

Regolith: The g-dependency of its filling factor

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Abstract

Planetary bodies without atmosphere are covered with a dust layer. This so called regolith determines the optical, mechanical and thermal properties of their surface. The properties depend on the regolith's filling factor and the size distribution of the particles it consists of. We performed experiments in parabola flights to determine the g-dependency of the regolith's filling factor for particle sizes of $100\mu\text{m}$ and 1mm and for $100\mu\text{m}$ sized agglomerates from $1.5\mu\text{m}$ grains. We utilized g levels from 0.7ms^{-2} to 18ms^{-2} . Our results can improve the the interpretation of ground based observations of planetary bodies and assist the preparation of future landing and sample return missions.