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Probing binary neutron star merger components and remnant using isentropic equations of state

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Gross properties of merger components and remnant in GW170817 are investigated using equations of state (EoSs) within the finite temperature field theoretical models. Tidal deformabilities and radii of merger components are estimated in light of GW170817. An analytical expression for the radius of a merger component is derived in terms of the combined tidal deformability for binary neutron star masses in the range $1.1M_{\odot} \leq M \leq 1.6M_{\odot}$. The maximum mass, radius, Kepler frequency and moment of inertia of the rigidly rotating remnant for each EoS at fixed entropy per baryon. It is found that the Kepler frequency of the remnant is much lower at higher entropy per baryon than that of the case at zero temperature.

Authors: Prof. BANDYOPADHYAY, Debades; Ms SOMA, Shriya (FIAS)

Presenter: Prof. BANDYOPADHYAY, Debades

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