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Energy conservation in neutrino decoherence

We investigate neutrino decoherence within an open quantum system formalism by using a phenomenological decoherence matrix. We focus on evaluating the expectation value of the Hamiltonian $\langle \hat{H} \rangle$ and its derivative $\langle \dot{\hat{H}} \rangle$ to quantify violation of energy conservation induced by decoherence parameters on the neutrino subsystem. We find that any variation in $\langle \hat{H} \rangle$ would be negligible compared to the propagation energy over the parameter range of phenomenological interest.

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