

Recent status of SELENE-2/VLBI instrument

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VLBI (very long baseline interferometry) technique is anticipated to be applied for precise positioning of an orbiter or a lander in lunar and planetary explorations. VLBI measures a difference in an arrival time of a signal transmitted from a radio source to two ground stations. The differential VLBI (DVLBI) measurement consists of the differenced delay between two radio sources (orbiter-orbiter or orbiter-quasar). The differential delays give plane-of-sky position differences of two radio sources in contrast to conventional 2-way Doppler measurements that give line-of-sight position information. The combination of VLBI with Doppler can be used for gravity field estimation of the Moon and planets, and for determining their rotations through the precise positioning of orbiters or landers.

VLBI observation is proposed for a lunar landing mission SELENE-2. The purpose is to investigate the internal structures through the estimation of the gravity field of the Moon. The VLBI technique is expected to contribute the understanding of the internal structure and leading the origin and thermal evolution of the Moon and planets. This presentation shows the recent status of SELENE-2 VLBI instruments.

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