Geophysical Research Abstracts, Vol. 7, 04490, 2005
SRef-ID: 1607-7962/gra/EGU05-A-04490

Laboratory studies of stream particle candidates

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The Cosmic Dust Analyzer (CDA) on the Cassini spacecraft is capable to characterize the chemical composition of dust particles by a time-of-flight mass spectrometer. During Cassini's approach to Saturn the CDA discovered streams of high-velocity dust originating from the inner Saturnian system. Most of the recorded spectra show indications for a silicate material. In order to verify this conclusion comparative spectra have been gathered in our laboratory by a high-resolution time-of-flight mass spectrometer using various types of silicate as target material. For this purpose we have been examining two different methods: - Laser ionization using a 355nm ND-YAG laser with different laser energies - Impact ionization using particles of different speeds and masses which are generated at the Heidelberg dust accelerator. The resulting spectra are compared among each other as well as with CDA spectra.