

**XVIII Workshop on Neutrino Telescopes
Palazzo Franchetti – Istituto Veneto
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**Poster Session
Submission of Abstract**

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Title of the Poster: Statistical Issues on the Neutrino Mass Hierarchy
Determination

Abstract:

The determination of the neutrino Mass Hierarchy (MH) is one of the main goals of the major current and future neutrino experiments. The analysis usually proceeds from the $\Delta\chi^2$ estimator. This estimator may show several draw-backs and concerns, together with a debatable strategy.

The author will discuss the needs for a clear strategy as well as the related sensitivity evaluation. The issues on the MH determination from the reactor experiments will be further illustrated, starting from the limited power of the $\Delta\chi^2$.

Summary:

We have discussed the statistical significance using $\Delta\chi^2$ depends on the $|\Delta m^2|$, the atmospheric neutrino mass scale. Then how $\Delta\chi^2$ is controlled by the statistical assumptions that significantly reduced the statistical significance.

An alternative method has been introduced, a new estimator 2D-F that gives significance results higher than 5σ , although a degeneracy on $|\Delta m^2|$ has to be taken in .

Kindly follow the instructions above and send the abstract (.pdf file) to <mailto:salente@pd.infn.it> by February 22nd 2019. Response will be sent to the submitter's e-mail address indicated above, by March 1st. Posters will be exhibited all week long at the workshop site. Discussion will take place on Thursday March 21st, during the Poster Party. At least one author must be available for "question-answer" time. Best 3 posters will be awarded on Friday 22nd, during the closing plenary session of the workshop.