

NEOWISE Mid-Infrared Light Curves of Asteroids

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Abstract

NASA's Near Earth Object Wide-field Infrared Survey Explorer (NEOWISE) [1] has been scanning the sky continuously since it was brought out of hibernation in December 2013. The entire sky is imaged every six months, and ten full sky coverages have been completed through the end of 2018. NEOWISE acquires series of images simultaneously in the 3.4 (W1) and 4.6 (W2) micron bands as it scans from pole-to-pole along lines of constant ecliptic longitude. During each sky coverage epoch, each fixed point on the sky is imaged at least 12-15 times with a cadence of 190 minutes as the NEOWISE scan longitude advances along the sky. The number of times a solar system object is observed by NEOWISE varies depending on how the trajectory and angular velocity compare with the survey cadence. Main belt asteroids are generally observed 12-13 times each epoch. Near Earth Objects may be observed many more times during an apparition if their orbits match the NEOWISE cadence.

We will describe the publically accessible archive of NEOWISE images and the extracted source database as a rich resource from which to mine mid-infrared light curves for thousands of asteroids. We will discuss the characteristics of the light curve data, the distribution of lengths and phase angles, and will present illustrative examples of mid-infrared light curves for a number of Near Earth Objects such as 2002 WW17 [2].

Acknowledgements

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References

[1] Mainzer, A. et al.(2015) *ApJ*, **792**, 30.

[2] Cutri, R.M., Masiero, J., Sonnett, S. and Mainzer A.. (2019) *Minor Planet Bull.* 46, 216.