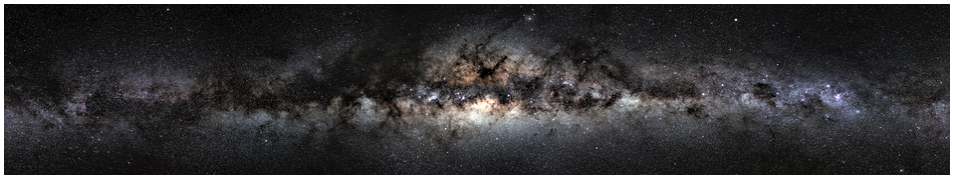

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Constraining the Absolute Neutrino Mass via Time-of-flight Measurements of the Supernovae Electron Neutrinos with DUNE

Tuesday 7 December 2021 08:20 (30 minutes)

Supernova (SN) explosions are the most powerful cosmic factories of all-flavors, MeV-scale, neutrinos. Their detection is of great importance not only for astrophysics, but also to shed light on neutrino properties. Since the first observation of a SN neutrino signal in the 1987, the international network of SN neutrinos observatories has been greatly expanded, in order to detect the next galactic SN explosion with much higher statistics and accuracy in the neutrino energy-time-flavor space. The Deep Underground Neutrino Experiment (DUNE) is a proposed leading-edge neutrino experiment, planning to begin operations in 2026. DUNE will have capability to extract precious information about SN neutrinos. In this contribution, I will discuss the constraints that we expect to achieve with DUNE on the absolute value of the neutrino mass, obtained by considering the time delay in the propagation of massive electron neutrinos from production in the SN environment to their detection in DUNE. Furthermore, the comparison of sensitivities achieved for the two possible neutrino mass orderings is discussed.

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