

Light Curves of BSM-induced Neutrino Echoes

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Astrophysical neutrinos present a unique opportunity to search for physics beyond Standard Model. Beyond Standard Model induced interactions of neutrinos during their propagation yield distinct signatures in their observables in neutrino detectors. Energy, flavor, arrival direction, and the arrival time of neutrinos can be modified when new physics is present. In particular, new physics scenarios will induce a time delay in the arrival time of neutrinos from astrophysical transients. The presence or absence of a delay in the arrival time of neutrinos compared to other cosmic messengers will provide a powerful probe of new physics in the neutrino sector. In this talk, we present the light curves for neutrino emission from transients for different new physics scenarios and discuss the expected temporal distribution for the arrival time of neutrino in each scenario. We highlight the power of time-domain multimessenger astrophysics and discuss the implications for current and future neutrino detectors.

Reference to paper (DOI or arXiv)

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