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The neutrino self-interaction: a magnetic resonance phenomenon?

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The study of neutrino-neutrino interaction is a very active field in neutrino astrophysics. Since a decade, physicists try to understand the flavor conversion of neutrinos, observed in numerical simulations, when they travel through the supernova (synchronization, bipolar oscillations, spectral split,...).
In this presentation, I will first explain which interactions are relevant for neutrinos when they propagate through supernovae. Then I'll show the correspondence that exists between the neutrino self-interaction and the magnetic resonance phenomenon within two flavors. This calculation is the first to concretely show this analogy on the basis of a full numerical neutrino propagation.

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