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Neutrino Oscillations in Dark Matter

We study neutrino oscillations in a medium of dark matter which generalizes the standard matter effect. A general formula is derived to describe the effect of various mediums and their mediators to neutrinos. Neutrinos and anti-neutrinos receive opposite contributions from asymmetric distribution of (dark) matter and anti-matter, and thus it could appear in precision measurements of neutrino or anti-neutrino oscillations. Furthermore, it leads to an amusing possibility that neutrino oscillations can occur from the dark-matter-induced flavorful potential even for massless neutrinos.

Mini-abstract

We provided a systematic study of neutrino oscillations in a medium of dark matter.

Experiment/Collaboration

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