Introduction: NOvA

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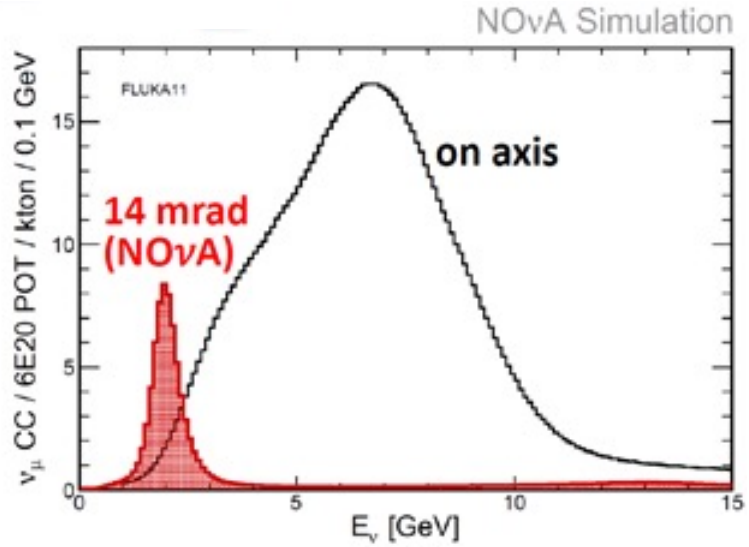
What is NOvA (w.r.t. Cross Sections)

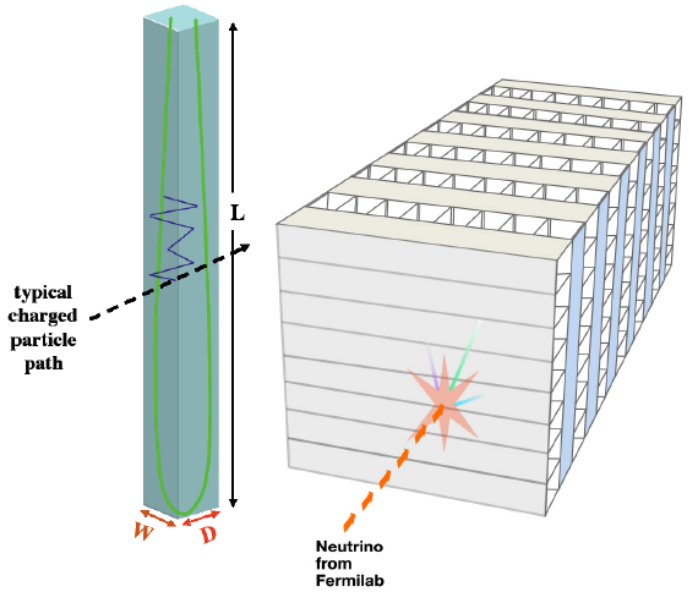
Accelerator neutrino experiment

- NuMI beam at Fermilab
- E ≈ 1.9 GeV (off-axis narrow band beam)
- ν_μ and $\bar{\nu}_\mu$ beam modes



