

# New RES and DIS uncertainties for NOvA cross-section model

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NOvA is a long-baseline neutrino experiment at Fermilab that studies neutrino oscillations via electron neutrino appearance and muon neutrino disappearance. The oscillation measurements compare the Far Detector data to an oscillated prediction informed by the Near Detector (ND) data. This ND-informed prediction is produced from the neutrino generator GENIE, which provides NOvA with a set of interaction uncertainties. However, this coverage does not account for all interaction uncertainties relevant for NOvA, in particular for resonance production (RES) and deep inelastic scattering (DIS) processes, which comprise a substantial portion of NOvA's interactions. Here we introduce six new cross section uncertainties that affect RES and DIS interactions, which represent degrees of freedom not available in the previous NOvA model. After careful studying of their impact, we incorporate them to the NOvA cross-section model. We show the impact of these new uncertainties on various reconstructed quantities.

## Poster prize

Yes

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