



Modeling of solar energetic particles in Hermean magnetosphere

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We have developed a test-particle simulation code, utilizing a simple model of a planetary magnetic field. We apply the model to assess the energetic particle environment at Mercury during solar energetic particle (SEP) events. We study the fluxes of SEPs hitting the planetary surface at different locations under foreseen conditions for the interplanetary SEP spectra and anisotropies. In addition, we evaluate the energetic particle fluxes that would be simultaneously observed by the Solar Intensity X-ray and particle Spectrometer (SIXS) on-board the BepiColombo/MPO spacecraft. The orbit of MPO will be partly inside the Hermean magnetosphere. Taking the energy and angular response function of the instrument into account, we analyze the ability of SIXS measurements to produce estimates of particle fluxes hitting the planetary surface below the spacecraft, which are required for the successful analysis of the planetary X-ray emission. We also analyze the ability of SIXS to measure the interplanetary electron and proton flux conditions at different energies and in different parts of the orbit of MPO.