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Sterile Neutrinos with Altered Dispersion Relations as an Explanation for the MiniBooNE, LSND, Gallium and Reactor Anomalies

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Recently the MiniBooNE Collaboration has reported an anomalous excess in muon to electron (anti-)neutrino oscillation data. Combined with long-standing results from the LSND experiment this amounts to a 6.1 sigma evidence for new physics beyond the Standard Model. We develop a framework with 3 active and 3 sterile neutrinos with altered dispersion relations that can explain these anomalies without being in conflict with the absence of anomalous neutrino disappearance in other neutrino oscillation experiments.

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