

Abstract Submitted
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Characterization of the KATRIN Focal Plane Detector LAURA BODINE, MICHELLE LEBER, ALLAN MYERS, KAZUMI TOLICH, BRENT VANDEVENDER, BRANDON WALL, University of Washington, KATRIN COLLABORATION — The Karlsruhe Tritium Neutrino (KATRIN) Experiment is a next generation tritium beta decay experiment designed to measure directly the electron neutrino mass with a sensitivity of 0.2 eV. In the experiment, electrons from tritium decay of a gaseous source are magnetically guided through analyzing solenoidal retarding electrostatic spectrometers and detected via a focal plane detector. The focal plane detector is a 90mm diameter, 500 micron thick monolithic silicon pin-diode array with 148 pixels. The diode contacts have a titanium nitride overlayer and are connected to preamplifiers via an array of spring-loaded pogo pins. This novel connection scheme minimizes backgrounds from radioactive materials near the detector, facilitates characterization and replacement of the detector wafer, but requires a unique mounting design. The force of the pins strains the silicon, possibly altering the detector properties and performance. Results on the mechanical, thermal and electrical performance of a prototype detector under stress from pogo pin readouts will be presented.

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