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Submission of Abstract

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Title of the Poster: Determination of the neutrino mass hierarchy with a new statistical method

Abstract Text: Nowadays neutrino physics is undergoing a change of perspective: the discovery period is almost over and the phase of precise measurements is starting. The three-flavour oscillation neutrino framework is strengthening well. In this framework a new method has been developed to determine the neutrino mass ordering, one of the still unknown and most relevant parameters. The method is applied to the 2015 results of the NOvA experiment for $\nu_\mu \rightarrow \nu_e$ appearance, including its systematic errors. A substantial gain in significance is obtained compared to the traditional $\Delta\chi^2$ approach. Assuming the number of the 2015 ν_e observed events scales with the exposure, an increase in only a factor three would exclude the inverted hierarchy at more than 95% C.L. over the full range of the CP violating phase.

Summary: New statistical method has been developed to determine the neutrino mass ordering. The method is applied to the 2015 results of the NOvA experiment for $\nu_\mu \rightarrow \nu_e$ appearance, including its systematic errors. A substantial gain in significance is obtained compared to the traditional $\Delta\chi^2$ approach. Keywords: neutrino, oscillations, mass hierarchy, mass ordering, NOvA