

## Near-Earth asteroid (137032) 1998 UO<sub>1</sub>: Shape model and thermal properties UO<sub>1</sub>: Shape model and thermal properties

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Near-Earth asteroid (137032) 1998 UO<sub>1</sub> was observed with the Arecibo planetary radar system during its close approaches in 2008 and 2010, yielding both CW spectra and delay-Doppler images. The Arecibo radar images have a resolution of about 75 meters. Observers at Elginfield Observatory and Lowell Observatory acquired visible lightcurves in 2004, 2008, and 2010 [1–3]. UO<sub>1</sub> was also observed with the Goldstone radar system in 2008. These observations can be combined to find the asteroid's size, shape, and spin state [4]. A preliminary shape model indicates that 1998 UO<sub>1</sub> is ellipsoidal, with a maximum diameter of approximately 1.2 km. The asteroid is of taxonomic type Sq or Q in the Bus-DeMeo system [5]. Pravec and Brown find that the rotation period is 2.9 hours, based on lightcurves from 2004 [3]. The radar images do not show evidence of a satellite.

1998 UO<sub>1</sub> was also observed in the near-infrared with the NASA IRTF's SpeX [6] in 2008 and 2010. We observed this object at several solar phase angles to determine a set of thermal parameters consistent with all the data. The data span 0.8–4.1 microns, from wholly reflected light to mainly thermal emission. This will allow us to fit both the reflected and thermal flux from the asteroid using SHERMAN, our shape-based thermophysical modeling software, to determine UO<sub>1</sub>'s thermal properties and compare them with results from other work (e.g. [3,7]).

The results of the shape model and thermal analysis of 1998 UO<sub>1</sub> will be presented.

**References:** [1] Warner, B.D., et al. (2009). *Icarus* 202, 134–146. [2] Skiff, B.A., et al. (2012). *Minor Planet Bull.* 39, 111–130. [3] Wolters, S.D., et al. (2008). *Icarus* 193, 535–552. [4] Magri, C., et al. (2007). *Icarus* 186, 152–177. [5] DeMeo, F.E., et al. (2009). *Icarus* 202, 160–180. [6] Rayner, J.T., et al. (2003). *PASP* 115, 362–382. [7] Thomas, C.A., et al. (2011). *Astron. J.* 142, 85.