

## **Venus Radiation environment monitor (VeRad) on-board Venus Orbiter**

Sushil Kumar<sup>1</sup>, Arpit Patel<sup>1</sup>, Deepak Kumar Painkra<sup>1</sup>, M.Shanmugam<sup>1</sup>, Nishant Singh<sup>1</sup>,  
Hitesh Adalaja<sup>1</sup>, Tinkal Ladiya<sup>1</sup>, Neeraj Tiwari<sup>1</sup>, S. K. Goyal<sup>1</sup>, Prashant Kumar<sup>1</sup>,  
D.Chakrabarty<sup>1</sup>, Santosh Vadawale<sup>1</sup>, Varun Sheel<sup>1</sup>, S. A. Haider<sup>1</sup>, Anil Bhardwaj  
<sup>1</sup>Physical Research Laboratory, Ahmedabad-380009, Gujarat, India

sushil@prl.res.in

### **Abstract**

The planet Venus is called the sister planet of Earth because it resembles Earth in many properties like size and structure. But there are lots of differences between these planets like the denser atmosphere of the planet Venus and much higher atmospheric pressure. Also the planet Venus does not have intrinsic magnetic field due to which even low energy cosmic rays, X-rays and Solar Energetic Particles (SEPs) are expected to cause ionization in the lower atmosphere. Further, Venus is closer to the Sun and hence it is expected to be exposed to higher SEP fluxes. Therefore, cosmic ray particles and SEPs are expected to exert significant influence in determining the ionospheric electron content, electrical conductivity of the Venusian atmosphere, atmospheric chemistry and charging of clouds. The flux of these SEPs around Venus is not known and is conventionally estimated from Earth based observation by scaling it according to the Sun-Venus distance[1]. Venus Radiation environment monitor (VeRad) is one of the instrument on-board Venus orbiter. Its primary objective is to measure the high energy particle flux around the Venus in the energy range of 100 KeV to 100 MeV. This measurement will help in understanding the effect of interaction of these particles with Venus atmosphere and also in estimating the radiation dose around the Venus orbit. The objective will be achieved by using the stack of detectors to cover this wide energy range of particles to be measured[2]. The stack of detectors include three silicon pin detectors of varying thicknesses and a CsI scintillator. The design aspects and the instrument configuration of VeRad will be discussed in detail in the conference.

**Keywords:** Venus Radiation environment monitor; Silicon PIN Detector; Scintillator; Solar Energetic Particles; Cosmic rays.

### **References:**

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