Title: Modeling the Common Envelope Inspiral Phase and Formation of LIGOâ€™s Binary Black Holes

Speakers: Soumi De

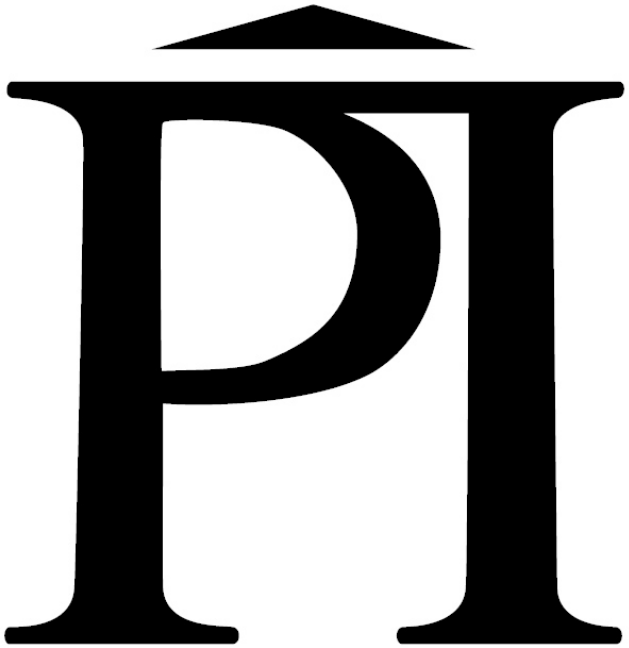
Series: Strong Gravity

Date: March 26, 2020 - 1:00 PM

URL: http://pirsa.org/20030115

Abstract: With the impressive number of binary black hole mergers observed by the LIGO-Virgo detector network in the recent years, it is now important to understand the formation channels of these systems. This talk focuses on the common envelope phase, crucial to the formation of compact object binaries. During this phase, the two companions evolve inside a shared envelope, with the secondary object orbiting towards the core of the primary star. Drag forces in the stellar envelope pull the two stellar cores into a tighter orbit. Additionally, the embedded object can be modified by accretion from the flow around it. I will present local simulations explaining the hydrodynamics of the common envelope inspiral phase, and highlight the effects of the full set of flow parameters on accretion and drag forces in these episodes. I will then discuss the transformation of binaries in common envelope phases and the effect of this phase on the properties of stellar-mass black hole populations



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