

The Equation of State and relic neutrinos from neutron star mergers

Saturday 7 June 2025 15:00 (30 minutes)

As standalone detections or in the context of multi-messenger signals, neutrinos offer opportunities to understand our universe in unprecedented ways. Their weakly interacting nature provides information about, among others, binary neutron star mergers. Interpreting neutrino observations from compact objects relies on models of neutrino emission and the still not fully understood nuclear matter Equation of State (EOS). While much can be learned from the neutrinos emitted by a single merger, the rarity of these events poses challenges for their detection. Unlike single events, relic neutrinos emitted since the first mergers occurred in the universe, provide a continuous background flux that offers an additional avenue for the study of matter under strong gravity. In this talk, I shall discuss the diffuse neutrino background from neutron star mergers, and the prospects of learning about the equation of state of nuclear matter from its possible detection.

Author: Dr CABALLERO SUAREZ, Liliana

Presenter: Dr CABALLERO SUAREZ, Liliana

Session Classification: Nuclear Physics