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The electron magnetosphere of Mercury as obtained from PIC simulations

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We examine the response of the hermean magnetosphere to variations in the solar wind parameters. A short-lived (a few minutes) event is investigated during which the solar wind speed abruptly increases (from 400 to 700 km/s), the interplanetary magnetic field rotates from a northward to a southward orientation, and the photon flux is greater than 10ˆ20 / mˆ2 / s. To model the plasma transport at Mercury, we use a modified version of the TRISTAN code initially developed by Buneman (1993). We also consider photon and proton sputtering of sodium atoms from the planet surface and examine their contribution to the magnetosphere after ionization. We will report on the characteristics of the electron distributions as well as their evolution in time and compare the results of PIC simulations with Mariner 10 data. The distributions of sodium ions will also be discussed.