

# Don expounds on sun spots

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**BANGALORE:** "Sunspots are a very complex feature of the solar atmosphere that are transient in nature. These are cooler regions compared to the hot visible surface of the Sun and so appear dark. The sunspots were seen for the first time through a telescope by Galileo and are occasionally visible with the unaided eye."

This explanation about a critical phenomenon on the solar surface was made during a lecture by Prof Douglas Gough, University of Cambridge, Institute of Astronomy, as part of an international conference on "Magnetic Coupling between the Interior and the Atmosphere of the Sun" at the Indian Institute of Astrophysics here.

These are generally located in groups and are found within 30 degrees



**Douglas Gough**

north and south of the equator of the Sun. Their number varies with a period of approximately 11 years, the solar cycle. The smaller ones last a week or so while the bigger ones last for over two months.

In a sunspot convection does not carry enough heat due to the controlling effect of the magnetic field whose value can be several thousand gauss. Interestingly

Evershed's observations at the Kodaikanal Observatory, made 300 years after Galileo's telescopic observations indicating radial outflow of solar plasma in sunspots parallel to the solar surface paved the way for a better understanding of the sunspots.

Douglas Gough is one of the most distinguished solar physicists today and a pioneer in the theory of convection and helioseismology wherein one gets to understand the internal properties of the Sun from the frequencies of many modes of oscillations of the Sun.

Professor Gough's pioneering work on helioseismology is now being extended to asteroseismology, an area of research which is presently in its infancy, and which promises to further refine our understanding of the structure and evolution of stars.

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