



Contribution ID: 743

Type: talk

Status of the neutrino mass experiments KATRIN and Project 8

Friday, July 24, 2015 11:30 AM (15 minutes)

A model independent, direct way to measure the neutrino masses is the investigation of the kinematics of single β -decay via a precise measurement of the β -decay electron energy spectrum close to the endpoint. This talk will present the current status of two experiments intending to use this method by measuring the β -spectrum of tritium.

The Karlsruhe TRitium Neutrino (KATRIN) experiment is currently under construction at KIT. The measurement setup consists of a high luminosity windowless gaseous tritium source, a magnetic electron transport system with differential and cryogenic pumping for tritium retention, and an electro-static spectrometer section (pre-spectrometer and main spectrometer) for energy analysis, followed by a segmented detector system for counting transmitted β -electrons. The latest results of a recent commissioning measurement phase aiming to investigate the performance of the main spectrometer will be presented.

The Project 8 experiment aims to detect coherent cyclotron radiation emitted by energetic electrons in a magnetic field in order to perform β -spectroscopy. Only recently, a dedicated test experiment was able to successfully detect synchrotron radiation emitted from a single, mildly relativistic electron for the first time, showing the feasibility of this approach and allowing for a new method to perform spectroscopy.

Primary author: FRAENKLE, Florian (Karlsruhe Institute of Technology)

Presenter: FRAENKLE, Florian (Karlsruhe Institute of Technology)

Session Classification: Neutrino Physics

Track Classification: Neutrino Physics