Abstract Submitted
for the APR07 Meeting of
The American Physical Society

Commissioning Studies with the KATRIN Pre-Spectrometer MICHELLE LEBER, University of Washington, KATRIN COLLABORATION — The Karlsruhe Tritium Neutrino experiment (KATRIN) plans to precisely measure the beta-decay electron energy spectrum near the tritium decay endpoint in order to directly probe the mass of neutrinos in the degenerate region. The highest energy beta-decay electrons from gaseous molecular tritium will be energy analyzed using a 10 m diameter Magnetic Adiabatic Collimation and Electrostatic (MAC-E) spectrometer. This main spectrometer is preceded by a similar but smaller pre-spectrometer that serves as a pre-filter to reduce the number of electrons that enter the main spectrometer. We will briefly discuss the design requirements for the spectrometers including vacuum requirements, energy resolution, and transmission properties. The spectrometers also include inner electrodes to further reduce backgrounds. Construction of the pre-spectrometer was recently completed and we will report on the preliminary studies of this system.

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Date submitted: 15 Jan 2007 Electronic form version 1.4