



Photometric Analysis of 4201 Orosz



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Introduction

There are millions of asteroids in the solar system, only a small percentage of which have been studied significantly. This makes them an easy and active area of research, where relatively simple observations can yield the data necessary to derive certain fundamental properties. While simple, this can be a very significant source of useful data to astronomers, allowing amateurs or beginners to contribute to the body of astronomical knowledge.

Over this semester I worked at the UMD Observatory, working to observe the asteroid 4201 Orosz, produce a light curve for the asteroid and determine its period.

Site Information:

UMD Observatory

Supervisor: Elizabeth Warner

The UMD Observatory, despite the challenge that local light pollution presents, is a site of significant outreach and research for the University of Maryland.

Issues Confronting Site:

The UMD Observatory is located in a field in order to limit the noise around it, however in College Park light pollution is inevitable. There were problems several times with light flooding the sky that made a number of images unusable. Additionally, the surrounding tree line made it so that asteroids could not be observed within about an hour of their rising or setting; the trees obscured the view.



951 Gaspra
Imaged in a flyby by Galileo satellite.

Activities:

My work at the observatory primarily involved using the telescopes to take observations of asteroids. This required reliably clear skies for most of the night, which proved difficult several times that I went observing.

First an asteroid was chosen to observe, and its coordinates were checked to make sure that it would be visible that night. The telescope was pointed towards the asteroid, and some time was spent confirming that the asteroid was in view. Once this was confirmed, an observing procedure was entered into the computer that controlled the telescope, usually to take several hours worth of images. Calibration images were also taken to help account for various sources of errors associated with CCD cameras.

The program MPO Canopus was used to analyze these images, with it using comparison stars in the surrounding sky as a reference point in order to correctly produce a light curve of the asteroid.

Equipment

7" Astro-Physics Refractor

Focal Length of objective lens: 65 inches (1654 mm)

Focal ratio: f/9

CCD: 1472 x 2184 pixels.

MaxIm DL 5 was used to capture our images.

Results

Unfortunately, as mentioned, the weather is not favorable to astronomy in college park. While my partner and I spent many nights observing over the last semester, ultimately we were not able to get enough data to find any meaningful results. Additionally, the accepted period of 4201 Orosz is a little over 17 hours, which increases the necessary data to fully map the asteroid's period.

While we were unable to finalize our results, this was still a fantastic experience, getting practice in how astronomers do research.

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Citations

<http://www.astro.umd.edu/openhouse/>

JPL Small Body Database

