

A Posterior Analysis on IceCube Double Pulse Tau Neutrino Candidates

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What this contribution is about:

- We present a posterior analysis on the most promising double pulse tau neutrino candidate observed in 8-year IceCube data and explore the potential distortion from ice property uncertainties.

Why is it relevant:

- The most promising tau neutrino candidate is located very near to the dust layer in the detector which might distort the waveforms due to potential rapid shift in the ice's optical properties.

What has been done:

- A targeted re-simulation of three flavor neutrinos was performed with a new ice model treatment with continuous variation of nuisance parameters.
- Double Pulse Analysis pipeline was applied to the MC data then obtained the expected event rates for each flavor and signal purity.

What's the result:

- The purity of the tau neutrino candidate remains larger than 0.9
- The impact of ice property uncertainties is not significant.

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