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Constraining Majorana CP Phase in Precision Era of Cosmology and Double Beta Decay Experiment

We show that precision measurement of sum of neutrino masses by cosmological observation and effective neutrino mass by neutrinoless double beta decay, together with beta decay experiments, have a synergy which allows us to get information on the Majorana phase of neutrinos. In order to quantify this information, we use, in addition to the allowed region plots, the CP exclusion fraction function as a complementary tool. This function shows how much fraction of the CP phase parameter space can be excluded for a given set of assumed inputs parameters. We find that one of the two CP neutrino phases can be constrained by excluding 10-50% of the phase space at 3σ CL for the lowest neutrino mass of 0.1eV. We also consider if the nuclear matrix element can be constrained by consistency of such measurements.

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