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Neutrino Oscillations Effects in the Context of Accretion Disks

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Neutrino oscillation effects due to the interaction of neutrinos with one another are diverse and depend strongly on having high densities of neutrinos. Accretion disks, which can arise from neutron star mergers or certain supernovae, are a setting where neutrino emission is high enough to be home to many of the neutrino-neutrino interaction effects seen in the early universe and supernova settings. Meanwhile, they lend themselves to additional effects not seen in other settings. We look in depth at one such effect, where the neutrino-neutrino interaction occurs at the same scale as the neutrino-electron interaction that can also influence oscillation.