

Estimate of surface geologic and albedo mapping of Vesta

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We made the visible and near infrared observation of asteroid 4 Vesta. The low latitude in the northern hemisphere of Vesta is viewable in these observations. We utilize these 6 bands' lightcurves and 2 v band lightcurves obtained in the past survey to deduce a geologic and an albedo map.

In order to make the albedo maps from these lightcurves, we adopt a method in which lightcurves are described as a sum of several gaussian functions. Accordingly it makes it possible to estimate the spacial distribution of Vesta's surface from ground-based observation, which was impossible before.

And we confirm the estimated geologic and albedo map through "lightcurve simulator" which calculates lightcurve from the shape, the rotational axis, the date of observation, and Hapke parameters of the surface of the asteroid.

Vesta is already observed with Hubble Space Telescope through 4 filters in 1994 and its spacial distribution of surface were obtained for low latitudes of northern hemisphere only.

Our conclusion in v band for the area agrees with it and the method we use is validated. Therefore both the albedo map in the southern hemisphere and maps in the northern hemisphere through other 5 bands we made are trustworthy. Albedo maps through 6 bands (more than HST) enable more delicate discussion and lead to more positive evidence for some regions to show impact excavated materials.