

## Periodicity of Interplanetary Magnetic Field

Hari Om Vats<sup>1</sup> and Satish Chandra<sup>2</sup>

<sup>1</sup> *Physical Research Laboratory, India*

<sup>2</sup> *PPN (PG) College, India*

In the past we have extensively used disk integrated solar flux at several radio frequencies and the images of Sun at 17 GHz and soft X-ray. These data sets have provided very valuable information of the rotation of the outer part of the Sun (mainly corona). These works have used the flux modulation method. Recently we extended this method to interplanetary magnetic field measurements. Most extensive data set of interplanetary magnetic field is available from the Advanced Composition Explorer (ACE). ACE orbits the L1 libration point which is a point of Earth-Sun gravitational equilibrium about 1.5 million km from Earth and 148.5 million km from the Sun. From its location at L1 ACE has a prime view of the solar wind, interplanetary magnetic field and higher energy particles accelerated by the Sun, as well as particles accelerated in the heliosphere and the galactic regions beyond. Used the interplanetary magnetic field data i.e. Bx, By and Bz as the individual time series with a daily cadence. The analysis indicates that Bx and By component of the IMF have a very strong modulation of solar rotation. The z component of IMF (Bz) has no rotational modulation. The estimated synodic rotation periods for the years 2000 and 2001 are 27.85 and 25.85 days respectively. Thus rotation in 2001 is faster than that in 2000. This is in contrast with the earlier measurements using other features on the solar surface. Here an exhaustive attempt will be made to compare and discuss the rotation measurements obtained by various techniques.