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Modeling the TRIMS Experiment[1] BYRON DANIEL, Carnegie Mellon Univ, TRIMS TEAM — By analyzing the kinematics of tritium beta decay, one can directly measure the neutrino-mass scale. Since modern tritium-based experiments use a molecular source and molecular excitations modify the beta spectrum, one must also understand these "final-state" excitations precisely in order to properly analyze the spectral shape. Historical mass spectroscopy measurements disagreed with theory. The Tritium Recoil-Ion Mass Spectrometer (TRIMS) experiment is a coincidence time-of-flight mass spectrometer designed to test the theory used in the neutrino-mass analysis. In this presentation, I will speak in detail about the Geant4 modeling of the TRIMS experiment, which explains features in the data such as secondary emission and dissociation in flight.

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