

## THE PROCESSING AND ANALYZING OF 500 MHZ LPR DATA FROM CHANG'E-3 MISSION

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Lunar subsurface structure provides considerable information on lunar evolution and resource distribution. As an efficient and high-resolution detection method, radar detection technology has great potential in other planet explorations. In 2014, China's Lunar Penetrating Radar onboard Chang'E-3 spacecraft obtained a set of rare data of lunar subsurface and regolith near a crater located in the northern Mare Imbrium. Considering the harsh detection conditions of lunar surface and the special radar acquisition method, geophysical methods such as gaining, filtering and range normalization are applied in this paper to process these radar data. An 87.8-meter-long radar profile is obtained through these processes, and the dielectric constant shows a trend of increase vertically in the first 8 meters by fitting the diffraction waves with hyperbolic curves. Combining with the coordinate data and image messages, the fluctuation of the radar event in the vertical direction and the clutter of reflected waves indicate that the meteorites have brought crush, excavation and compaction to the subsurface of the moon. Further experiment shows that the method adopted in this paper is applicable to the analysis of 500 MHz LPR data from Chang 'E-3.