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The antineutrino anomaly: implications for the solar neutrino sector

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The interest around a light sterile neutrino with mass in the eV range has been recently reawakened by the emergence of new anomalies in the neutrino data, which may be explained by hypothesizing oscillations into a new sterile state. The existence of a non-negligible mixing with an additional sterile neutrino specie has important consequences on the remaining neutrino oscillation phenomenology, where it must be incorporated in the framework of a general 3+1 scheme. Here we investigate the perturbations induced in such a scheme on the phenomenology of the solar neutrino sector (solar and KamLAND data), showing that these data allow us to put interesting constraints on the lepton matrix element Ue4 describing the mixing of the electron neutrino with a fourth neutrino.

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