Binary Interaction Dominates Mass Ejection in Classical Novae

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Classical novae are thermonuclear outbursts in the accreted surface layers of white dwarfs in cataclysmic variable systems. In this talk, I will describe our new hydrodynamic calculations of nova mass loss with MESA, which demonstrate the formation of optically thick winds, confirming previous analytic and numeric work. However, for the first time, we consider the influence of the binary companion on the formation of these winds. For most of the mass loss phase, we find that the wind velocity at the white dwarf's Roche radius is so low that the companion must disrupt the wind; thus, mass loss is instead primarily driven by the binary interaction as an equatorial outflow. A successful spherical optically thick wind is only launched near the end of the ejection phase. This new picture of nova mass loss has broad implications for observables, including shock-induced high-energy emission, and the long-term survival of cataclysmic variables.