

## Lunar magnetic poles estimated from small isolated magnetic anomalies on the SVM map

# Yuuya Ikeuchi[1]; Hideo Tsunakawa[2]; Futoshi Takahashi[3]

[1] Earth and Planetary, Tokyotech; [2] Dept. Earth Planet. Sci., Tokyo TECH; [3] Kyushu Univ.

Recent studies on the lunar magnetism indicate that the global magnetic field was generated by a core dynamo of the early Moon although the present Moon has no global magnetic field. Since the crustal magnetic anomaly could record the early Moon's magnetic field as remanent magnetization, probably TRM, the magnetization directions of the lunar magnetic anomalies (LMAs) may yield information about the position of the paleomagnetic pole of the early Moon.

Runcorn(1982, 1983) argued clusters of magnetic pole positions from Hood's magnetization directions, which were determined by fitting magnetized disks to the LMA observations of Apollo 15 and 16 sub satellites. Takahashi et al. (2014) applied dipole approximations to 24 isolated magnetic anomalies to the LMA observations by Kaguya and Lunar Prospector at 20-40 km altitudes, suggesting the true polar wander in the early Moon. Since the LMAs show fine structures on the recent maps (Tsunakawa et al., 2014, 2015), these observations are generally affected by the crustal field at relatively wide area, resulting in ambiguity of the dipole approximation.

In the present study, we use the global maps of the LMAs on the spherical lunar surface with the Surface Vector Mapping (SVM) method [Tsunakawa et al., 2015]. The SVM data with high spatial resolution are useful for finding small isolated anomalies like a single dipole. As a result, we have selected several tens of magnetic anomalies to be approximated with a single dipole source. The magnetic poles estimated in the present analysis show two main clusters associated with the polarity reversal and a relatively minor one: one of the main clusters is located near the selenographic north pole (P1; Takahashi et al., 2014), the other at low latitude on the eastern hemisphere (P3; Tsunakawa et al., 2015). Minor one is at low latitude area on the near side (P2; Takahashi et al., 2014). These LMA clusters imply that the dipolar field would be generated by a core dynamo while the true polar wander might occur in the early Moon. We will discuss possibility of the true polar wander of the early Moon.