



RSPP seminars



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“Geometry of Jupiter’s Magnetic Field & observability of Decameter Radiation in the Juno era”

The decametric radio emissions (DAM) originating in Jupiter’s polar auroras have been observed from Earth since 1955 and from near-equator spacecraft such as Voyager. Since July 2016, Juno is providing stunning information since it is orbiting Jupiter and recording these events in a wide range of latitudes. DAM ought to originate along magnetic field lines at the local electron gyrofrequency. The Io-related DAM have received most attention since the 1980’s. It is expected that the maximum frequency of these emissions is bounded by the maximum magnetic field strength near the footprint of the instantaneous Io Flux Tube (IFT). However, the lack of agreement between the frequency extent of Io-related decameter radiation and those predicted by Jovian magnetic field models has been hotly debated. Here, the results from a detailed analysis of Io and non-Io-related DAM identified by Juno are presented, as well as how the newly proposed magnetic field model (JRM09) can accommodate the Io-DAM. Io-DAM events are also investigated to estimate the emission half-cone angle, altitude of emission, and resonant electron energy. In addition, through a quantitative analysis, an explanation regarding the higher likelihood of observing groups of arcs originating in the northern hemisphere relative to those originating in the southern hemisphere is presented. This is primarily a consequence of the asymmetry of the magnetic field geometry, observer location, and pitch angles of the electrons at the equator. Finally, Jupiter’s orbital forcing on Earth’s ice-age cycles will be briefly discussed based on new results obtained in the sediments collected in a recent Antarctic expedition.

Wednesday, March 11th at 2 pm in **Physics LTD**