

Winter Meeting 2024



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From Binary Interaction to Luminous Red Novae

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Multiple systems, and in particular binary systems of massive stars, are much more the norm than the exception in our Universe, and this is especially true when looking early in stellar formation. The interaction within these systems greatly defines the evolution and fate of their members. In some cases, two binary stars can enter a so-called common envelope phase when they both orbit within the same atmosphere of gas. This envelope is then partially or completely ejected, leading to either a merger or the formation of a compact binary system. The ejection of this envelope results in light emission that we detect as transient events: the Luminous Red Novae. Studying these events is highly important because they represent the observables of a stellar interaction mechanism that can explain a wide variety of energetic phenomena, such as Type Ia supernovae (SN Ia), neutron star mergers, cataclysmic variables, and other sources of gravitational waves. In this presentation, we will explore the nature of the observations used to refine the main models describing the Luminous Red Novae and how these observations are linked to the theory.

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