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An innovative facility for the simulation of Martian sand/dust phenomena

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In the framework of the "Earth Moon Mars"(EMM) project of the PNRR, the INAF –OACN Space Planetology Laboratories are upgrading their Martian facility to develop a unique, ground-breaking facility that will permit a comprehensive simulation of the Martian environment. The facility is made of a vacuum chamber, that allows the reproduction of Martian atmosphere in terms of pressure and composition, and of several instruments, systems and sensors. The facility will be able to reproduce the presence of dust in Martian atmosphere and the consequently induced electrical field, allowing the study of the effect of the electrical field on dust lifting on Mars, which is novel in literature. A Martian wind tunnel will be installed in the vacuum chamber, and will be suited to accommodate a sandbed, allowing the study of wind-formed features on Martian soil. The sandbed will be positioned over a cold plate that will bring it to Martian temperatures. To study grain electrification, UV sources will simulate the effect of sun irradiation on the sand/dust and its effect in terms of electrical behaviour. By combining all these features, we will be able to comprehensively simulate Martian environment and sand/dust lifting phenomena, providing a significant input to Martian climatic models and possibly the answers the numerous open questions regarding these research topics. The presentation will show the capabilities of the facility and the expected outcomes of the research activities forecasted.

sessioni congresso

Sole e Sistema solare

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