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Phenomenology of MaVaN's Models in Reactor and Solar Neutrino Data

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Mass Varying Neutrinos (MaVaN's) mechanisms were proposed to link the neutrino mass scale with the dark energy density, addressing the coincidence problem. In some scenarios this mass can present a dependence on the baryonic density felt by neutrinos, creating an effective neutrino mass that depends both on the neutrino and baryonic densities. In this work we study the phenomenological consequence of MaVaN's scenarios in which the matter density dependence is induced by Yukawa interactions of a light neutral scalar particle which couples to neutrinos and matter. Under the assumption of one mass scale dominance, we perform an analysis of KamLAND neutrino data which depends on 4 parameters: the two standard oscillation parameters, $\Delta m^2_{0,21}$ and $tan^2\theta_{12}$, and two new coefficients which parameterize the environment dependence of neutrino mass. We introduce an Earth's crust model to compute precisely the density in each point along the neutrino trajectory. We show that this new description of density does not affect the analysis with the Standard Model case. With the MaVaN model we observe a first order effect in lower density, which lead to an improvement on the data description. We will also present new results with solar data.

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