

WISE AND THE OUTER SOLAR SYSTEM – SEARCHING FOR OBJECTS IN “THE BACK FORTY”

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The Wide-Field Infrared Survey Explorer (WISE) is scheduled to be launched in early December of 2009, and will image a multitude of objects (on the order of 10^5) during its 9-month mission life time. The vast majority of these objects will be in the inner solar system, primarily Near-Earth Objects (NEOs) and Main Belt Asteroids (MBAs) [1] with some significant fraction of Jupiter Trojan asteroids as well. However, several larger solar system objects beyond 5 AU will also be imaged (Figure 1), providing diameters and albedo constraints on a subset of these small bodies, including irregular satellites, Centaurs, and possibly Scattered Disk Objects. We will present an overview of the outer solar system object observations based upon the first two months of operations.

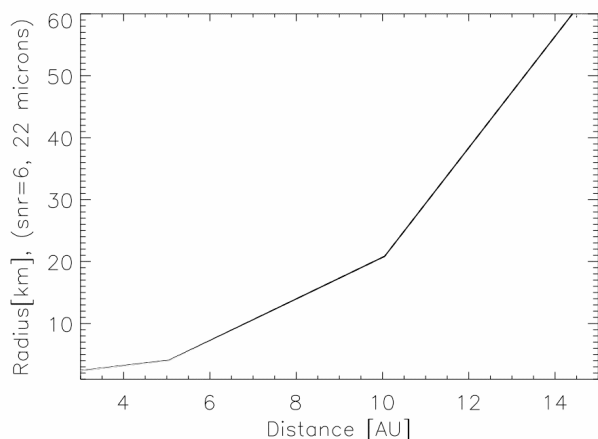


Figure 1: Approximate detection limits for the IR-emission of small solar-system bodies as predicted by a NEATM thermal model [2]. The solid line shows the 6-sigma sensitivity limits of the WISE single-frame exposures as a function of object size and distance, for object albedos near 0.1, including corrections phase angle. WISE will detect objects down to sizes of 8km at Jupiter distances, and down to sizes of a few tens of km at Saturn distances.

References:

- [1] McMillan, R. S. et al. (2009) *B.A.A.S.*, 41, p. 364.
- [2] Harris, A. W. (1998) *Icarus*, 131, 291.

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