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Hunting for electron-lepton number crossings in core-collapse supernovae

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Neutrinos, despite their weak interactions, play an important role in core-collapse supernova evolution. In the supernova core, the neutrino number density is so high that the coherent forward scattering among neutrinos leads to flavor conversion, a phenomenon that can alter both the supernova explosion dynamics and nucleosynthesis. A necessary condition for the development of fast neutrino flavor conversion is the existence of crossings in the angular distribution of the electron neutrino lepton number. In this talk, I will discuss how to identify the necessary conditions for fast neutrino flavor conversion in core-collapse supernova simulations, and how they are affected by the presence of muons and convection.

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