

Special Issue on
**Recent Advances in Lunar Exploration Using Radar and
Microwave Techniques**

CALL FOR PAPERS

The successful launch of China's Chang'E (CE), Japan's Selene, India's Chandrayaan, America's lunar reconnaissance orbiter (LRO), and in particular the Yutu rover onboard CE-3 mission has significantly changed our understanding of the moon. Compared to previous lunar missions, radar and microwave techniques have been used extensively in recent missions, such as the lunar penetrating radar (LPR) onboard the Yutu rover in CE-3 mission, the lunar radar sounder (LRS) onboard SELENE, the microwave sounder (CELMS) onboard CE-1/2, the miniature synthetic aperture radar (Mini-SAR) onboard Chandrayaan, and the miniature radio-frequency instrument (Mini-RF) onboard the LRO lunar orbiters. Radar wave and microwave signals can penetrate the lunar regolith to some extent, and it is sensitive to the regolith's thermophysical parameters. In the past 5 years, abundant interesting results have been revealed by microwave data. However, comparison of the findings from these different data sources is critically absent. One of the most important research topics for the current lunar exploration is finding a way to analyze the microwave data, including the orbital and in situ measurements, to further understand the thermophysical characteristics of lunar regolith.

Over the past few years, the microwave technique has developed considerably in terms of instrumentation, data processing, and simulation methods. In the microwave region, the remote sensing technique offers new challenges in the development of simulation models for deriving useful information about the lunar surface. Together with orbital and in situ methods, it is becoming increasingly integrated into lunar probe projects as the best solution, due to its being a swiftly applicable and efficient technique. This special issue aims to gather high-quality original research articles and reviews articles on the use of microwave data for the analysis of the thermophysical characteristics of lunar regolith, instruments for lunar exploration in general, lunar penetrating radar exploration and parameter estimation, and the use of penetrating radar and microwave remote sensing for solar system exploration. We hope to provide a new way to further understand the basaltic volcanism on the moon surface using microwave data.

Potential topics include but are not limited to the following:

- ▶ Active and passive microwave sensors to investigate the lunar surface
- ▶ Microwave radiative transfer mechanism study in lunar exploration
- ▶ Scattering and emission mechanism in the lunar regolith
- ▶ Geophysical parameter retrieval and uncertainty analysis of lunar surface with lunar penetrating radar
- ▶ Operational microwave products for lunar exploration
- ▶ Penetrating radar and microwave remote sensing for solar system exploration

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/aa/lprmr/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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