Name: Oliver Dial

Time: 3:30pm – 4:30pm

Title: Error Mitigation and Suppression in Superconducting Quantum Processors

Abstract: In principle, quantum computers have the potential to be able to solve problems that are intractable with classical computers. However, all currently existing quantum platforms suffer from errors; typical state of the art error rates are approximately one error per thousand operations. The central problem in building and operating these devices successfully is how we deal with these errors. Using superconducting quantum processors as an example, I will discuss some sources of errors, including decoherence, crosstalk, and control noise. With these in mind, I will then discuss at a high level three main strategies for handling these errors: error suppression, error mitigation, and error correction.

Bio: Dr. Oliver Dial was named an IBM Fellow in 2021 for his contributions to quantum computing hardware. He is IBM Quantum’s CTO, ensuring IBM’s quantum hardware and software together deliver an outstanding experience. Oliver received his PhD from MIT in 2007 for research in two-dimensional electron and hole systems. He then entered the field of quantum computing as a post-doc at Harvard, demonstrating the first two-qubit gate between semiconductor singlet-triplet qubits and performing pioneering charge noise spectroscopy in these systems. He joined IBM as a research scientist in 2012.