

Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Cooling of Nuclear Spins in Diamond via Dark State Spectroscopy SWATI SINGH, ITAMP, University of Connecticut, ADI PICK, MIKHAIL D. LUKIN, Harvard University, SUSANNE F. YELIN, ITAMP, University of Connecticut — Interaction between an electronic state and its surrounding nuclear spin environment is a major source of decoherence in most artificial atomic systems. Recently, optical pumping techniques, including coherent population trapping were used to monitor and control the nuclear bath surrounding such solid state systems. We develop a semi-classical model reminiscent of VSCPT in atomic physics to explain the anomalous diffusion in the nuclear bath. We test our model by using it to explain the dark time distribution in experiments with NV centers in diamond.

Swati Singh
ITAMP

Date submitted: 24 Jan 2013

Electronic form version 1.4