INVITED LECTURES

Evolution of binary stars leading up to high-energy sources

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Many stellar high-energy sources are manifestations of one of the stages of binary star evolution. In this talk, I will discuss the astrophysical processes influencing binary star evolution such as mass transfer and the response of mass-losing and mass-accreting stars, formation of circumbinary medium, explosions, and violent events such as common envelope evolution, as well as their relation to end products such as gravitational wave sources. I will cover in greater detail two types of transient events: luminous red novae, which accompany stellar mergers and potentially hold the key to connecting many different evolutionary pathways , and classical novae, where recent GeV Fermi detections as well as ground, space, and interferometric observations suggest a much more complicated picture of mass ejection than previously thought.