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Abstract for an Invited Paper
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Dynamics versus isolated binary evolution: place your bets¹

MICHELA MAPELLI, University of Innsbruck

Understanding the formation channels of compact-object binaries is one of the main challenges of astrophysics in the upcoming era of gravitational-wave astronomy. In this talk, I will discuss the importance of progenitor's metallicity, mass-loss rate and Eddington factor to explain the mass of black hole binaries, and I will show that core-collapse and electron-capture supernovae are a key ingredient to investigate the rate of neutron star mergers. Dynamical processes also affect the formation of black hole binaries: dynamical exchanges in star clusters or Kozai-Lidov effects in hierarchical triples systems can lead to the formation of more massive binaries with (relatively) high eccentricity and misaligned spins. The runaway collision scenario can even lead to the formation of intermediate-mass black holes. Finally, I will discuss new models of the merger rate evolution across cosmic time, which are crucial to distinguish between various formation channels.

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