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Energetic electron measurements near Enceladus by Cassini during 2005-2015

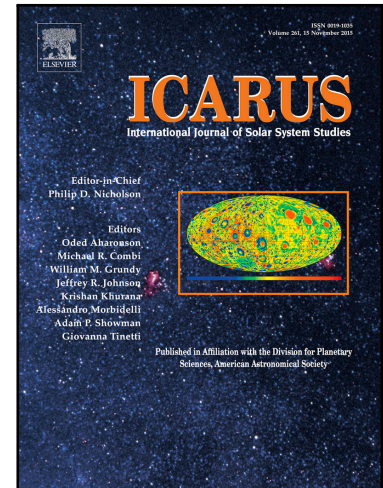
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Highlights

- Full absorption down to background levels mark the region where Cassini was either magnetically connected with the moon itself or with the dense plume or it was crossing the central wake. Dependent on the spacecraft trajectory and dependent on the energy of the electrons the intensities recovered to magnetospheric levels. For MeV electrons measured upstream those magnetospheric levels were reached after the plume encounter in the south, indicative of the interaction region upstream of the moon and the dense plume extension in the south.
- Ramp-like signatures have been observed during some of the northern and some of the southern flybys. In this region only a partial depletion of the bouncing electrons is observed. Dependent on the flyby trajectory this ramp was sometimes observed and sometimes not. Ramp signatures with respect to Enceladus were measured in both hemispheres. All the ramps in the southern flyby data are within 1 REnc around the moon while in the north the ramps have been observed quite far away from the moon for two flybys E3 and E5. The efficient interaction region between the Enceladus environment filled with neutrals and dust and the undisturbed magnetosphere is much larger than the moon itself. Electrons entering this interaction region during their bounce and drift motion along and perpendicular to the magnetic field lines react on those disturbed field lines and dense material around the moon. From the ramp signatures in the MIMI/LEMMS data this region extends 12 REnc downstream from the moon (flyby E5) but close to the geometrical wake (or edge of the dust trail region). In addition the plume itself

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