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Lunar Swirls: Plasma Magnetic Field Interaction and Dust Transport MICHAEL DROPMANN, CASPER - Baylor University/IRS - University of Stuttgart, RENE LAUFER, CASPER - Baylor University, GEORG HERDRICH, CASPER - Baylor University/IRS - University of Stuttgart, LORIN MATTHEWS, TRUELL HYDE, CASPER - Baylor University — In close collaboration between the Center for Astrophysics, Space Physics and Engineering Research (CASPER) at Baylor University, Texas, and the Institute of Space Systems (IRS) at the University of Stuttgart, Germany, two plasma facilities have been established using the Inductively heated Plasma Generator 6 (IPG6), based on proven IRS designs. A wide range of applications is currently under consideration for both test and research facilities. Basic investigations in the area of plasma radiation and catalysis, simulation of certain parameters of fusion divertors and space applications are planned. In this paper, the facility at Baylor University (IPG6-B) will be used for simulation of mini-magnetospheres on the Moon. The interaction of the solar wind with magnetic fields leads to the formation of electric fields, which can influence the incoming solar wind ion flux and affect dust transport processes on the lunar surface. Both effects may be partially responsible for the occurrence of lunar swirls. Interactions of the solar wind with such mini-magnetospheres will be simulated in the IPG6-B by observing the interaction between a plasma jet and a permanent magnet. The resulting data should lead to better models of dust transport processes and solar wind deflection on the moon.

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