

The active binary asteroid 288P (300163)

J. Agarwal¹, D. Jewitt^{2,3}, M. Mutchler⁴, H. Weaver⁵, S. Larson⁶

(1) Max-Planck-Institut für Sonnensystemforschung, Göttingen, Germany (agarwal@mps.mpg.de), (2) Department of Earth, Planetary and Space Sciences, University of California at Los Angeles, USA (3) Department of Physics and Astronomy, University of California at Los Angeles, USA, (4) Space Telescope Science Institute, Baltimore, USA, (5) The Johns Hopkins University Applied Physics Laboratory, Laurel, USA, (6) Lunar and Planetary Laboratory, University of Arizona, USA.

Abstract

We report on Hubble Space Telescope observations of the active asteroid 288P (300163) that reveal it to be a binary system, and confirm sublimation as the most likely cause of the activity. The observations were obtained at 12 epochs between August 2016 and January 2017, covering both the perihelion and a close perigee of 288P. The combination of similarly sized components, a wide separation, high eccentricity, and activity renders 288P unique among the known binary asteroids. We discuss rotational fission and an impact as possible formation scenarios, and explore the influence of the activity on the evolution of the system.