Abstract Submitted
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T1-limited Nitrogen-Vacancy magnetometry of fluctuating AC magnetic fields[1] CARLOS MERILES, ABDELGHANI LARAOUI, Department of Physics, City College of New York - CUNY, JONATHAN HODGES, Department of Electrical Engineering, Columbia University — Nitrogen-Vacancy (NV) centers in diamond are being actively investigated as a platform for nanoscale magnetic field sensing. In many of the envisioned applications the target AC magnetic field fluctuates over time and cannot be triggered in synchrony with the pulse protocol controlling NV evolution. Here we introduce a scheme to characterize the time correlation of the unknown field over a time interval limited by the NV spin-lattice relaxation time. Our approach uses two consecutive Hahn-echo sequences separated by a time interval of variable duration. We present an initial experimental demonstration of the technique using an engineered AC field and discuss possible extensions to the monitoring of slowly fluctuating spin ensembles.

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