Photoelectron current from GEOTAIL in the magnetosphere derived from measurements of spacecraft potential and ambient plasma

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Current density of net photoelectrons escaping from the GEOTAIL spacecraft was estimated from the GEOTAIL EFD single probe data and low energy particle (LEP) data obtained during the period from September 14, 1993, to October 31, 1998, by assuming balance of the currents caused by photoelectrons and ambient thermal electrons. The saturation current density was 44+-17[micro A m-2]. Number density of the photoelectrons was 1500+-700[cm-3] at the surface of the spacecraft, and the energy of the photoelectrons was 1.4+-0.3[eV], according to a model fitting of the photoelectron current density as an exponential function of electric potential of the spacecraft.

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