

Observations of the Perseids 2013 using SPOSH cameras

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Abstract

Earth is constantly bombarded by debris, most of which disintegrates in the upper atmosphere. The collision of a dust particle, having a mass of approximately 1g or larger, with the Earth's atmosphere results into a visible streak of light in the night sky, called *meteor*. Comets produce new meteoroids each time they come close to the Sun due to sublimation processes. These fresh particles are moving around the Sun in orbits similar to their parent comet forming meteoroid streams. For this reason, the intersection of Earth's orbital path with different comets, gives rise to a number of meteor showers throughout the year. The Perseids are one of the most prominent annual meteor showers occurring every summer, having its origin in Halley-type comet 109P/Swift-Tuttle. The dense core of this stream passes Earth's orbit on the 12th of August when more than 100 meteors per hour can be seen by a single observer under ideal conditions.

The Technical University of Berlin (TUB) and the German Aerospace Center (DLR) together with the Armagh observatory organize meteor campaigns every summer observing the activity of the Perseids meteor shower. The observations are carried out using the *Smart Panoramic Optical Sensor Head* (SPOSH) camera system [2] which has been developed by DLR and Jena-Optronik GmbH under an ESA/ESTEC contract. The camera was designed to image faint, short-lived phenomena on dark planetary hemispheres. The camera is equipped with a highly sensitive back-illuminated CCD chip having a pixel resolution of 1024x1024. The custom-made fish-eye lens offers a 120°x120° field-of-view (168° over the diagonal) making the monitoring of nearly the whole night sky possible (Fig. 1).

This year the observations will take place between 3rd and 10th of August to cover the meteor activity of the Perseids just before their maximum. The



Figure 1: A long Perseid meteor captured by the SPOSH camera operated in Mt. Parnon during the last 2012 observing campaign in Greece (left). The camera breadboard mounted on a tripod in Mt. Mainalon.

SPOSH cameras will be deployed at two remote sites located in high altitudes in the Greek Peloponnese peninsula. The baseline of ~50km between the two observing stations ensures a large overlapping area of the cameras' field of views allowing the triangulation of approximately every meteor captured by the two observing systems.

The acquired data will be reduced using dedicated software developed at TUB and DLR. Assuming a successful campaign, statistics, trajectories and photometric properties of the processed double-station meteors will be presented at the conference. Furthermore, a first order statistical analysis of the meteors processed during the 2012 and the new 2013 campaigns will be presented [1].

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References

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