

## Lunar Impact Flashes during 2007 Geminids

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The Lunar Impact Flash is thought to be a phenomenon after a hyper-velocity impact of a large dust particle on the Moon. It is evident that hyper-velocity objects impacting on Lunar surface emit visible flash that is observable from the Earth. Japanese and ESA's spacecraft HITEN and SMART-1 crashed onto the Moon in 1993 and 2006 respectively showed flash (or dust cloud reflection) signatures in the visible and near-infrared wavelength regions[1,2].

During 1999 Leonids maximum, the first lunar impact flashes caused by meteoroids were confirmed using CCD video cameras[3-5]. After the discovery of impact flashes due to a non-Leonid meteoroid, Perseids[6] and several other meteor showers such as Lyrids, Orionids, Taurids and Geminids[7], lunar impact flashes induced by meteoroids are recognized as common phenomena. However, details of impact flashes, the luminous efficiency and the emitted materials are still uncertain.

On the night of 15 December 2007 during Geminid meteor shower (impacting velocity is approximately 35 km/s), the first color video images carried out using a newly developed high-sensitive CCD camera in the wavelength range of 400-1000 nm were successfully observed at the Nishiharima astronomical observatory. Observed three events detected by the color camera were also obtained by three other independent black-and-white CCD video cameras in Japan.

We will discuss on size-distribution of larger dusts (sub-meter size) and their flash mechanism. Considering our investigation on a flash model, evaporation rate of Na in the Moon atmosphere will also be shown.

### References

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