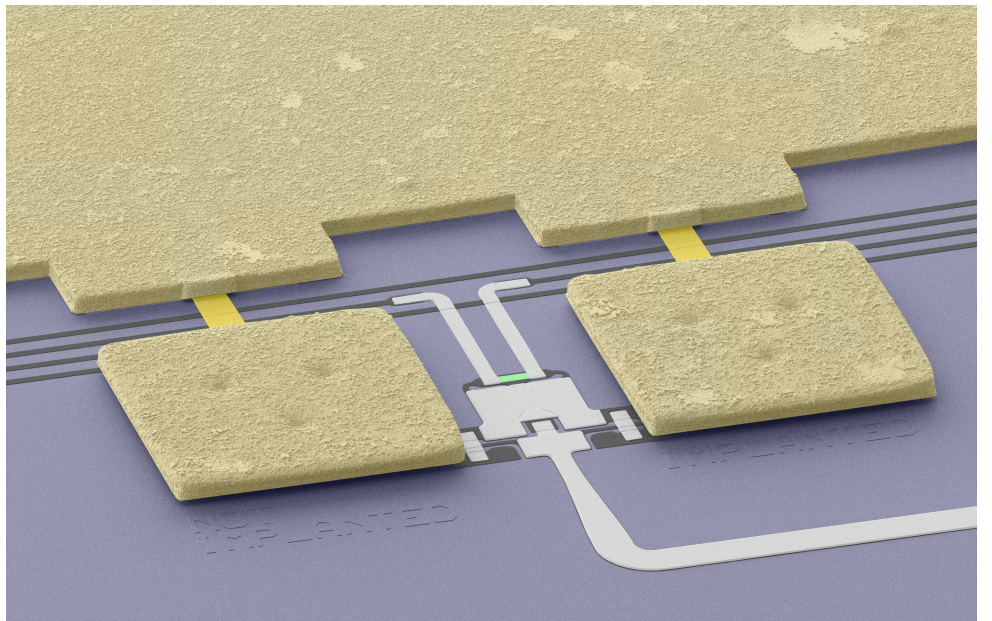


Quantum sensors for a next-generation tritium-base neutrino mass experiment.

Tuesday, 23 June, 2026
Auditorium & Webcast 16:00 h

Sebastian Kempf (KIT)

Determining the absolute neutrino mass scale is one of the remaining grand challenges in fundamental physics. Precision measurements of weak-decay kinematics provide the only model-independent route. The Karlsruhe Tritium Neutrino (KATRIN) experiment currently spearheads this effort and has recently set the world's tightest neutrino mass limit, by measuring the tritium β -decay spectrum.



Yet, probing the inverted or normal mass ordering lies far beyond KATRIN's reach and requires breakthroughs in both tritium source technology and electron spectroscopy. In this talk, I will discuss how superconducting quantum sensors, combined with an atomic tritium source, provide a suitable path towards a next-generation tritium-based neutrino mass measurement, aiming to probe or even resolve the neutrino mass ordering.

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