

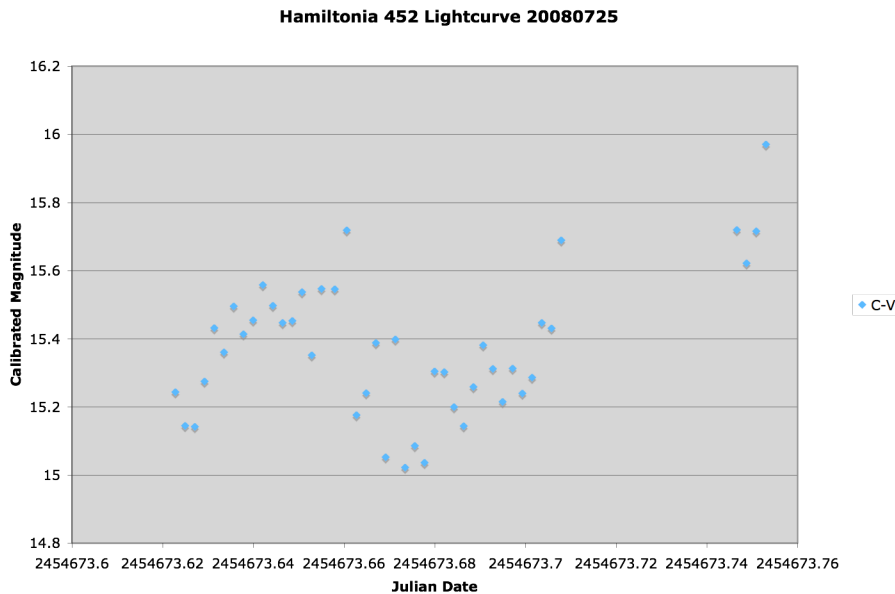
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Summer 2008 UROP Summary

This summer, I worked with the other UROP students to make observations for several different projects. We tracked several Kuiper Belt objects and Asteroids over the course of the summer, and also observed the exoplanet transits and KBO appulses we knew would be visible from the observatory.

With the installation of new camera and telescope control software, I updated the 12.410 lab manual with instructions on how to operate the telescopes and take images with the new camera software, as well as making general edits.

I was responsible for analyzing the data for two asteroids: 811 and 452 for sample astrometry and photometry projects for 12.410. I used CCDSoft and TheSky to make an astrometric solution for the field, and Michael Person's orbitfit to solve for an orbit from times and celestial coordinates. The calculated orbits were a good fit when compared to the JPL small body database.

To plot lightcurves for the asteroids, I used both Elizabeth Adams' Mathematica notebook, and CCDSoft's lightcurve generator. I decided to use CCDSoft to analyze most of my observations, because it was better suited to follow moving objects throughout a night of data. I used CCDSoft to do dark and bias reduction on the images first. In a comparison between lightcuves generated from flattened and unflattened data, the flat reduction appeared to add more noise.



I started work with the other UROP students on a paper to describe techniques for observing KBOs on small telescopes, highlighting our 14" telescope observations this summer of Makemake. I will be writing the introduction and the section discussing our analysis. I have started researching past observations of Makemake, and previous methods of obtaining KBO astrometry.