

Crossover analysis of rang data onto the moon by SELENE-LALT

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The crossover analysis of ranged positions by SELENE-LALT on the moon has been under investigation. This method aims to determine the positions and attitudes of S/C and absolute ranged positions on the moon by making use of small size footprints of LALT (30m). Due to the preliminary analysis it is possible to determine the absolute ranged positions with the accuracy about 100m depending on the ground profile conditions around the ranged crossover points. Assuming the averaged range direction of LALT (that is nominally towards the center of the moon) it is possible to separate the contribution of S/C's orbit and attitude on the shift of ranged positions. If the separation is possible, it is expected that the information of S/C's attitude may be refined with a few times better accuracy than nominal one. We are now performing full-simulation of the crossover analysis. Above estimations have turned out to be generally valid but topographic modeling is so severe that only 3m topographic error leads to about 1km positioning error on the moon. The results of the full simulation will be presented.