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Hypervelocity impact laboratory simulation for future interplanetary missions

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The performance spectrum of the hypervelocity laboratory at the Technische Universität München (TUM) indicates, that a simulation can be conducted of interplanetary and cosmic dust impacts in satellite experiments. The accelerators in this laboratory have been used to develop space experiments like the experiment MDC on the satellites HITEN and NOZOMI (both ISAS Projects), and CDA on CASSINI. At the same time first experiments were conducted by Koschny (Dissertation on "Impact Dynamics on Ice- Silicates Mixtures" 1994) in preparation of EUROPA missions. The results obtained by Koschny and Rott indicate, that the structure of an ice-silicate (sand) crater, generated by a hypervelocity impact, changes significantly with the ice/silicate mixture-ratio.

The results are described together with an analysis of the impact of these results on the current and planned interplanetary missions, especially to planetary bodies with icy surfaces.