Udaipur Solar Observatory/ Physical Research Laboratory

P.Box.No 198, Dewali, Badi Road, Udaipur-313001

SEMINAR

Declining solar magnetic fields: Are we heading towards a Maunder minimum?

(Prof. S. Ananthakrishnan Dept. of Electronic Science, University of Pune, Pune)

One of the primary indicators of Solar activity is the Sunspot number and the associated 11 year solar cycle. This activity is controlled by the solar magnetic field. There are clear indications based on a variety of studies that the agnetic field on the Sun has been steadily decreasing in the past ~ 20 years resulting in lower activity on the Sun. The Sunspot formation has decreased by ~ 30% since the early 90's. It has been speculated that if this continues, there will be no sunspots by the latter part of this decade, leading to a Maunder-like minimum in the next cycle. Using Interplanetary scintillation data from radio telescopes, surface photospheric fields measured by National Solar Observatory and He abundances measured by ACE, SDO spacecraft, my collaborators from PRL, Ahmedabad & Harvard Smithsonian Observatory and I have been studying this monotonic decrease.

Interplanetary Scintillation observations between 1983 and 2009 clearly show steady drop in the turbulence levels in the entire inner heliosphere starting from around 1995. Our recent analysis of the solar magnetic fields have shown that a steady decline of the fields have taken place since around 1996 and meridional flows also appear to have changed. Similarly, Helium abundance dropped dramatically during 2008-2010. All these lead us to state that the build-up to the deepest solar minimum in 100 years actually began more than a decade earlier. We will examine the evidence in detail in this talk.

Date: Oct 25, 2013

Time: 16:00

Venue: USO Seminar Hall