

Contribution ID: **60** Type: **Poster**

3D MHD Simulation of Solar Wind Interaction with the Lunar Environment: A Preliminary Study

Monday, August 17, 2026 11:00 AM (10 minutes)

We present a preliminary study of the interaction between the solar wind under supersonic and super-Alfvénic conditions in the lunar environment outside the Earth's magnetosphere using a three dimensional magnetohydrodynamic model that solves the ideal MHD-PRJ equations. The model incorporates observationally plasma parameters from upstream monitors (ACE, DSCVR, WIND) as input, allowing a physically consistent description of plasma conditions. The simulation captures the evolution of key parameters such as velocity, density and magnetic field, showing the formation of discontinuities, shock-like structures and a wake region downstream of the Moon. Preliminary results show that the model can reproduce plasma structures and can be extended to include additional physical processes.

Author: DEGGERONI, Vinicius (INPE)

Co-authors: Dr A. PIMENTA, Alexandre (INPE); Ms BOTELHO, Caroline (INPE); Dr R. P. JÁCOME, Hadassa (INPE); Dr R. JAUER, Paulo (INPE)

Presenter: DEGGERONI, Vinicius (INPE)

Session Classification: Poster Session

Track Classification: Machine Learning and AI: Heliophysics & Space Weather