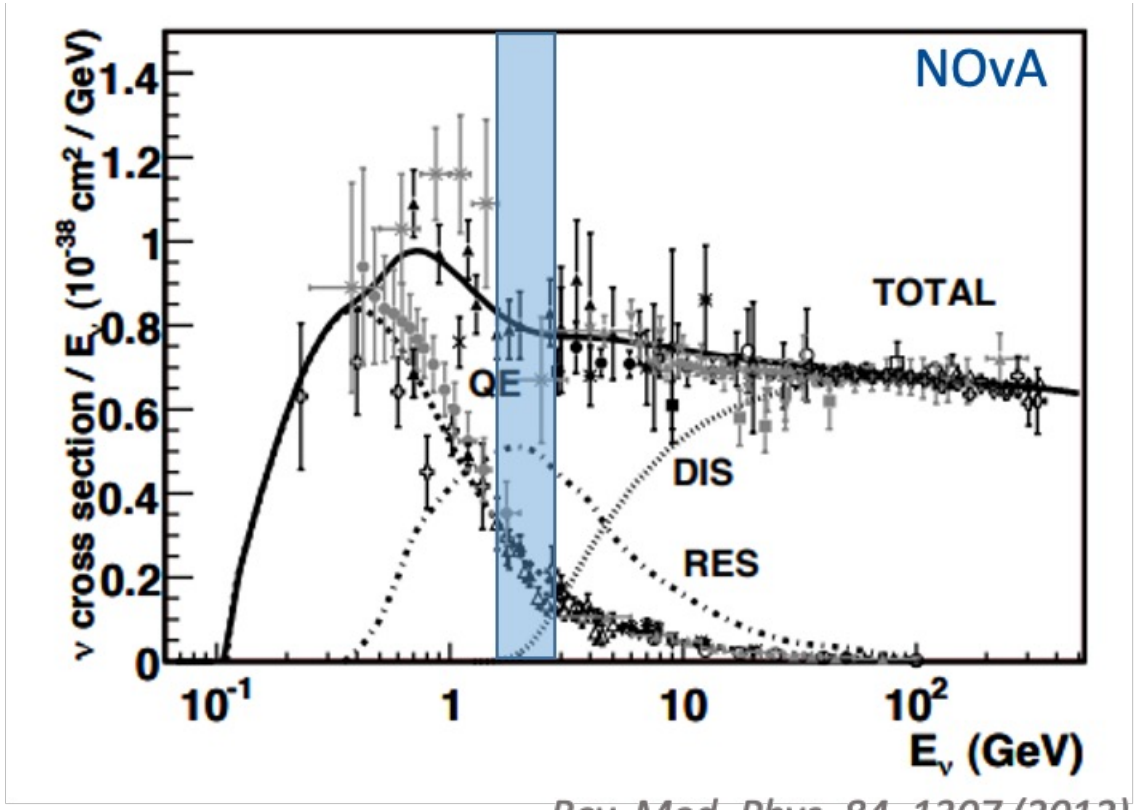
Near Detector

- ~1km from production target at Fermilab
- Active liquid scintillator hydrocarbon target
  67% C, 11% H with 16% Cl, 3% Ti, 3% O
- Tracking calorimeter



