

Abstract Submitted
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Towards NV-based magnetic sensing in the time domain¹ ELANA URBACH, TAMARA SUMARAC, IGOR LOVCHINSKY, RENATE LANDIG, JAVIER SANCHEZ-YAMAGISHI, TROND ANDERSEN, HONGKUN PARK, MIKHAIL LUKIN, Harvard Univ — The study of protein folding dynamics is an outstanding problem in the biological sciences. We show that nitrogen-vacancy (NV) centers in diamond can be used to dynamically sense the conformational states of individual proteins under ambient conditions. We present preliminary data on time-domain detection of electronic spin labels which were chemically attached to the proteins, as well as label-free detection of native hydrogen nuclear spins within the protein. In addition, we discuss work towards polarizing boron-11 spins in atomically-thin hexagonal boron nitride using Hartmann-Hahn double resonance, with the ultimate goal of studying many-body spin dynamics and performing quantum simulation.

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