

**Northwestern Quantum Week Opening Science Workshop:  
Superconducting Qubits for Quantum Computing**

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Angela Kou

**Dr. Angela Kou** is an experimental physicist specializing in superconducting circuits and topological materials. She did her graduate work at Harvard University on microscopic effects of the fractional quantum Hall effect. Angela's postdoctoral research at Yale University was focused on superconducting qubits, and particularly on the fluxonium. Angela then worked as a senior researcher in the Microsoft Quantum Lab at Delft where she supervised the circuit QED group.

Angela is currently an assistant professor in the UIUC physics department and a member of the Illinois Quantum Information Science and Technology Center (IQUIST) and the Chicago Quantum Exchange (CQE).

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**Building superconducting qubits from new materials**

**Abstract:** Superconducting qubits are one of the leading platforms for quantum information processing but have not yet reached the performance necessary for useful quantum computation. In this talk, I will discuss current limitations on superconducting qubits. I will then present our work investigating new materials that would enable qubits that are better protected from noise. I will present a novel qubit built using high-kinetic inductance superconductors. To conclude, I will discuss a new scanning tool we have developed for characterizing superconducting qubit processors and measuring proposed protected qubit implementations in two-dimensional materials and topological insulators.