

Fast neutrino oscillation in short baseline reactor antineutrino experiments

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Nuclear power plants are used to study properties of neutrino oscillation. The intensive antineutrino flux provides the large statistics, the main uncertainties come from systematic.

Usually, the baseline of reactor experiments, the distance between the reactor and the detector, varies from 0.5 km or more. It allows to effectively measure the oscillation parameters Δm_{32}^2 , $\sin^2 2\theta_{13}$. The reactor and detector are considered as point objects.

At the same time, the short baseline experiments, baseline is less than 100 m, are used to precisely measure antineutrino flux (e.g. Taishan Antineutrino Observatory). In the case of the short baseline, it is crucial to take into account the size of the reactor and detector.

This poster will address the impact of spatial distortion of baseline on the effectiveness of measurements of fast neutrino oscillations, comparing measurements with a point model of the reactor and the detector.

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