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Advantages of a Second Detector in the Neutrino Mass Hierarchy Determination

In the next decade, a number of experiments will attempt to determine the neutrino mass hierarchy. I will show that a second detector can significantly improve the precision of the hierarchy determination in reactor neutrino experiments at intermediate baselines, breaking the degeneracy with a shift of \Delta M_23 and reducing the impact of the non-linear response.
Moreover, with the addiction of one cyclotron complex, it will be possible to measure the CP-violating phase with good precision.
I will also show that, since the two hierarchies are nonnested hypothesis, the statistic delta chi^2 does not follow a one-degree-of-freedom chi^2 distribution and so the confidence in the hierarchy determination cannot be estimated by taking the square root of the expected delta chi^2; I will present the correct formula for the confidence.

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