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TITLE: May Using New Concept GPR to Find Water in Deep Crust of Solid Planets in Solar System

ABSTRACT BODY:

Abstract Body: Space borne and ground surface GPR techniques have been used to explore the inner structure of the Earth, the Moon, the Mars and the Venus. In the SELENE/KAGUYA mission, a maxium depth of 40 km was reached by integrating multi-pass measurements. Also in Chinese Chang'E-3 lunar landing mission, a surface GPR on Jade Rabbit rover detected the layered structure about 450 meters under the surface of landing area. Usually, the space borne powerful GPR working at very low frequency (1~5MHz), can reach deeper with poor resolution; the ground surface GPR working at higher frequency (20MHz ~1GHz) can has higher resolution with shallow detectability. Taking above advantages, we suggested an updated method for ground surface GPR method with both of higher resolution and deeper decection (4~8km) for future planetary landing missions. Usually the liquid water has much higher dielectric constant (80~81) than common rock (1~14). If a hidden reserve of underground water exists in the crust of the solid planet, it can be easily identified in the rock stratum by using GPR method.

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