

Title of the talk: Understanding Magnetospheric Systems: A peek into the Venusian Magnetosphere.

Abstract

A magnetosphere is a region of influence surrounding any object where the object's magnetic field dominates, but outside of which the interplanetary magnetic field dominates. The study of magnetosphere offers crucial insights into the interaction between celestial bodies and their surrounding environments. All the planets visited by spacecraft to date have either an induced or intrinsic magnetosphere. The type of magnetosphere formed depends upon whether the solar wind is interacting with the object's own magnetic field, which it generates by an internal dynamo action in its core or whether the solar wind is directly interacting with the object's conducting ionosphere. The former case produces an intrinsic magnetosphere, and the latter case produces an induced magnetosphere. We will briefly study about the terrestrial magnetosphere and then will move to Venus, where we will learn about various missions to Venus concerning space physics exploration like PVO and VEX missions. We will discuss the formation of induced magnetosphere at Venus, how the magnetic field lines pile up and creates a magnetic barrier and will see how this magnetosphere is dependent upon the orientation of IMF. Since Venus's induced magnetosphere is very small in size, hence compared to terrestrial magnetosphere, it is not very effective in shielding the planet, as a result the solar wind alters the Venus's atmospheric photochemistry, accelerating some of the ions out from its atmosphere. Hence, studying Venus will help us in finding out how well these planetary magnetospheres are protecting planets from Venus like fates.