

# Design and development of the Princeton Axion Search

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The Princeton aXion Search (PXS) is a new experiment to search for QCD axion dark matter in the 0.8-2.1  $\mu\text{eV}$  mass range (corresponding to 200-500 MHz frequency range). I describe development into all aspects of the experiment, including solenoidal magnet, cryogenics, amplifiers, and resonators. PXS leverages a strong partnership with the Princeton Plasma Physics Laboratory (PPPL) to build a 5T, 0.5  $\text{m}^3$  conduction-cooled Nb<sub>3</sub>Sn magnet. PXS is also working with Caltech/JPL to build near-quantum-limited parametric amplifiers tailored to this frequency range. I present the design for the full-scale experiment, which is under construction, as well as results from preliminary tests of a model coil, room-temperature cavity prototype, and kinetic inductance traveling-wave parametric amplifier.

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