



Space Weather on the Moon

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Abstract

Lunar Prospector electron reflectometry (ER) data have demonstrated that the Moon's surface is likely to charge to large electrostatic potentials with respect to the environment when the Moon crosses different regions of the Earth's magnetosphere [1], from potentials close to 0 or positive on the dayside to negative values near the terminator and several hundredth or thousandth of volts in the wake or during SEP events. Concomitantly, dust charging and transport at the Moon's surface is of high interest for the preparation of future missions to the Moon.

In the present study we investigate the Moon charging environment and surface charging processes under different conditions by using a 3D PIC simulation code, on the one hand. On the other hand, we analyze the physics to be implemented in a numerical approach in order to address dust charging and transport processes at the Moon surface relevant to the exploration of the Moon. We will give a few examples of dust charging and levitation carried out with our model.

References

[1] Halekas et al, (2008) *JGR*, Volume 113, Issue A9