

Disk-resolved photometric properties of local regions on asteroid 25143 Itokawa

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The photometric properties of asteroids reflect their surface compositions and conditions. Disk-integrated photometry of asteroid 25143 Itokawa was studied based on observations by AMICA on Hayabusa spacecraft (Tatsumi et al., 2018) and gave a global averaged surface properties. However, the surface of Itokawa shows a wide variety of terrains. Rough terrains are covered with numerous boulders of various sizes, while smooth terrains are covered with well-sorted pebbles. The degree of space weathering is also quite diverse over the surface. Disk-resolved photometry gives an opportunity to investigate local photometric properties of these interesting sites, but it requires considering the incidence angles and emission angles of observations at every pixel in observations. Our pixel database system stores individual pixel values with observation conditions such as incidence, emission, and phase angles extracted from observations, and enable us to make analysis using pixel values throughout all available images. We present results of disk-resolved photometric modeling at selected local regions on Itokawa using the pixel DB of AMICA images.

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