

The Lunar Radar Sounder on-board the SELENE Spacecraft

T. Ono(1), A. Kumamoto(1), H. Oya(2)

(1) Tohoku University, (2)Fukui University of Technology

ono@stpp1.geophys.tohoku.ac.jp /Fax: +81-22-217-6517

The Lunar Radar Sounder (LRS) on-board the SELENE will provide subsurface stratification and tectonic features in the shallow part (several km depth) of the lunar crust, by using an FM/CW radar technique in HF (~5MHz) frequency range. Knowledge of the subsurface structure is crucial to better understanding not only of the geologic history of the moon, but also of the regional and global thermal history of the Moon, and also of the origin of the Earth-Moon system. In addition to the subsurface radar experiment, LRS will provide the spectrum of plasma waves, and solar and planetary radio waves in wide frequency range covering from 10 Hz to 30 MHz. The SELENE spacecraft will be launched in 2007.

The present state of the SELENE project is under the final stage of the system integration test of the spacecraft. As the supporting observations from the ground, trial to obtain the reflectivity and thermal radio emission of the moon body has been made in UHF range. This paper makes report of development of the LRS system on-board the SELENE spacecraft and provides results from recent theoretical and observational approach from the ground.

1. Kobayashi, T., and T. Ono, *J. Geophys. Res.*, (in Press) 2005.
2. Kobayashi, T., H. Oya, and T. Ono, *Earth Planets Space*, 54, 973-982, 2002.
3. Kobayashi, T., H. Oya, and T. Ono, *Earth Planets Space*, 54, 983-991, 2002.
4. T. Ono et al., *Earth Planets Space*, 50, 213- 222, 1998.
5. H. Oya and T. Ono, *Earth Planets Space*, 50, 229- 234, 1998.