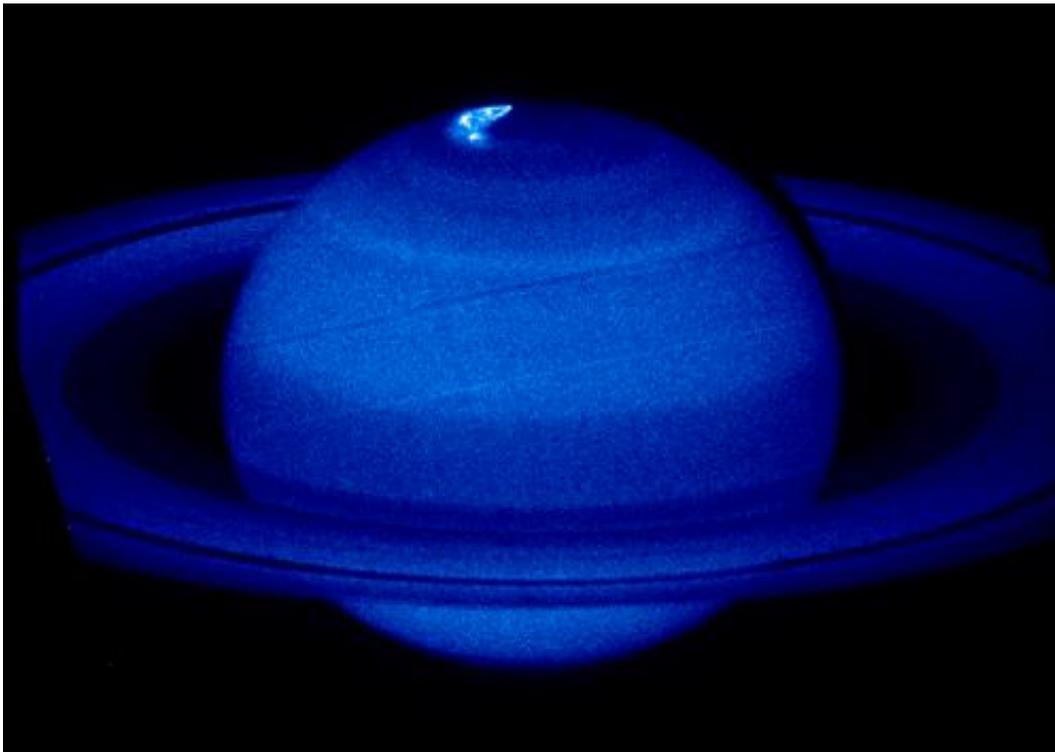


Scientists organise groundbreaking Saturn observational campaign

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Auroral formation on Saturn. Credit: Jonathan Nichols, NASA, ESA, University of Leicester

University of Leicester planetary scientists have collaborated with an international team of researchers to organise the largest ever observational campaign of Saturn's auroras.

The month-long project will see a host of space and ground-based

telescopes focus on the ringed [gas giant](#) in order to expand our knowledge of the planet's northern lights.

A team of scientists from the University's Department of Physics and Astronomy has collaborated with NASA and the European [Space Observatory](#) (ESO) on the project.

The instruments involved include NASA and ESA's [Hubble Space Telescope](#), the NASA/ESA/ASI Saturn-orbiting spacecraft Cassini, the ESO's Very Large Telescope (VLT) in Chile, the W. M. [Keck Observatory](#) in Hawaii and NASA's Infrared Telescope Facility (IRTF) in Hawaii.

Each instrument will make different [observations](#) of Saturn's aurora covering a variety of wavelengths and view points – potentially giving the most comprehensive set of data on the phenomenon to date.

The team hope the observations will tell us more about how the auroras are formed and the way energy flows from the solar wind and Saturn's magnetic field into the planet's ionosphere and atmosphere.

This could tell us more about other auroras – including those on Earth.

The group of instruments will observe Saturn's [northern aurora](#) and southern aurora at several points between April 19 and May 21.

The team chose this period to observe Saturn as it is the time of year when the planet is closest to the Earth and at its largest in the night's sky.

Dr Tom Stallard is leading the ground-based observations from IRTF over 74 hours and the VLT over 15 hours – both of which will observe Saturn's northern aurora.

Dr Jonathan Nichols is leading on the Hubble, which will observe the planet's northern ultraviolet aurora for a total of 11 hours, and Dr Sarah Badman has co-ordinated with the Cassini team to help plan observations in both the northern and southern aurora over 142 hours.

In addition, Dr Kevin Baines, of NASA's Jet Propulsion Laboratory is leading on Keck observations over 24 hours, and will work closely with Dr Tom Stallard.

At the end of the observations, the findings from each instrument will be collated. The researchers will then be able to view and compare the observations of auroral events from many different angles.

Dr Stallard, of the Radio and Space Plasma Physics Group within the University of Leicester's Department of Physics and Astronomy, said: "Up until now, it's like we have been looking at the aurora in black and white – and now we're trying to look in colour. We're hoping to get much more depth to the observations we have taken - filling in a far more complete picture of the [aurora](#) as a whole, rather than disconnected parts.

"What we hope to gain from this observing campaign is a way to link different auroral and magnetospheric events, following the flow of energy through the system, from the solar wind and magnetic field of Saturn down into the [ionosphere](#) and atmosphere. By understanding the way this energy flows at Saturn, we should also gain real insight into the interaction between the Sun and other planets."

Dr Jon Nichols said: "Over the last few years, the view from Earth of Saturn's north pole has been steadily growing, and we have been using Hubble to take snaps of Saturn's northern auroras as the view gets better."

"This year will provide us with the best views yet of the north, and it's very exciting that a battery of other instruments will be zeroing in on the auroras at the same time. It takes a great deal of effort to obtain such coordinated efforts, so credit has to go to the whole team in getting this programme organised."

Dr Badman said: "The coordination with Hubble, Cassini, Keck Observatory, IRTF and the VLT is going to provide really exciting science. For example, we may obtain good views of the northern and southern auroral emissions at the same time - Cassini looking at the south from high latitudes while HST and the other telescopes look at the north."

The team aim to live stream observations from the W. M. Keck Observatory via the observatory's website: keckobservatory.org/

A podcast is available here: [soundcloud.com/university-of-l ... r/dr-thomas-stallard](https://soundcloud.com/university-of-leicester/dr-thomas-stallard)

Provided by University of Leicester

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