



Global flows of energetic ions in the Jovian magnetosphere: Galileo EPD measurements 1996-2003

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We present a final version of the global flow pattern inside the Jovian magnetosphere. In this study all available data (1996-2003) from the Energetic Particles Detector EPD aboard the Galileo spacecraft are used and therefore present an update of the results published in Krupp et al. [2001] where only data from the first 11 orbits could be used.

Based on directional anisotropies and energy spectra of energetic ions and under the reasonable assumptions that most of the anisotropies are caused by species and energy-independent ExB-drifts the flow vectors along the Galileo orbits were derived inside the Jovian magnetosphere at a variety of distances and local times.

In general we find sub-corotational flows with smaller radial and north-south components, occasionally disrupted by tailward and/or planetward flows especially in the predawn and midnight sector of the magnetosphere. We find large asymmetries between the smaller flows near local dusk compared to nearly rigidly corotating particles near dawn possibly related to the differences in the thickness of the plasma sheet at those local times.

In addition measurements from the noon to afternoon sector of the magnetosphere are presented where very small corotational flows are detectable implying the existence of field-aligned components.