

## Is T2K missing energy? Searching the electron-scattering data archives for robust removal energy uncertainties

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In order to make precision measurements of neutrino oscillation parameters, it is vital for T2K to have an accurate kinematic reconstruction of the neutrino energy. The uncertainty on this reconstruction has a variety of contributions. However for recent oscillation measurements, the missing energy in the nuclear response is a significant source of systematic uncertainty. T2K has recently updated its nuclear response model, yet it fails to accurately predict the evolution of inclusive electron scattering data over the relevant range of kinematic phase space for T2K - thus motivating a large systematic uncertainty.

By comparing our models to inclusive electron data, it is possible to reduce this systematic. This talk will focus on the development of an approximate electron scattering simulation in NEUT, the event generator used by T2K, and its comparison to such electron scattering data to produce a physically motivated correction to the first nucleon removal energy systematic. The sensitivity of cross-section measurements to such effects will be discussed in the context of recent T2K CC0Pi measurements.

### Working group

WG2

**Author:** Mr MCELWEE, Jordan (University of Sheffield)

**Co-author:** T2K COLLABORATION, T2K Collaboration

**Presenter:** Mr MCELWEE, Jordan (University of Sheffield)

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