



Contribution ID: 11

Type: c

Tritium and the Mass of the Neutrino

Wednesday, May 24, 2023 9:10 AM (35 minutes)

For 75 years the shape of the beta spectrum of tritium has been our clearest window on the most mysterious property of the neutrinos, their mass. The discovery of neutrino oscillations gave us proof that neutrinos have mass, which is a direct contradiction of the minimal standard model of particle physics. But how much mass? Oscillations cannot give a number for the mass, other than that the average of the three masses must be at least 0.02 eV. The mass is needed to build the new standard model, and to help pin down such things as the equation of state of dark energy and the evolution of structure in cosmology. KATRIN, the first new laboratory experiment on the beta spectrum of tritium in more than 20 years, has now shown the mass to be no greater than 0.8 eV. KATRIN continues toward its sensitivity goal of 0.2 eV. If the mass is not in this range, a very different approach called “Project 8” has passed proof-of-concept tests with a scheme that might have even greater sensitivity.

Author: ROBERTSON, Hamish (University of Washington)

Presenter: ROBERTSON, Hamish (University of Washington)

Session Classification: Neutrino physics with Tritium and atomic sources

Track Classification: Oral presentations