



# Backscattering of solar wind from the hermean surface: expected observations at the example of a high solar wind flux event at the Moon

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## Abstract

On 24. June 2009 the solar wind flux and density at the Moon reached for several hours values comparable to average solar wind conditions expected at Mercury. During this event, the Chandrayaan-1 Energetic Neutrals Analyzer (CENA) [1] on board of the Indian Chandrayaan-1 spacecraft observed the solar wind back-scattered from the lunar surface as energetic neutral atoms [2][3]. The Mercury Magnetospheric Orbiter (MMO), part of the Bepi Colombo mission, will carry an identical instrument, the Energetic Neutrals Analyzer (ENA) to measure energetic neutral atoms in the hermean environment. The lunar event from 24. June 2009 serves as a prototype for observations to be made by ENA on Mercury. We analyze the lunar event and predict ENA measurements for average hermean conditions.

## References

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- [2] Wieser, M., et al., Extremely high reflection of solar wind protons as neutral hydrogen atoms from regolith in space, *Planetary and Space Science* 57, no. 14-15, 2132 – 2134, 2009.
- [3] Wieser, M., et al., First observation of a mini-magnetosphere above a lunar magnetic anomaly using energetic neutral atoms, *Geophys. Res. Lett.*, 37, L05103, doi:10.1029/2009GL041721, 2010.