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Time-Dependent Collective Neutrino Oscillations in Supernovae[1]
SAJAD ABBAR, HUAIYU DUAN, Univ of New Mexico — Neutrinos can experience self-induced flavor conversion in core-collapse supernovae due to neutrino-neutrino forward scattering. Previously a stationary supernova model, the so called "neutrino bulb model," was used exclusively to study collective neutrino oscillations in the core-collapse supernova. We show that even a small time-dependent perturbation in neutrino fluxes on the surface of the proto-neutron star can lead to fast varying collective oscillations at large radii. This result calls for time-dependent supernova models for the study of collective neutrino oscillations.

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