

## **SPOSH: A Proposed Meteoroid Impact Detector in Lunar Orbit**

**J. Oberst** (1), J. Flohrer (1), H. Michaelis (1), R. Schroedter (1), W. Tost (1)

(1) German Aerospace Center, Institute of Planetary Research, Berlin (Juergen.Oberst@dlr.de)

The Terrestrial Planets collide with extraterrestrial material from various Solar System sources. Most of these “meteoroids” are believed to originate from comets, the asteroids in the main belt, or NEOs (Near Earth Objects) and probably hold important clues on the origin and current state of their parents. Meteoroids impacting the Moon release a small portion of their kinetic energy in the form of light flashes that can be observed by Earth-based cameras, as Lunar astronomers have proven only very recently. A Lunar orbiting satellite at a much closer range would be an ideal platform for observations of these faint transient events. We have developed a dedicated camera system, SPOSH (Smart Panoramic Optical Sensor Head), which is perfectly suited for this type of monitoring task. The camera is equipped with a highly sensitive back-illuminated 1024 x 1024 CCD chip and a custom-made wide-angle (120 deg) optical system with high light-gathering power. SPOSH has a sophisticated processing unit for automatic event detection, with which images (at their maximum resolution) can be processed at rates up to 2 per sec. To reduce data volume, only those images are returned to the ground, which contain events. The goals of such a Lunar monitoring platform are to determine magnitude/frequency data for sporadic and shower meteoroids, which will be fully interpreted in terms of overall flux, types, and orbital distribution of the meteoroids. Comparisons will be made with the Lunar cratering rate, the Lunar seismic detection rate of impacts, NEO statistics, and Earth-based observations of meteors to reconcile and understand observational biases in the different techniques for the studies of the meteoroid population.