Using Optically Detected Magnetic Resonance (ODMR) to Probe NV Center Alternatives for Quantum Information Science Applications

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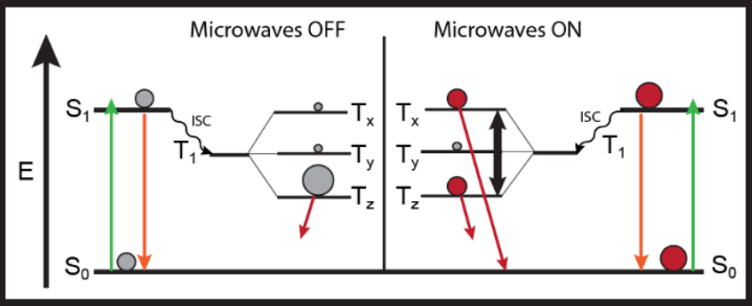

Monday, November 14
12:00 - 1:00 PM
Ford Design Center
Room 1.350

Abstract:

Quantum Information Science (QIS) is a rapidly growing field that is poised to revolutionize areas like computing, information transduction, and sensing by taking advantage of the quantum properties of spins, surpassing classical limitations. In particular, defects in diamonds known as nitrogen vacancy (NV) centers have emerged as promising candidates for QIS applications. However, NV centers lack synthetic tunability and there is little control over spatial placement. A promising approach has been to use molecules with similar energy levels to NV centers, consisting of a photogenerated triplet chromophore and a stable radical. To fully characterize and probe these molecules I have built an optically detected magnetic resonance (ODMR) spectrometer capable of monitoring the effect of microwaves and magnetic fields on the emission and absorption of these molecules at cryogenic temperatures. Using a combination of continuous wave and pulsed microwaves we are working towards having a better understanding of the properties of these molecular qubit candidates, and how to eventually implement them for QIS applications.

RSVP
(lunch included)

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