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**Dynamical Decoupling to Preserve Spin Squeezing in a Dephasing Bath** BHASKAR ROY BARDHAN, JONATHAN DOWLING, Department of Physics and Astronomy, Louisiana State University — Spin-squeezed states (SSS) are quantum-correlated states of a collection of spins or two-level atoms with reduced fluctuations in one of the collective spin components. They are also used to generate as well as detect multipartite quantum entanglement. We show that the amount of spin-squeezing, and hence the entanglement, is significantly deteriorated in presence of individual phase-damping channel and demonstrate that dynamical decoupling technique of repeatedly applying external pulses collectively on the spin-squeezed state can be successfully used to preserve the squeezing in presence of such dephasing bath. Various schemes of the dynamical decoupling technique are studied and their efficiencies in preserving the spin squeezing are compared.

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