



Contribution ID: 32

Type: Long talk (20 mins)

Sensitivity of Future Tritium Decay Experiments to New Physics

Thursday, December 15, 2022 4:00 PM (30 minutes)

The β -decay of tritium is the most promising approach to measure the absolute masses of active light neutrinos in the laboratory and in a model-independent fashion. The development of Cyclotron Radiation Emission Spectroscopy techniques and the use of atomic tritium has the potential to improve the current limits by an order of magnitude in future tritium experiments. In this paper, we analyse the potential sensitivity of such future searches to keV-mass sterile neutrinos and exotic interactions of either the active or sterile neutrinos. We calculate the relevant decay distributions in both energy and angle of the emitted electron with respect to a potential polarisation of the tritium; we include interference with the Standard Model case as well as incorporating relevant final state corrections for atomic tritium. We present projected sensitivities on the active-sterile neutrino mixing and effective operator scales of exotic currents, demonstrating the potential to probe New Physics in tritium experiments.

Type of presentation

20 minute talk

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Phenomenology

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Session Classification: Full Length Talks