



Deep Electromagnetic Sounding of Venus and Mars: The Concept

Michaela Villarreal (1), Christopher Russell (1), Peter Chi (1), Tielong Zhang (2), Janet Luhmann (3), and Yingjuan Ma (1)

(1) IGPP, UCLA, USA (mvillarreal@igpp.ucla.edu), (2) Austrian Academy of Sciences, (3) University of California, Berkeley

The interaction of the solar wind with a planet with a weak magnetic field and a well-developed ionosphere can result in a transport of magnetic flux into the ionosphere and the build-up of a strong magnetic field layer at low altitudes. We can now illustrate the properties of this layer with the Pioneer Venus and Venus Express magnetometer data, but soon such measurements are expected to be returned by the MAVEN mission at Mars. In this paper we show how we could electromagnetically sound the interior of Mars, and especially to determine the size of the core using InSight and/or MAVEN measurements based on our understanding of the Pioneer Venus and Venus Express magnetic measurements. We await the MAVEN measurements in order to determine how much the crustal field affects the martian ionosphere.