



Contribution ID: 302

Type: **Invited talk in the parallel session**

On the Rate of Neutron Star Binary Mergers from Globular Clusters

Friday, 9 July 2021 08:10 (25 minutes)

Tens of binary black hole (BH) mergers and a few binary neutron star (NS) mergers have been observed by LIGO/Virgo gravitational wave detectors, strongly advancing our understanding of the lives and deaths of compact objects. Recent realistic globular cluster simulations have shown that dynamical formations of binary BHs can entirely explain the observed rate of binary BH mergers. At the same time, it is well known that globular clusters are abundant in millisecond pulsars, with their production greatly enhanced by dynamical interactions. These naturally lead to the question of whether globular clusters could also efficiently produce NS-BH and NS-NS mergers. In this talk, I will show how we use a large sample of models that are representative of the present-day Milky Way globular clusters to quantify the merger rates of these two types of binary mergers. I will talk about the intertwined dynamical evolution of BHs and NSs in globular clusters and how it affects the formation rates of compact object binaries.

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Session Classification: Explosive Events Associated with Compact-Object Binary Mergers

Track Classification: Binaries: Explosive events associated with compact-object binary mergers