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8077 HOYLE: A SHORT PERIOD ASTEROID

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8077 HOYLE: A SHORT PERIOD ASTEROID

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The main-belt asteroid 8077 Hoyle was observed on 13 nights over a span of 47 days in 2012 April-May. A bimodal synodic period of 2.7454 ± 0.0002 h and an amplitude of 0.20 ± 0.02 mag. were obtained.

Observations of 8077 Hoyle were made at two observatories: Etscorn Campus Observatory (ECO, 2012) at New Mexico Institute of Mining and Technology in Socorro, NM, and the Southeastern Association for Research in Astronomy observatory, SARA (2012) at Kitt Peak National Observatory. The Etscorn observations were made with Celestron C-14 telescopes with SBIG STL-1001E CCDs, unbinned, 1024x1024 24-micron pixels. All exposures were 300 seconds through a clear filter. Image scale was 1.25 arcsec/pixel. The images were dark-subtracted and flat-field corrected using *MPO Canopus* (Warner, 2011). The reduced images were also processed with *MPO Canopus*. The images obtained at SARA were made with a 0.92-meter telescope and Apogee U42 CCD binned 2x2, which resulted in 27-micron pixels and a scale of 0.770 arcsec/pixel. The exposures were 120 seconds through a clear but IR-blocked filter. The telescope was remotely-controlled from Butler University. The images were bias and dark-subtracted and flat-field corrected using and then measured using *MPO Canopus* (Warner, 2011).

Images were obtained from 2012 April 5 through May 21. The asteroid was observed on 13 nights during that period. Most nights contained at least one complete cycle of the 2.7454 hour period. All except two nights had sufficient MPOSC3 stars that we were able to use the *MPO Canopus* Comp Star Selector system. We obtained more than 1000 measurements in the 13 nights of observation. Analysis of the combined data set found a period of

2.7454 ± 0.0002 h with an amplitude of 0.20 ± 0.02 mag. While there is a fair amount of scatter in the individual data points, when combined they produce a well-determined period, which was found by using an 8th order fit in the FALC analysis algorithm (Harris *et al.*, 1989).

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