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Commissioning Measurements of the KATRIN Main Spectrometer[1] KEVIN WIERMAN, University of North Carolina at Chapel Hill, KATRIN COLLABORATION — Beginning in May 2013, the KArlsruhe TRItium Neutrino experiment (KATRIN) collaboration began measurements to commission the 10-m diameter main spectrometer. KATRIN utilizes the spectrometer to provide magnetic adiabatic collimation and electrostatic filtering designed to analyze the tritium beta decay spectrum for contributions from the neutrino mass. In order to achieve an order-of-magnitude improvement on previous neutrino mass experiments the desired sensitivity of the apparatus must be 200 meV in the decay endpoint region. Goals of the recent measurements include identification and reduction of backgrounds and determination of the spectrometer transfer function. Backgrounds have been probed by utilizing electromagnetic field configurations to explore decays in the spectrometer, Penning traps and field emission. A 148-pixel PIN diode array is employed to detect particles exiting the spectrometer, which permits angular and radial distributions of particles to be analyzed. This has allowed for high precision comparison between measurements and simulations of expected backgrounds to be investigated in order to commission the spectrometer.

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