

Searching for Large Extra Dimensions with MINOS and MINOS+

Authorship annotation

On behalf of the MINOS/MINOS+ Collaboration

Session and Location

Wednesday Session, Poster Wall #52 (Auditorium Gallery Right)

Abstract content

Most data from neutrino oscillation experiments are consistent with the standard three-flavor paradigm. With increasing experimental precision, potential effects from high scale physics that could modify oscillations in subtle ways are searched for. One such high scale physics scenario involves large extra dimensions. Following the Large Extra Dimension model, sterile neutrinos arising as Kaluza-Klein states in an extra dimension with size R can mix with the three active neutrinos in 3+1 spacetime, thereby altering the neutrino oscillation probabilities. MINOS reported the strongest constraint on R from a neutrino oscillation experiment, excluding $R > 0.45 \mu\text{m}$ at 90% C.L. An updated result will be presented, employing a new analysis technique that exploits the full power of both MINOS detectors and including the analysis of MINOS+ beam data which significantly increases the number of events at energies above the three-flavor minimum where the LED model effects are bigger.

Poster included in proceedings:

yes

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