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The 22 May 2011 Pluto Occultation Observed

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Abstract

Based on a prediction from MIT with astrometric observations from the USNO and Lowell Observatory, we observed the 22 May 2011 UT 06:22 occultation of a star by Pluto (www.stellaroccultations.info and occult.mit.edu), predicted time. The star occulted was UCAC2 magnitude 15.3, and the event's geocentric velocity was 18.2 km s^{-1}. We used the 0.6-m telescope of Williams College's Hopkins Observatory in Williamstown, MA, and one of our Portable Occultation, Eclipse, and Transit System (POETS) CCD/GPS. The centerline of the predicted path was just above the north pole, with the southern limit passing through the U.S. mid-Atlantic, so telescopes in the northeast were potentially in the path, though at high air mass. An occultation of approximately 100 s was clearly detected after calibrating on a nearby comparison star (and barely visible on the CCD monitoring screen in real time), given the relatively cloudy and variable nature of the observing conditions. We used the observation to refine the prediction model that is crucial for the 23/27 June occultations of Pluto-Charon/Pluto-Hydra, respectively. Observations in clear conditions with the Magdalena Ridge Observatory's 2.4-m telescope in New Mexico and another of our POETS did not show an occultation to better than 1%. This nondetection provides a constraint for a Pluto atmospheric graze or the potential shift of the path of Charon sufficiently far north to that site from the predicted path in northernmost South America.

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