

Abstract Submitted
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Undergraduate Research with Josephson Qubits: From Fabrication to Spectroscopy¹ ALYSSA WILSON, JEROME MLACK, ANTHONY TYLER, ZECHARIAH THRAILKILL, JOSEPH LAMBERT, ROBERTO RAMOS, Drexel University — Josephson junctions are scalable solid state devices that can be used as qubits in quantum computing. In this talk we will describe the different stages involved in the fabrication, characterization and state measurement of a particular superconducting qubit known as the Josephson phase qubit. We have performed current-voltage measurements that determined the critical current of our device and produced histograms of switching currents that were needed to establish the quantum state of the junction. We will also report on the progress on microwave spectroscopy measurements involving multiple qubits coupled using on-chip capacitors. Spectroscopy reveals the various energy levels of entangled quantum states. We will discuss how physics undergraduates have contributed to this work.

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