

Asteroid Occultation Observations

Juniata College Sigma Pi Sigma Undergraduate Research Award Interim Report

Original Abstract

By setting up multiple locations for observing asteroid occultations, Juniata students will be able to record and analyze these occultations from different points of view. Doing so will allow Juniata to contribute multiple chords for single occultation events in order to better determine the cross sectional size of asteroids.

Progress

All of the necessary equipment has been purchased and inspected by the Juniata College research award team. To date, no occultations have been recorded. There have been several attempts to record occultations, most recently part of the group attempted an occultation by the asteroid, Aivazovskij. However, like each of the other attempts during the semester, the weather was too cloudy to observe any stars. The Juniata team, consisting of 13 students, has met several times and has gone over how to use the equipment and has practiced recording the night sky on a clear night, although there were no occultations that night.

Moving forward, the Juniata College team has two students doing summer research at the college who will also be working on recording observations as opportunities arise throughout the summer. Additionally, another student who is not at the college will be continuing to work on the research over the summer. Fortunately, there are several asteroids whose path goes across the state in such a way that both the team at Juniata and the other student will be able to record. This lends itself to making multiple observations from different locations, as is the ideal for this project. In particular, one such asteroid will be going across the state on June 9th and the team plans to record the event.

Research will continue throughout the summer. There are currently five asteroid occultations between now and mid-July that are potentially strong candidates for observations based on their magnitude and the travel distance. If we are able to successfully record several of these occultations, we would still be on track to meet our goal of eight to twelve recordings for the year, especially if we include lunar occultations. Furthermore, with more students back in the fall and with longer nights compared to summer, the team will have more potential for successful observations when school resumes.

Expense Report

Item	Quantity	Cost
Low Light Camera	3	\$420
OWL Focal Reducer and Adapter	3	\$150
Celestron Powertank	2	\$120
IOTA GPS Video Time Inserter	3	\$750
Meade Telescope	2	\$520