

Development of a new radar sounder system for planetary subsurface exploration

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Concept studies of a new radar sounder system for the planetary subsurface exploration have been performed based on Kaguya/LRS specification. In order to achieve high S/N sounder observation with limited power consumption, following four improvements will be needed: (a) Efficiency of the power amplifier should be improved by applying class-D/E amplification technique. (b) Pulse repetition rate (PRF) should be increased in order to apply synthetic aperture radar (SAR) analysis. (c) Light-weight Yagi antenna system should be developed by applying inflatable structure technique. (d) Ionospheric TEC effects should be cancelled by modulating reference signal for mixing with received signal. By performing the development mentioned above, we will be able to establish the sounder system of the next generation, which can be applied for planetary exploration missions.