# WISE results for the Main Belt Asteroids

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## Data

We present our analysis of Main Belt asteroid data found in the *Wide-field Infrared Survey Explorer (WISE)* survey database. *WISE* [1] launched December 14, 2009 and began survey operations January 14, 2010, scanning the sky from a sun-synchronous polar orbit in four thermal infrared wavelengths simultaneously. Known objects are identified in the field of view automatically, while new objects are discovered through the NEOWISE enhancement [2] using the *WISE* Moving Object Processing System (WMOPS). Thermal infrared observations, in particular the *WISE* 12 $\mu$m and 22 $\mu$m bandpasses (W3 and W4, respectively) allow us to model the diameter of an asteroid. Using optical observations from the Minor Planet Center (MPC) and followup campaigns, along with the infrared diameters, we can break the degeneracy inherent to optical data to determine the albedo of an asteroid.

*WISE* has reported observations of over $155,000$ minor planets to the MPC, of which over $34,000$ are new discoveries. Most of these detections are of Main Belt asteroids (MBAs). We have produced preliminary thermal models for over $100,000$ previously known MBAs with sufficient S/N (*i.e.* $> 5\sigma$), all of which have previous optical data allowing for albedo measurement as well. The unprecedented size of this infrared data set allows us to focus on specific regions or families in the Main Belt while putting these subsets in context of the greater population.

## Results

We present albedo and diameter distributions for various subpopulations of the Main Belt, and compare these to the general population trends observed for the Belt as a whole. The trend of decreasing albedo observed across the Main Belt has been known since IRAS [3], but now with a data set $\sim 100$ times larger we can investigate the structure of this transition. This provides important clues to the understanding of the evolution of MBAs. These results are also discussed further in Masiero, et al. [4].

## References

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