

Astrophysicists develop model on solar flares

BENGALURU, DHNS: A team of astrophysicists from the Indian Institute of Astrophysics (IIA) and the University of Oslo, Norway have developed a numerical model that explains how magnetic fields from deep below the Sun's surface can produce energetic flares in the Sun's corona.

The team studied the behaviour of sunspots and solar flares and their findings have changed the way these phenomena are understood, said a release from IIA.

Sunspots are temporary dark spots that appear on the solar surface due to concentrations of magnetic flux. Solar flares on the other hand are sudden bursts of energy that occur when the magnetic energy that has built up in the solar atmosphere is suddenly released. The team studied a special type of sunspots called Delta sunspots that have a complex magnetic topology. They also carried out numerical simulations on super computers starting with initial conditions consisting of a thin horizontal sheet of magnetic field underneath the solar surface.

"Solar flares and coronal mass ejections are the main drivers of space weather in the heliosphere", says Dr Piyali Chatterjee from IIA, while stressing the importance of understanding them better.

On November 4, 2015, a malfunction of the radars at Sweden's airports grounded all of the country's commercial flights. Similarly, on March 13, 1989 the hydroelectric transmission system in Quebec, Canada suffered a nine-hour outage. Such events are often triggered by solar flares - a sudden burst of high-energy particles and radiation from the Sun reaching the Earth.



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