Abstract Submitted
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Characterization and initialization of molecular defects in diamond as a testbed for single-molecule NMR[1] EMMA ROSENFELD, Harvard Univ, DOMINIK BUCHER, Harvard-Smithsonian Center for Astrophysics, LINH PHAM, Lincoln Laboratory, JUNGHYUN LEE, ERIK BAUCH, CONNOR HART, FRANCESCO CASOLA, Harvard University, RONALD WALSWORTH, Harvard University, Harvard-Smithsonian Center for Astrophysics — Nitrogen vacancy (NV) centers in diamond enable promising applications in nanoscale magnetic resonance and manipulation of spins. In particular, single-molecule NMR as well as coherent control of individual electronic and nuclear spins on the diamond surface remain long-standing goals in the NV community. Surface physics challenges, such as background spins and strain, are currently prohibitive of such protocols. In this talk, I will discuss progress towards using molecular defects inside the diamond as a testbed for various NMR pulse sequences and quantum information protocols, ultimately as a step towards single molecule NMR and coherent manipulation of spin networks on the diamond surface.

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