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(I) Multi-messenger astronomy and neutrinos

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Recent unprecedented developments in astronomical observations have established the era of multi-messenger astronomy. Weakly interacting neutrinos play a fundamental role in the evolution of supernovae, neutron star mergers, and accretion disks around black holes. The byproducts of neutrino reactions with ejected matter as well as their direct detection provide extra insight about the physics of their interiors. The analysis of such signals together with other multi-messengers will shed light in our understanding of related phenomena such as the synthesis of heavy elements and the mechanism of stellar explosions. In this talk, I shall discuss the connection between neutrinos and compact objects in the Galaxy, as well as at cosmological scales.

Primary author: Dr CABALLERO SUAREZ, Liliana (University of Guelph)

Presenter: Dr CABALLERO SUAREZ, Liliana (University of Guelph)

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