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Constraining new physics scenarios in neutrino oscillations

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We consider the disappearance data of the Daya Bay experiment to constrain the parameter space of models where sterile neutrinos can propagate in a large compactified extra dimension (LED) and models where non-standard interactions affect the neutrino production and detection (NSI). I will show that compactification radius R in LED scenarios can be constrained at the level of $0.57\mu\text{m}$ for normal ordering and of $0.19\mu\text{m}$ for inverted ordering, at 2σ confidence level. For the NSI model, reactor data put a strong upper bound on the parameter ϵ_{ee} at the level of $\sim 10^{-3}$, whereas the main effect of $\epsilon_{e\mu}$ and $\epsilon_{e\tau}$ is a worsening of the determination of θ_{13} .

Summary

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