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# A Study of Two Newly-Discovered Eclipsing Binary Systems

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## **A Study of Two Newly-Discovered Eclipsing Binary Systems**

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I have observed three newly-discovered variable stars using the 16-inch telescope and CCD at the Valparaiso University Observatory. Of these three variables, two have been verified as binary star systems, where one of the stars passes in front of the other. The third is found to be a pulsating variable, which varies due to a change in its size and temperature. One of the goals of this project has been to further refine the periods of these three variables. From my new data and some previous observations at the Valparaiso University Observatory, I have been able to determine that the brightness of the three systems has varied from 13-55 percent. I have improved upon the determination of the periods of these variables. For the two binary systems, the periods are 0.52 and 1.21 days. For the pulsating variable, the period is 0.32 days. I have formed light curves for each star showing the change of brightness over one cycle. For the two binaries, the light curves are being analyzed to determine the relative sizes and differences in temperature of the two stars in each system. All of this is a part of my senior research project in physics and astronomy.

*Information about the Author:*

Austin Bain is a senior physics major from Monrovia, Indiana. He has worked with Professor Bruce Hrivnak during the summer and school year as an undergraduate research assistant. He plans on pursuing a master's degree in aerospace engineering upon completion of his bachelor's in physics. He is a member of Phi Mu Alpha Sinfonia and is on the executive board for the Valparaiso University League of Gaming, and the Valparaiso University Human Protection Society.

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