

SPECKLE OBSERVATIONS OF NEAR EARTH ASTEROIDS. D. E. Trilling¹, Gerard van Belle², Nicolas Erasmus³, Andy Lopez-Oquendo¹, Andrew McNeill¹, Moses Milazzo⁴, Steve Howell⁵, Elise Furlan⁶. ¹Department of Astronomy and Planetary Science, Northern Arizona University, Flagstaff, AZ 86011; david.trilling@nau.edu. ²Lowell Observatory ³South African Astronomical Observatory ⁴OtherOrb, Inc. ⁵NASA Ames Research Center ⁶Caltech/IPAC

Summary: We are using the speckle cameras `Alopeke and Zorro on the Gemini North and South (respectively) telescopes to image close-approaching Near Earth Asteroids (NEAs). Approximately once per semester, an NEA passes close enough to the Earth that its angular size is large enough (50 milliarcsec or more) to be resolved. Such resolved imagery allows a direct measurement of NEA size and shape. Furthermore, because these speckle cameras operate at two wavelengths simultaneously (562 and 832 nm), we may be able to detect color gradients on the surfaces of these NEAs, which could indicate surface heterogeneities that could be a result of torques derived from planetary encounters.

Results to date: We have observed two NEAs to date, both of which are resolved in the Gemini data. A third NEA is scheduled for observations shortly after this Apophis conference. At this conference I will present the current state of our data and analysis and talk about prospects for future observations.

Connection to Apophis: I will present the relevance of this technique to Apophis' flyby as well as the importance of acquiring speckle data for targets other than Apophis to provide comparative context for understanding Apophis' properties.