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Observational Studies of Proto-Planetary Nebulae at the Valparaiso University Observatory

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We are observing the light variation with time of a sample of 26 proto-planetary nebulae (PPNe) using Valparaiso University's 16-inch computer-controlled reflector telescope and CCD digital camera. PPNe are evolved stars late in their lifetime, in between the red giant and planetary nebula phase. The resulting images are analyzed and properly calibrated to produce quantitative measurements of light intensity with respect to time. We are particularly analyzing nine PPNe and their light variations through time to quantify variability and search for periods to their variability. Of the nine, all are variable over a range of 10-50%. Five demonstrate an approximate cyclical variability with preliminary period values of 45-120 days. One is possibly cyclical, and three display short-term variations on the order of a few days. Future studies will refine the current results and attempt to find periodicity to more PPNe.

Information about the Authors:

This is Christopher Miko's and Rachael Jensema's first summer working as undergraduate research assistants at VU. Both are pursuing a BS in Physics and Astronomy from Valpo and hope to study these subjects in the future.

Faculty Sponsor: Prof. Bruce Hrivnak

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