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Searching for Binary Stars in Planetary Nebulae Using the ISIS Image Subtraction Software

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We explored the theory that binary central stars of planetary nebulae may be contributing factor in the formation of planetary nebulae. We searched for this photometric variability in central stars of planetary nebulae because consistent periodic variability is indicative of a close binary system. The variability of our targets was assessed with the image subtraction software, ISIS. We found that the central stars of the planetary nebulae Hen 2-84, NGC 6326, and K 1-22 showed clear variability. A preliminary light curve for Hen 2-84 showed periodic behavior, suggesting a binary system. Of the remaining targets observed, with sufficient data, five did not appear to have substantial variability detected through ISIS and for 2 targets we were unable to determine true variability.

Information about the Authors:

Samantha Schwartz is a rising senior majoring in physics and mathematics at Valparaiso University. While this is the first time Samantha has worked in the astronomical field, the subject has always fascinated her. After graduation, she plans to study in an education graduate program to become a physics educator.

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