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Observations of Polarization Variation and Lightcurve with the Rotation of Asteroid 21 Lutetia

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We conducted observations of polarization and of lightcurve of 21 Lutetia, which is a target for Rosetta mission and discovered in 1852 by H. Goldsmith. The diameter derived by the IRAS flux is 95.8±4.1km and the rotational period obtained by the optical observations is 8.17±0.01hr (Zappala et al 1984). The asteroid was formerly classified as M-type or X-type (Barucci et al. 1987, Thoren 1989, Bus & Binzel 2002). However, recent observations suggest that it may be C-type (Lazzarin et al, 2004).

We carried out observations of time variation of the polarization and the flux of 21 Lutetia simultaneously with a 65 cm telescope in Gunma Astronomical Observatory using a precise polarimeter "PICO" (Furusho et al. submitting) on 16th Nov. 2004 UT. The observations covered most of the rotation periods (Figure 1). The average of the degree of polarization is -1.507±0.072%, and whose value is smaller than that of a typical M-type asteroid. Our results suggest that 21 Lutetia does NOT have a uniform and M-like surface.

Keywords: Asteroid; Polarization; Lightcurve

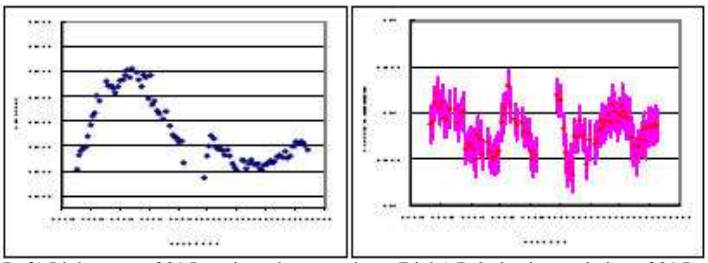

Figure 1: (Left) Lightcurve of 21 Lutetia at the same time. (Right) Polarization variation of 21 Lutetia, with 5-points running average data.

References

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