

LIGHT CURVES OF 2005 FY₉, PLUTO-SIZED TRANS-NEPTUNIAN OBJECT

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Recent astronomical searches have revealed a number of Pluto-sized trans-Neptunian objects (TNOs). These objects have moderately-eccentric orbits, and are found at high inclination angles off the ecliptic. One such object is 2005 FY₉, with an orbit located 30° off the ecliptic, a semi-major axis of 46 AU, and 0.16 eccentricity. This object has a mean diameter on the order of 2000 km compared to 2600 km for Pluto, making it a candidate for classification as a dwarf planet.

Images of 2005 FY₉ were taken 14-17 December 2006 by J.L. Ortiz (Departamento Sistema Solar Instituto de Astrofísica de Andalucía), using the 1.5-m telescope at the Sierra Nevada Observatory (Granada, Spain). Using aperture photometry, these images were analyzed to produce light curves of this Pluto-sized object.

Having undergone core differentiation, 2005 FY₉ is almost spherically-shaped, producing only small variations of ~0.01 magnitude. To estimate the rotation rate becomes difficult as these small magnitude variations are due to differences in surface topography, not to differences in the geometric configuration of an irregularly-shaped object.