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Determination of the Absolute Neutrino Mass with Quantum Technologies

venerdì 21 giugno 2024 17:30 (2 ore)

The Quantum Technologies for Neutrino Mass (QTNM) is a UK-based neutrino mass measurement experiment which aims to leverage advances in quantum technology to develop a new experimental apparatus to determine the absolute neutrino mass.

Sensitivity to neutrino masses in the 10meV/c^2 regime is well motivated by neutrino oscillation measurements, but is out of reach of the current state-of-the-art technology. A forward looking experimental programme incorporating recent technological advances will help us to reach this ambitious goal.

QTNM will use Cyclotron Radiation Emission Spectroscopy (CRES) to measure the beta-decay spectrum of atomic tritium, and hence perform an absolute neutrino mass measurement. The first demonstrator apparatus (CRESDA) pulls together cutting edge technologies: atomic magnetometry, atomic source production and containment, high frequency signal collection and quantum-limited microwave amplifiers.

This poster will give an overview of QTNM, detailing the current status of the proposed detector technologies, forthcoming measurement plans and future experimental outlook.

Poster prize

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