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# Straylight characterisation of SMART-1 AMIE camera

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The SMART1 Satellite is orbiting the Moon since October 2003. One of the instruments on board the satellite is the high resolution camera AMIE.

The AMIE team was imaging the lunar South Pole, in order to map the area in a resolution down to 200 meters. The filters of the camera are placed at the wavelengths 760nm, 915 nm, 847nm, and 960 nm.

We present the results of the stray light characterization of the AMIE camera on board SMART-1 satellite. One of the tasks of the mission is to investigate the permanently shadowed regions near the lunar South Pole and look for the surface deposits of ice. The previous missions showed an indication of ice in the area 90x150 km located at 84.5 S, 310 E. This area shows two prominent topographic depressions. Within the depressions are six craters of 19-51 km in diameter, which, according to Margot (1999), have permanently shadowed floors.

The Clementine images of the UV/Vis camera could not be used to look for ice in the permanently shadowed crater floor because they were overwhelmed by instrumental stray light (McConnochie 2000).

We developed a computer model of the AMIE camera optics to understand its stray light performance. We verified the model with measurements obtained during the cruise phase and the ground-based calibration.

The model indicates that the stray light contribution is negligible. As the multiply reflected light from the crater bottom should be approximately 6% of the light reflected from the crater rim, using a fit for the Hapke/Lommel-Seeliger lunar surface photometric function (McConnochie 2002, Hillier 1999).

We think that the camera performance allows long exposures in dark regions and in principles the detection of very faint surface features like ice deposits.

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