Wind estimate 'shortens Saturn's day by five minutes'

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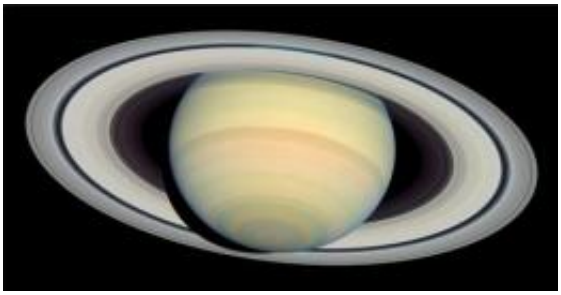

Saturn's day may be five minutes shorter than previously thought.

(PhysOrg.com) -- A new way of detecting how fast large gaseous planets are rotating suggests Saturn's day lasts 10 hours, 34 minutes and 13 seconds - over five minutes shorter than previous estimates that were based on the planet's magnetic fields.

The research, published in this week's *Nature*, was carried out by an international team led by scientists from Oxford University and the University of Louisville, USA.

Measuring the rotation of gas giants such as Saturn is difficult because the planet has no solid surface to use as a reference. Also, unlike Jupiter, Saturn's magnetic fields are aligned with its rotation axis so that their fluctuations do not give an accurate measure of the rotation of the planet's deep interior.

The new approach comes out of work begun over ten years ago by Timothy Dowling of the University of Louisville into measuring the movements of ammonia clouds across Saturn's surface and the work of Professor Peter Read of Oxford University, who has been using data from the NASA Cassini spacecraft's infrared spectrometer to study the planet's atmosphere since 2004.

'We realised that we could combine information on what was visible on the surface of Saturn with Cassini's infrared data about the planet's deep interior and build a three dimensional map of Saturn's winds,' said Professor Peter Read of Oxford University's Department of Physics, an author of the paper. 'With this map we were able to track how large waves and eddies develop in the atmosphere and from this come up with a new estimate for the underlying rotation of the planet.'

Professor Read said: 'While shortening Saturn's day by five minutes might not sound like much it implies that some of our previous estimates of wind speeds may be out by more than 160 miles per hour! It also means that the weather patterns on Saturn are much more like those we observe on Jupiter, suggesting that, despite their differences, these two giant planets have more in common than previously thought.'

The new finding could prove crucial in understanding the deep interior of the planet, whose rotation the team believes may be more complicated than a solid body because it is made up of fluid. It could also shed light on how Saturn and other gas giants - such as Jupiter, Uranus and Neptune - evolved.

Provided by Oxford University (news : web)

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