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Energy Eigenstates in Systems Weakly Coupled to Environments:Decoherence to Pointer States WENGE WANG, Dept. of Phys., NUS, Singapore — We study decoherence of superpositions of energy eigenstates in a generic system with nondegenerate discrete spectrum, which is quite weakly coupled to a generic environment. We show that $t_e \gg \tau_f$ in most cases, where t_e is the time before which energy eigenstates are robust and τ_f is a time scale related to decoherence of superpositions of energy eigenstates. Energy eigenstates are shown to be pointer states between the two time scales.

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