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Rotation period determination of NASA Lucy mission target (52246) Donaldjohanson

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(52246) Donaldjohanson is a small 4 km in diameter main-belt asteroid, and a C-type belonging to the Erigone collisional family [1]. The Lucy Mission is a NASA Discovery class mission that will launch a spacecraft in October 2021 to explore several Jupiter Trojan asteroids. On its way to Jupiter’s orbit, Lucy will first encounter Donaldjohanson in 2025. However, few physical characteristics are known about this body at present time.

Here, we present new photometric observations of Donaldjohanson acquired from November 2020 to February 2021 with the two 60-cm TRAPPIST telescopes [3]. During this apparition, we obtained 91 individual series that revealed a very slow rotator featuring a large amplitude of the rotational lightcurve. We determined a rotation period of ~252 h and an amplitude of ~1 magnitude.

References:

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