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Peer Review

Review of: "Measuring the Distances to Asteroids from One Observatory in One Night with Upcoming All–Sky Telescopes"

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This paper is worth publishing. It shows how astrometric observations of asteroids, and in particular of NEOs, spread over 1 or 2 consecutive nights can be effectively employed to model the effect of topocentric parallax, with the goal of determing the objects' distance from Earth. The methodology, is not new – the relevant literature is duly cited – and the approach developed here specializes a more general method published by one of the authors (Z22 in their references).

The analysis carried on on both synthetic and real data indicates that distances at the level of a few percent for objects up to a few AU can be recovered. The technique is relatively simple, and can be implemented in present and future telescope surveys with multiple observations per night; also, it's potential can be further exploited by combining it with other rapid distance techniques – again duly cited by the authors.

The paper is well organized and the exposition clear. There are a good number of figures and tables which nicely support the results, and the code used is made available via GitHub.

The part which could have benefited from a more detailed discussion is the astrometric reduction of the single (or combined) real images obtained with the PROMPT telescope at Cerro Tololo. The astrometric error estimates derived from the observational data are crucial quantities that reflect directly in the Fractional Distance Uncertainy given in Eq. 6, and therefore deserve to be properly addressed.

In summary, in order to improve the paper, my recommendation to the authors would be to expand on the astrometric reduction itself an on the error propagation involved, giving more details on the procedure they adopted.

Finally, I assume that there is a mistake in the units reported in the 'Noise' column of table 3, i.e., the values are in radians and not degrees. Please correct it.

Declarations

Potential competing interests: No potential competing interests to declare.