



**Udaipur Solar Observatory/ Physical Research Laboratory**

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

---

## **SEMINAR**

### **Theoretical study of the solar magnetic cycle and its irregularities**

**(Bidya Binay Karak)**

The solar cycle is not regular. The strength as well as the period varies from cycle to cycle. One puzzling aspect of this sunspot cycle is the Maunder minimum in 17th century when sunspots disappeared for about 70 years. Indirect studies suggest that there were several other such events in the past. The motivation of my talk will be first to understand the generation and the evolution of the large-scale magnetic field of the Sun and then to model some irregular features of the solar cycle.

I shall discuss a flux transport dynamo model to study the evolution of magnetic fields in the Sun. In this model, the toroidal field is generated by the strong differential rotation near the base of the convection zone and the poloidal field is generated near the solar surface from the decay of sunspots. The turbulent diffusion, the meridional circulation and the turbulent pumping are the important flux transport agents in this model which communicate these two spatially segregated source regions of the magnetic field. With this dynamo model, I shall explain several aspects of the solar cycle including grand minima. I shall also discuss the predictability of the future solar cycle using dynamo models.

**Date:** Feb 04, 2013

**Time:** 16:00

**Venue:** USO Seminar Hall