THE UNIVERSITY OF CHICAGO

COMPUTATIONAL AND APPLIED MATHEMATICS
STUDENT SEMINAR

ABBY POTESHMAN
Committee on Computational and Applied Mathematics
University of Chicago

Recovering Hyperfine Interactions in Random Spin Baths from Coherence Signals

Friday, April 30, 12-1pm
Jones Laboratory, Room 303

Zoom Meeting ID: 982 7975 2970

Password: gershgorin

ABSTRACT

Defects in semiconductors (e.g., NV center in diamond or axial divacancies in SiC) are promising candidates for quantum information processing devices. Each defect, however, has a unique local spin environment due to naturally occurring isotopes in its semiconductor host. These isotopes interact with the central defect spin through the hyperfine interaction, which impacts the coherence time of the defect, a property of interest for quantum information applications. Any realistic scale-up of quantum information processing devices will require fast, accurate methods to characterize the local isotope environment of defects before optimizing entanglement procedures for quantum information processing. In this talk I will describe efforts to model the isotopes in the semiconductor as a random spin bath and to recover hyperfine interactions from pi-pulse experimental coherence data.