

Coherent neutrino scattering and the quenching factor measurement

Thursday, August 4, 2022 4:10 PM (25 minutes)

The recent evidence for coherent elastic neutrino-nucleus scattering (CE ν NS) in the NCC-1701 germanium detector using antineutrinos from the Dresden-II nuclear reactor is in good agreement with standard model expectations. However, we show that a 2σ improvement in the fit to the data can be achieved if the quenching factor is described by a modified Lindhard model with a negative value of q , which is also consistent with the direct quenching factor measurements. We also place constraints on the parameter space of a light vector or scalar mediator that couples to neutrinos and quarks, and on a neutrino magnetic moment. We demonstrate that the constraints are quite sensitive to the quenching factor at low recoil energies by comparing constraints for the standard Lindhard model with those by marginalizing over the two parameters of the modified Lindhard model.

Attendance type

Virtual presentation

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Session Classification: WG5: Beyond PMNS

Track Classification: WG5: Beyond PMNS