Hubble Space Telescope

Cycle 15 AR Proposal

Constraints on the Formation and Evolution of the Pluto System

Principal Investigator: Dr. Marc W. Buie

Institution: Lowell Observatory

Electronic Mail: buie@lowell.edu

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Abstract

We propose a detailed program of analysis based on archival HST data and mutual event photometry to address several goals related to the Pluto system. A new analysis of HST images of Pluto from 1992 and 1993 should reveal the two new satellites recently discovered, with the longer temporal baseline greatly improving their orbital periods. Application of the new Pluto surface maps derived from HST data obtained in 2002 and 2003 to the astrometry extracted from the HST images from 1992 and 1993 will remove the center-of-light to center-of-body offset, thereby improving the orbit of Charon, especially after being combined with the more recent astrometry. With these new constraints on the orbit of Charon and the new stellar occultation constraint on the radius of Charon, we intend to derive a new radius for Pluto by imposing these values on the mutual event photometry.

Investigators:

	Investigator	Institution	Country
PI	Dr. Marc W. Buie	Lowell Observatory	USA/AZ
CoI	Dr. William M. Grundy	Lowell Observatory	USA/AZ
CoI	Dr. David Tholen	University of Hawaii	USA/HI

Number of investigators: 3