EPSC Abstracts,
Vol. 2, EPSC2007-A-00351, 2007
European Planetary Science Congress 2007

Dynamics of Enceladus south pole ejecta

M. Makuch, J. Schmidt, F. Spahn
Institute of Physics, University of Potsdam, Germany

The Saturnian moon Enceladus was recently found to be a potent source of gas and dust particles. There was an active region observed on the south pole of Enceladus with jets spraying material in the space. The ejected dust particles are considered to be the main source of the faint E ring.

In our work we investigate the long-term dynamics of icy particles ejected from the south pole of Enceladus. The motion of the ejected grains, being subject to many perturbation forces, strongly depends on particle properties (e.g. size, charge etc.). We study the resulting spatial distribution of particles in the E ring. Primarily we focus on the structure of the ring in the vicinity of Enceladus.

In our study we also concentrated on processes limiting particle lifetime. These are mainly collisions with Enceladus and other Saturnian satellites or main ring, as well as the sputtering of particles by plasma ions bombardment. Modeling the equilibrium between particle sources and sinks we found the size distribution which is expected to be observed in the E ring.