



Reconstruction of grain size distributions in granular and regolith soil with ground penetrating instruments.

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The usage of mechanically ground penetrating instruments can yield valuable information about layering and granularity on almost any extraterrestrial surface, as has been recently demonstrated with the Huygens probe. In this contribution we will demonstrate the kind of texture information which can be derived with quasi-static - and dynamic penetrometer sensors.

We will show examples of penetration experiments mostly in preparation for future Mars lander instruments, and dynamic penetrations performed during the development and testing of the anchoring system of the Rosetta Philae lander. The presentation will focus on the detection of small scale structures and their signatures in a penetrometer signal, namely resonance's forced by semi-regular scales (granularity) and boundary crossings (layers). By applying statistical methods on penetrometry data, the cumulative grain size distribution of sample materials can be reconstructed.