



Mercury's Magnetospheric Solar Wind Interaction in a Global Hybrid Simulation

R. Jarvinen^(1,2)

(1) Finnish Meteorological Institute, Helsinki, Finland; e-mail: rikku.jarvinen@fmi.fi

(2) Department of Electronics and Nanoengineering, School of Electrical Engineering, Aalto University, Espoo, Finland

Modeling of Mercury's space weather using the 3D global hybrid-particle code RHybrid is presented. The model is applied to simulate the Hermean magnetospheric solar wind interaction under different upstream solar wind and interplanetary magnetic field conditions. In the simulation, ions are treated as particles moving under the Lorentz force and electrons form a charge-neutralizing, inertialess fluid. The evolution of the magnetic field is self-consistently coupled with ion dynamics through Maxwell's equations in the non-radiative limit. Focus of the study is the structure and properties of plasma and magnetic field in Mercury's plasma environment. Additionally, particle, magnetic field and plasma wave characteristics along the flyby trajectories of the BepiColombo mission before its orbital insertion are examined, to prepare for observations during the upcoming orbital phase.