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The Double-Double Pluto-Charon and Pluto-Hydra Predicted Stellar Occultations of June 2011

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Abstract

MIT astrometry predicted an occultation of Pluto and Charon within 11 minutes of each other on 23 June 2011 and an occultation of Pluto on 27 June 2011 with an occultation of Hydra following in a narrow shadow-path 33 minutes later. Our Williams-MIT team organized a network of telescopes around the Pacific-Asia region, including use of two telescopes in Hawaii, on which we report here. On 23 June, we successfully observed a 49 s occultation of Charon at 2 Hz with our Portable Occultation, Eclipse, and Transit System, POETS, from Leeward Community College's 0.5-m telescope in Pearl City. Our site at Windward Community College in Kaneohe with its 0.4-m telescope and a POETS was cloudy for both events, as was the Leeward Community College site for the second event with a 0.3-m telescope, used because the event was only 16° above the horizon, too low for their larger telescope, and a POETS. We place our successful Charon occultation in the context of observations by others, including our collaborators on SOFIA and observing with IRTF, and we discuss the predictions, observations, and prospective scientific value of the predicted double events with Pluto (radius 1400 km) and Charon (radius 605 km) prospectively occulting the same star on 23 June 23 UT and Pluto and Hydra (possibly only 50 km in radius) prospectively occulting a different star on 27 June UT.

Acknowledgments

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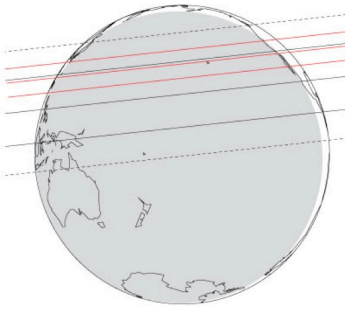
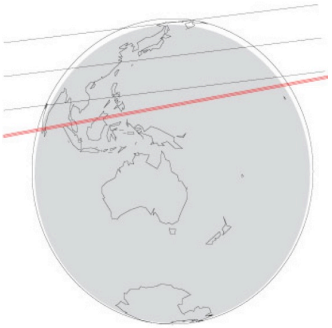


Pluto-Charon (black-red) occultation predictions, 23 June 2011; 3 sigma uncertainties are shown as dashed lines; shading shows where the Sun is <-12°.



Pluto-Hydra occultation predictions, 27 June 2011