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Neutrino decoherence in matter

The phenomena of neutrino oscillations can proceed only in the case of the coherent superposition of neutrino mass states. An external environment can modify a neutrino evolution in a way that conditions for the coherent superposition of neutrino mass states are violated. Such a violation results in quantum decoherence of neutrino states and leads to suppression of flavor neutrino oscillations. We consider the influence of the neutrino radioactive decay in dense media on neutrino oscillations, and the corresponding damping of neutrino oscillations in the presence of an electron media and a magnetic field is calculated. The formalism of quantum electrodynamics of open systems is used in the performed evaluations. The studied phenomena can be significant for description of neutrino oscillations in extreme conditions of astrophysical environments peculiar to supernovae, neutron stars or quasars.

Session and Location

Wednesday Session, Poster Wall #138 (Hölderlin-Room)

Poster included in proceedings:

yes

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