EPSC Abstracts
Vol. 15, EPSC2021-463, 2021, updated on 11 Jan 2022
https://doi.org/10.5194/epsc2021-463
Europlanet Science Congress 2021

A portrait of the Trans-Neptunian Object (143707) 2003 UY_{117} from a stellar occultation and photometry data.

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Within the Lucky Star international collaboration* on stellar occultations by TNOs and other outer solar system bodies, we predicted the occultation by the TNO (143707) 2003 UY117 of an mV ~ 14.6 mag star on 23 October 2020. Around a week before the occultation date, we updated and refined the prediction using high precision astrometry obtained using the 2 m Liverpool telescope located at El Roque de Los Muchachos Observatory on La Palma, Spain. The update resulted in a shadow path with good observability potential. We carried out a specific campaign involving 27 observing sites in the south of Spain and North of Africa to observe the occultation. We recorded 4 positive detections and several very close misses to the south of the body. With this information we determined the silhouette of 2003 UY117 at the moment of the occultation. We also obtained the geometric albedo and the size for this object. In addition to this, we carried out several photometric runs with large telescopes to determine the rotation period and rotational phase at the time of the occultation. The body presents a clear double-peaked rotational light curve consistent with a triaxial ellipsoid of considerable elongation, which means that a rotational light curve analysis is critical to correctly interpret the occultation results. The preliminary analysis indicates a larger equivalent diameter than that determined from Herschel thermal data, although consistent within the large error bars of the thermal determination. We will present the preliminary results and discuss their

implications.

*Lucky Star (LS) is an EU-funded research activity to obtain physical properties of distant Solar System objects using stellar occultations. LS collaboration agglomerates the efforts of the Paris, Granada, and Rio teams. https://lesia.obspm.fr/lucky-star/

Acknowledgements:

JLO, PS-S, NM, MV, and RD acknowledge financial support from the State Agency for Research of the Spanish MCIU through the 'Center of Excellence Severo Ochoa' award for the Instituto de Astrofísica de Andalucía (SEV-2017-0709), they also acknowledge the financial support by the Spanish grant AYA-2017-84637-R and AYARTI2018- 098657-J-I00 'LEO-SBNAF' (MCIU/AEI/FEDER, UE).

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