Contribution ID: **171** Type: **not specified**

Core-collapse Supernovae to constraint neutrino mass with future neutrino detectors

Monday, 11 September 2023 17:30 (15 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. In this contribution, I will discuss the constraints that we expect to achieve with next-generation neutrino experiments like DUNE and Hyper-Kamiokande, on the absolute value of the neutrino mass, obtained by considering the time delay in the propagation of massive neutrinos from production in the SN environment to their detection. Furthermore, the comparison of sensitivities achieved for the two possible neutrino mass orderings is discussed, as well as the effects due to propagation in the Earth matter.

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Session Classification: NUS: Neutrinos

Track Classification: Neutrinos