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Long-Lived Nuclear Spin Singlet States in Molecules STEPHEN DEVIENCE, MATTHEW ROSEN, Harvard University, RONALD WALSWORTH, Harvard-Smithsonian Center for Astrophysics — Nuclear spins in molecules can be paired to create singlet states with lifetimes much longer than the single spin T1. We create and characterize such singlet states using protons in organic molecules and discuss the effects of temperature, applied RF fields, and chemical exchange. We discuss potential uses of these states in biomedical imaging and as NMR probes in condensed matter systems.

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