atmosphere. On Earth, the lights appear green when the Sun's particles collide with oxygen and red when they hit a chemical called nitrogen.

Saturn's atmosphere has a different chemical make-up to ours. It is made up largely of a chemical called hydrogen, which produces auroras invisible to the human eye. They shine with a type of light called Ultraviolet (or UV). Luckily for us, Hubble can see Saturn's aurora and allow it capture spectacular photos like these!

COOL FACT

Recently, scientists stumbled across a new phenomenon in our atmosphere that sometimes appears alongside aurora. The curious sight, called STEVE, appears across the night sky as a narrow ribbon of bright purple and white. So far, no-one has any idea what it is, but it gets its name from the film *Over the Hedge*!





More information about EU-UNAWE
Space Scoop: www.unawe.org/kids/