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**Decoherence of nitrogen-vacancy defect spins in diamond from surface spins** MICHAEL DOMINGUEZ, MICHAEL E. FLATT, Department of Physics and Astronomy, University of Iowa — In recent work[1,2], researchers measured the spin coherence time of intentionally-doped nitrogen-vacancy (NV) spin ensembles. The spin coherence times of these spins depends on their local environment, including their nearness to the surface of the material. We calculated the decoherence time of a deep spin within the material affected by the presence of a sheet of surface spins interacting with the deep spin through the dipolar interaction. These calculations describe the experimental measurements qualitatively, however quantitative agreement requires the assumption these spins extend deeper into the material from the surface layer. [1] J. Cardellino et al., Nat. Nanotechnol. 9, 343 (2014) [2] K. Ohno et al., Appl. Phys. Lett. 101, 082413 (2012). This work was supported by the NIGMS under Award Number R25GM058939

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