

Exploration of Lunar subsurface structure in heavily cratered terrain region by SELENE Lunar Radar Sounder

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Observation of lunar subsurface structure by SELENE Lunar Radar Sounder has been examined by means of computer simulation for a case where the surface feature is characterized by a heavily cratered terrain. In addition to subsurface reflection in an observation, the nadir reflection, strong (coherent) off nadir reflection, and weak random clutter are found. It has been realized that a B-scan display is effective in detecting subsurface signals even under a severe S/N condition for an A-scope data. For the data with low S/N value, data stack method is effective to improve S/N value of the subsurface signals; there is, however, limit of data stack number in improving the S/N. The limit number can be estimated from the behavior of surface nadir echoes with respect to the number of data stack.