Abstract Submitted
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Search for Axions using CUORE SETH NEWMAN[1], University of South Carolina, CUORE COLLABORATION — The best solution to the "Strong CP Problem" was developed by Peccei and Quinn and has the QCD Lagrangian possessing an additional global U(1) symmetry which is broken at a high energy scale, f_a. The symmetry breaking generates a Nambu- Goldstone boson called the axion, which can couple to quarks, leptons or photons. The Axio-Electric effect is one detection mechanism where an axion is absorbed by a bound electron, acquiring its energy and momentum and is ejected. In a bolometer, the higher shell electrons will immediately replenish the vacancies left by the ejected electron and the resulting x-rays will be detected. The absorption of a series of mono energetic axions will create a peak in the energy spectrum at the incoming axions energy. The CUORE Experiment, located at the Laboratori Nazionali del Gran Sasso in Assergi, Italy, will have 988 TeO_2 detectors, with total mass 741-kg. The 14.4 keV M1 transition of ^{57}Fe in the sun has an axion-emission branch which CUORE could be sensitive to. The CUORE Collaboration will search for the 14.4-keV axion peak at coupling scales scale not yet excluded in direct laboratory experiments, and will attempt to improve the current bounds on the Peccei-Quinn coupling scale, f_a.

[1]On Behalf of the CUORE collaboration

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