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Visualizing and Manipulating the Density Matrix to Understand Multiple Pulse NMR YANQUN DONG, DALE LI, RONA RAMOS, SEAN BARRETT, Yale University, Department of Physics — NMR spin echo experiments using Carr-Purcell-Meiboom-Gill (CPMG) sequence produce an abnormally long-lived echo train in many solid samples. Average Hamiltonian theory and exact quantum simulations reveal that the dipolar couplings during the finite pulses play an important role in this phenomenon. In this talk we will use density matrix tomography to visualize the effect of dipolar couplings during finite pulses. Using this visualization and other simulations, we explore how the complicated flow through many coherence transfer pathways can lead to a measurable signal.

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