

Abstract Submitted
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Characterization and Automation of Quantum Electronics for Qubit-based Dark Matter Detector¹ MICHAEL ZAIDEL, Pennsylvania State University, RAKSHYA KHATIWADA, MOHAMED HASSAN, DANIEL BOWRING, Fermi National Accelerator Laboratory, QUANTUM INFORMATION SCIENCE METROLOGY TEAM — The hypothetical axion particle is not only a potential solution to the strong CP problem of quantum chromodynamics but also is a compelling cold dark matter candidate. Searching for axions requires sensitivity that is achievable only with superconducting qubits and other quantum-noise limited devices. This work focuses on the characterization of one such device, a Traveling Wave Parametric Amplifier (TWPA). This was accomplished through developing techniques for remote control and operation of various electronics and the TWPA used in qubit-based dark matter searches.

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