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The Differences in Energy Outputs between Binary Stars in Quiescence and Outburst
Cataclysmic variable stars are stars that vary in luminosity. These star systems are composed of a massive primary star and a less massive secondary star orbiting very closely to one another. Matter is pulled off of the secondary star and falls onto the primary star, forming an accretion disk. The disk becomes unstable as more matter accumulates in the accretion disk. Eventually, the matter is expelled from the system in an outburst that can last anywhere from several seconds to several days. This period of outburst is followed by a quiescent period in which the star maintains a constant luminosity.

Lightcurves are graphs used by variable star observers to analyze a particular star system's fluctuations in luminosity. Lightcurve analysis is an integral part of astronomy in that it allows researchers to determine a particular object's behavior. Variable stars produce lightcurves that normally exhibit distinct periods of quiescence and outburst

This research looks at the ratio of energy emitted during outburst to energy emitted during quiescence for 10 cataclysmic variable star systems. Each of these 10 systems represents a subgroup of cataclysmic variable. The energy ratios compiled in this study show that some star systems are more closely related than others, regardless of the subgroup they belong to. Several systems provide evidence against the Osaki Disk Instability Hypothesis, which suggests that the energy ratio should indicate that the star’s luminosity increases by a factor of ~10.

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