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The role of metallicity in Compact binary merger Formation

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The binary black hole coalescences GW150914 and GW151226 observed by the LIGO enabled us to investigate gravity in the strong-field regime. In the formation models, including isolated binary stars, there are still many open questions about the sustainability of mass transfer and common envelope evolution. The gravitational wave (GW) sources have been predicted using extensive binary population simulations. We model the galactic population of compact binaries with the “Binary Population Synthesis” method using COSMIC and GW signals. The population’s ultimate fate has been predicted based on metallicity. The formation characteristics of the final mass depend strongly on the initial mass and the metallicity associated with a system-defined critical point.

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