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Resonant neutrino self-interactions in astrophysical spectra

If neutrino self-interactions arise from beyond-Standard Model physics, there will be scattering between astrophysical and cosmic background neutrinos. As a result, resonance features can appear in astrophysical neutrino spectra. While the flavor-diagonal case has been studied before numerically, we present an analytic result for arbitrary self-coupling matrix, allowing for possibilities such as self-interactions only between tau neutrinos. We then examine effects on the diffuse supernova neutrino background and high-energy astrophysical neutrinos.

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