

Quantum Information Seminar - Hosted by Discovery Park

Rick Muller

Sandia National Laboratories, Albuquerque, New Mexico

November 5, 2018 • 1:00 - 2:00 p.m. • MRGN 121

Overview of Sandia Quantum Information Science Research

This talk will give an overview of research that Sandia National Laboratories has pursued in the science and engineering of quantum information systems (QIS). Sandia's work in QIS spans computing, sensing, and communications applications. In quantum computing, Sandia has focused on the design, fabrication, and measurement of a variety of qubit technologies, with special expertise in trapped ions and semiconductor qubits. Sandia has developed tools to model qubits and the associated support architectures as well as tools to characterize the performance of qubits and to assess the performance of collections of qubits. In quantum sensing, Sandia has focused on a suite of capabilities around cold atom technologies to improve magnetometry and accelerometry beyond classical limitations. In quantum communications, Sandia has developed on-chip implementations of Quantum Key Distribution hardware. Muller will briefly describe these research areas and will discuss areas of potential collaboration with Purdue scientists.



RICK MULLER

Rick Muller has a B.A. in Chemistry from Rice University, and a Ph.D. in Chemistry from Caltech. His graduate work under Bill Goddard explored numerical techniques to accelerate Hartree-Fock and density functional theory calculations. Rick did postdoctoral research in enzyme catalysis with Arie Warshel at USC, and then returned to Caltech to help manage industrial collaborations around catalysis and quantum chemistry in Goddard's Materials Simulation Center. In 2003 he moved to Sandia National Laboratories in Albuquerque. His work has explored multiscale modeling, simulation of battery materials, and modeling semiconductor quantum computing devices. In 2015-2016 he worked in Washington in the Joint Program Office for the National Strategic Computing Initiative, after which he returned to Sandia as Manager of the Computational Materials and Data Sciences Department.

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