Why NOvA Measures Cross Sections

NOvA interactions probe an interesting energy regime



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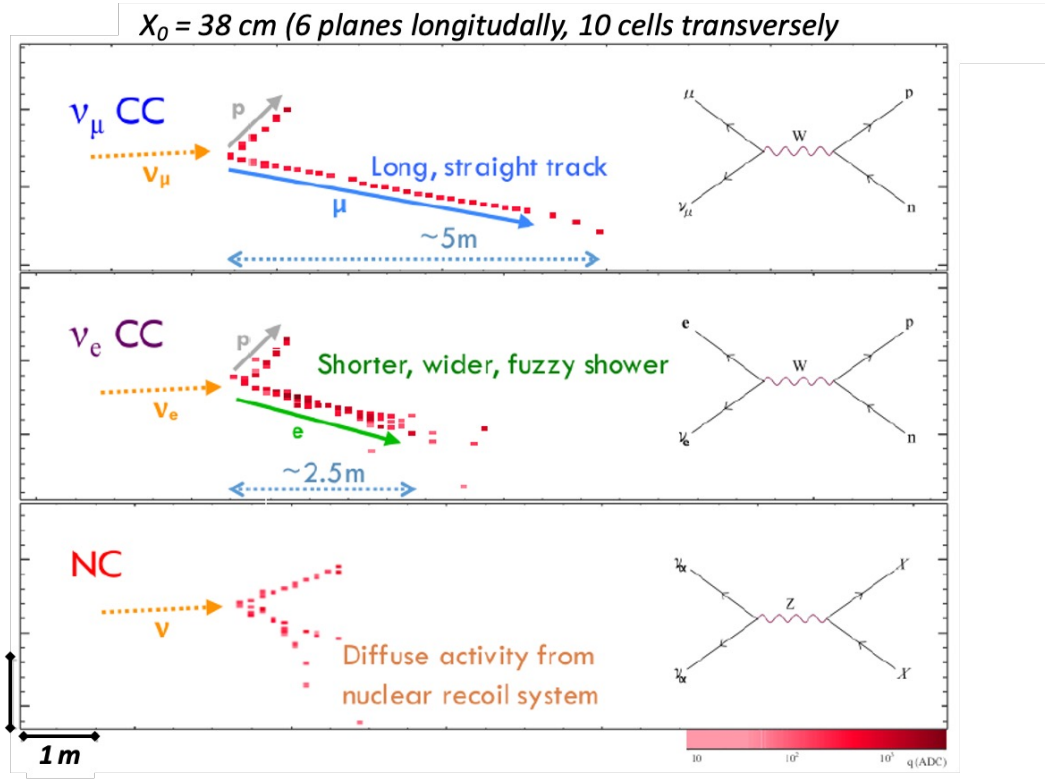
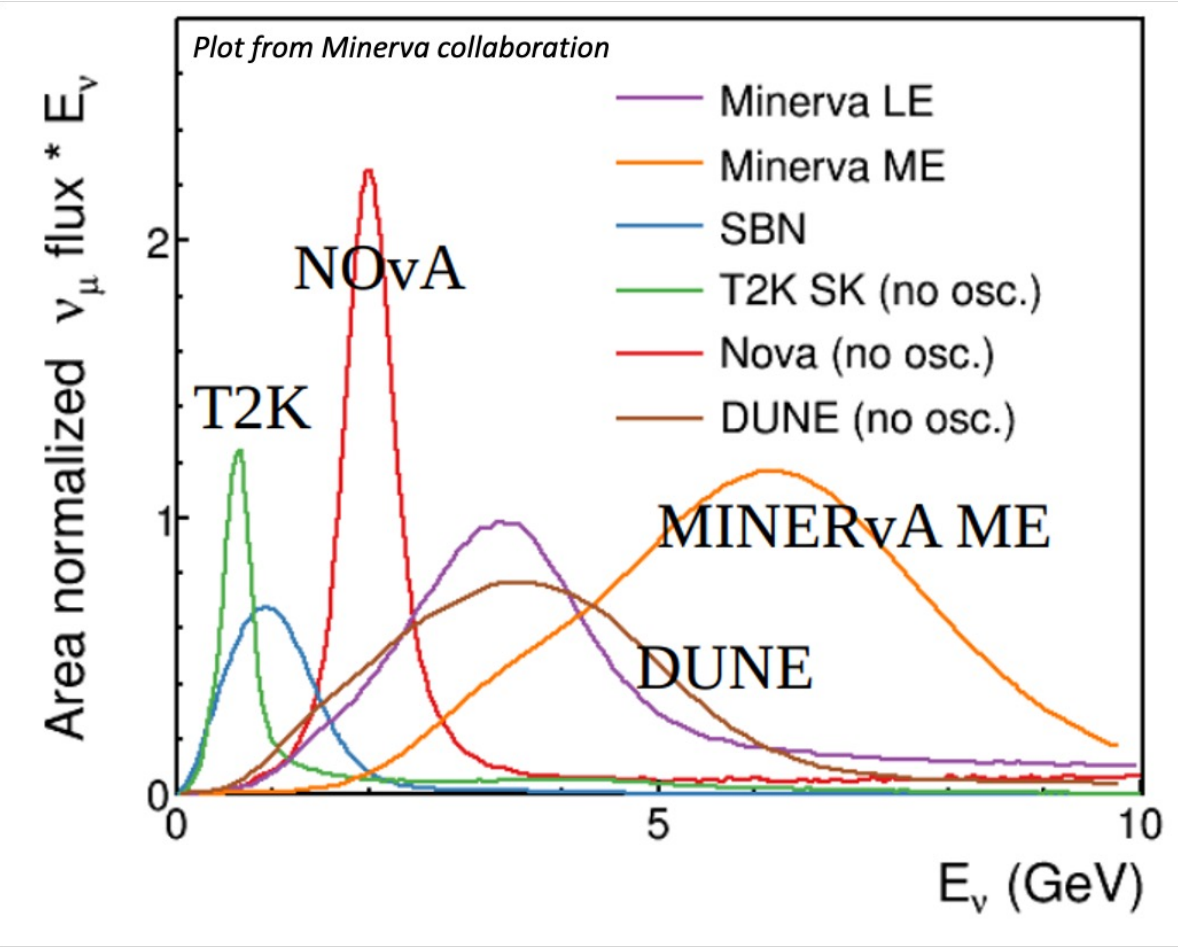
Energy is where resonant production is dominant and mix of QE, 2p2h, RES, and DIS is important

Tracking calorimeter detects individual particles



Can probe individual particle kinematics (lepton and hadronic particles)

How is NOvA relevant for DUNE?



NOvA completes the experimental coverage of neutrino energies that are relevant for DUNE

Resonant enhanced region

What you will hear about

How NOvA presents its results

- What type of observables we look at
- How do we handle uncertainties
- How do we present in true values
- How do we make comparisons with models