The impact of binarity on stellar evolution along the Cepheid instability strip

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Abstract

One of the great successes of stellar astrophysics has been understanding the structure and evolution of stars on the Cepheid instability strip. However, the role of binarity continues to be an open question. Observations suggest that binarity is common for classical Cepheids yet rare for the RR Lyrae stars and that many Type II Cepheids may be interacting binary systems. Interactions between stars during the main sequence or red giant stage of evolution can prevent the future evolution of Cepheid and RR Lyrae stars, while mergers on the main sequence can create stars that mimic Cepheid evolution. On the other hand, interactions during red giant evolution can lead to an evolutionary shortcut to the Type II Cepheid stage. In this talk I will discuss how binary interactions and stellar mergers impact the evolution of these three classes of stars.

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