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Visual and Infrared Studies of Asteroids and the Pluto-Charon System

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Strategy

1. To analyze lightcurves of Pluto-Charon mutual eclipse event lightcurves to derive models of the Pluto-Charon system. 2. To use these results in planning and reducing Hubble Space Telescope observations tentatively scheduled to be obtained in August 1991 to determine the Pluto-Charon mass ratio. 3. To obtain visual and infrared photometry of selected asteroids to help determine their albedos, sizes, shapes, pole orientations, taxonomic classes, and phase functions.

Progress and Accomplishments

During 1990 we completed reduction of Pluto-Charon mutual event light-curves obtained with the Palomar 1.5-meter telescope and submitted for publication a synthesis of simultaneous observations, spanning 0.44 to 2.4 μm, of the 03 March 1987 total event. We completed the IRTF infrared mutual event lightcurve program by successfully observing three of four scheduled events. Production of a master data base of four decades of asteroid UBV photometry and a listing of asteroid absolute magnitudes and slope parameters, to appear in the 1992 *Ephemeris of Minor Planets* were completed.

Projected Accomplishments

During 1991 we will publish the Palomar CCD Pluto-Charon mutual event lightcurves, the UBV color indices and absolute magnitude listings, and thermal infrared lightcurves of the near-Earth asteroid 1580 Betulia.

Publications

Tedesco, E.F. (1990). Magnitude parameters for the numbered minor planets. *Minor Planet Circulars* 17256-17273.