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P3.046 Testing the sensitivity of oscillation experiments to CSD(n) neutrino models

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CSD(n) are a class of neutrino mass models, based on constrained sequential dominance (CSD), which fully determine all neutrino masses, mixing angles and phases from a small number of free parameters. This high predictivity opens the possibility for the model to be probed by current and future neutrino oscillation experiments. The CSD(3) case with two right handed neutrinos, giving two related input mass parameters plus a single phase to determine the mixing matrix, fits well to existing data [1].

We present here a study into the potential sensitivity to this model of oscillation experiments. Exact sum rules predicted by CSD(n) [2] are used to demonstrate the sensitivity of the current generation of oscillation experiments including T2K and NOVA, with further sensitivity demonstrated using full GLoBES simulations of future experiments including DUNE and Hyper-Kamiokande.

Also presented are the tools and techniques used to perform this study. These tools have been developed to extend the GLoBES software package [3] to provide a general framework for determining experimental sensitivity to neutrino mass models. This framework allows any neutrino mass models that predict a neutrino mass matrix with some arbitrary parametrisation to be tested with long-baseline oscillation experiments simulated in GLoBES.