

TRIMS: Validating Tritium Molecular Effects for Neutrino Mass Experiments

The Tritium Recoil-Ion Mass Spectrometer (TRIMS) experiment measures the branching ratio of molecular tritium (T_2 and HT) beta decay to their bound states ($^3\text{HeT}^+$ and $^3\text{HeH}^+$). This measurement will help validate the current molecular final-state theory utilized by neutrino mass experiments such as KATRIN and Project 8. TRIMS consists of a 60-kV acceleration chamber with magnetic guiding to silicon detectors at both anode and cathode ends. By measuring the kinetic energies and the time-of-flight differences between the decay product ions and beta particles, we are able to distinguish molecular ions from atomic ones. We will present our preliminary tritium data and analysis progress toward obtaining the branching ratio in question.

Authorship annotation

for the TRIMS Collaboration

Session and Location

Monday Session, Poster Wall #6 (Robert-Schumann-Room)

Poster included in proceedings:

yes

Primary author: Mr LIN, Ying-Ting (University of Washington)

Presenter: Mr LIN, Ying-Ting (University of Washington)

Track Classification: Poster (participating in poster prize competition)