

Abstract Submitted
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Mississippi State Axion Search KRIS MADSEN, Mississippi State University, MISSISSIPPI STATE AXION SEARCH COLLABORATION — Ever since the Peccei-Quinn Theory was proposed in 1977 as a possible solution to the strong CP problem, the therein postulated Axion, a weakly interacting boson, has been much sought after. The Mississippi State Axion Search is an attempt to improve the limit in the mass-coupling parameter space by using a variation of the Light Shining Through a Wall (LSW) technique. A vacuum sealed and RF shielded cavity is partitioned by a lead wall. EM waves at a frequency between 420 and 430 MHz are amplified by SR-550 and SR-510 amplifiers, broadcast from an antenna on one side of the lead wall and pass through an intense magnetic field. Theory predicts that in the presence of such a magnetic field, axions can be produced from photons via the Primakoff effect. Any axions generated will pass unimpeded to the other half of the cavity, regenerate into photons, and be detected as an excess in the signal picked up by the antenna on the far side. The Data Acquisition is handled by LABView based software running Measurement Computing drivers for two PCI DAQ cards: the DAS-08 handles the analog signals from the receiving antenna and monitors vital statistics in the cavity, while the DIO-24 provides the 1kHz timing TTL pulse and allows remote control of the experiment's systems.

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