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Experimental and Theoretical Limits on Pulse Quality in Silicon NMR Experiments RONA RAMOS[1], KENNETH MACLEAN, YANQUN DONG, DALE LI, ANATOLY DEMENTYEV, SEAN BARRETT, Yale University, Department of Physics — Previous NMR experiments on Silicon involving multiple pulses showed long lived spin echoes [A.E. Dementyev, D. Li, K. MacLean, S.E. Barrett, Phys. Rev. B, 68, 153302 (2003)], an anomalous behavior that disagrees with conventional NMR theory. The application of several pulses to a many spin system warrants the understanding of pulse quality in fine detail. A series of experiments to improve the pulse characteristics and to approach the limit of delta function, spatially homogeneous pulses were performed. These experiments and detailed calculations of the pulse fields involved will be discussed, as well as the implications in understanding the anomalous long lived behavior of previous experiments.

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