

# **Development and Characterization of a CW Nitrogen-Vacancy Magnetometer**

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Nitrogen-Vacancy (NV) defects in diamond are a well-known solid state quantum system with emerging applications in quantum information science, quantum sensing, biology, and fundamental physics. An advantage of this system is the relative simplicity of the hardware required to interact with the quantum states of NV defects. In the simplest initialization and readout mode, small diamond crystals containing a large number of NV defects are continuously illuminated with green laser light and the intensity of the resulting red fluorescence is measured while exposing the crystals to a microwave signal. By varying the frequency of the microwave signal, spectra can be obtained that contain information about the diamond crystal itself as well as the magnitude and direction of external electromagnetic fields. This talk will present ongoing work that uses these spectra to precisely determine the strength and direction of an external magnetic field.