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# Follow-Up Observations of GNAT MG1 Survey Stars: A Summer Community College Student Research Project

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## 1. Introduction

Along with two other community college students, Casey Milne and Neelie Jaggi, I used a 10-inch telescope at the Orion Observatory in the fall of 2006 to observe nine GNAT MG1 survey stars whose periods, due to heavy aliasing, were unknown. Two were found to be continuously variable. Lightcurves for these two stars, each with over a thousand data points, were obtained and the variable's periods were determined. This summer (2007), I will be using multiple telescopes to observe a considerably larger number of MG1 stars. I will, again, obtain extensive observations of those stars found to be continuously variable and will attempt to determine their periods.

## 2. Equipment

The scale of my observational program is determined by the availability of telescopes and CCD cameras. Two Meade LX-200 telescopes, one 10- and one 12-inch, on equatorial wedges and permanent piers at the Orion Observatory, will be my primary instruments. I may be able to set up, on tripods, two 8-inch Meade LX-200R telescopes from Cuesta College, although they are currently lacking equatorial wedges and guidescopes. One SBIG ST-8 camera and five SBIG ST-402 cameras are available. Observations with this equipment will be supplemented by observations made with two Meade 14-inch telescopes (and SBIG cameras), one located at the Dark Ridge Observatory in New Mexico, and the other at the Hill House Observatory in nearby Atascadero, California.

## 3. Data Reduction and Analysis

MPO Canopus/Photometry Reduction software will be used for data reduction and period analysis. Every effort will be made to reduce the data within a day or two of the observations so the results can be reviewed by the summer program's advisors and appropriate stars can be selected for the next round of observations.

## 4. TDI (Drift Scan)

I may attempt to utilize the two 8-inch Meade LX-200R Cuesta College telescopes (which lack equatorial wedges) as alt-az, non-tracking systems operating in a time-delayed-integration (TDI) drift scan mode to determine which of the GNAT candidates are continuously variable. The GNAT candidates are all located on a narrow strip of sky near the celestial equator, so repeated TDI scans of approximately a half-hour's duration may provide sufficient data to identify, simultaneously, a number of continuous variables. These would then be observed individually with the equatorial tracking telescopes.

