

**NEOWISE – The WISE Near Earth Object Survey.** A. K. Mainzer<sup>1</sup>, J. M. Bauer<sup>1</sup>, J. Masiero<sup>1</sup>, T. Grav<sup>2</sup>, R. Cutri<sup>3</sup>, R. McMillan<sup>4</sup>, R. Walker<sup>5</sup>, E. L. Wright<sup>6</sup>, and the WISE Team,<sup>1</sup>Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91011, <sup>2</sup>Department of Physics and Astronomy, Johns Hopkins University, <sup>3</sup>Infrared Processing and Analysis Center, California Institute of Technology, <sup>4</sup>Lunar and Planetary Laboratory, University of Arizona, <sup>5</sup>Monterey Institute for Research in Astronomy, <sup>6</sup>Department of Physics and Astronomy, University of California, Los Angeles.

In early January 2010, the Wide-Field Infrared Survey Explorer (WISE) will begin imaging the entire sky, with sensitivities in the mid-IR hundreds of times greater than previous surveys [1]. WISE is expected to observe roughly 700 Near Earth Objects (NEOs), more than a third newly discovered [2]. These measurements will provide a relatively unbiased and uniform sampling of this small body sub-population down to sizes of a few hundred meters, and will represent a significant fraction of the roughly 1100 numbered NEOs.

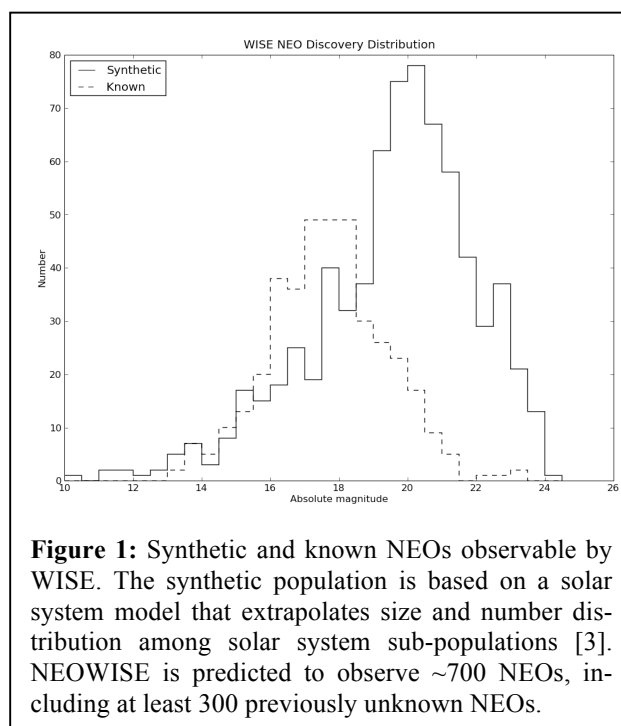
The WISE band-passes (3.4, 4.7, 12 & 22 $\mu$ m) will sample the flux from most inner-solar-system bodies near the peak of their thermal emission, and so will have a strong advantage for the detection of NEOs. There is a further advantage in that infrared observations are somewhat more sensitive to optically dark objects – those that are most likely to be missed in visible searches. But since the infrared flux of an asteroid is proportional to (1-albedo), which varies by a factor of 2.5, rather than albedo, which varies by a factor 25 [4], the objects that will be discovered by the NEOWISE project will constitute an albedo-insensitive survey. We will present preliminary results of the NEOWISE survey from the first two months of WISE scan operations.

#### References:

[1] Mainzer, A. K. et al. (2006) *SPIE*, 6265, 626521. [2] McMillan, R. S. et al. (2009) *B.A.A.S.*, 41, p. 364. [3] Grav, T. et al. (2007) *B.A.A.S.*, 39, p. 807. [4] Stuart, J.S., & Binzel, R.P. (2004) *Icarus*, 170, p. 295-311.

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Infrared Processing and Analysis Center using NASAs TDRSS facility; EPO is provided by University of California, Berkeley.



**Figure 1:** Synthetic and known NEOs observable by WISE. The synthetic population is based on a solar system model that extrapolates size and number distribution among solar system sub-populations [3]. NEOWISE is predicted to observe ~700 NEOs, including at least 300 previously unknown NEOs.