DUNE Prism questions

Mike Kordosky

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WILLIAM & MARY

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DUNE

Question 1

Can DUNE Prism help constrain the focusing errors at the FD?

Elaboration: The intent is "errors in the oscillation analysis". That is, the analysis will have to eat any F/N focusing uncertainties that are not resolved. These are flux uncertainties but could fake cross-section or energy scale uncertainties (i.e., move the peak). We have an a priori set of these, mostly derived from NuMI.
How sensitive is the DUNE Prism analysis to focusing errors? Do they degrade it? Can they be confused for cross-section effects? Energy scale?

Mike Kordosky

WILLIAM & MARY

Question 2

To what extent can DUNEprism with realistic hall size deconvolute xsec and flux errors?

Elaboration: This is a question about the run plan, what detectors should be moved, and what ability DUNE prism has for disambiguating between flux and cross-section errors. Here, cross-section uncertainties include things like missing energy and energy biases. How do we tell these apart from flux errors with a prism program?

The suggested procedure is to assume a suite of flux errors (which DUNE has) and demonstrate how DUNE prism can tell them apart from cross-section errors with a given run plan and analysis procedure.

There is overlap with Q1. We could refactorize this into "hadron-production uncertainties".

Mike Kordosky

WILLIAM & MARY

Question 3

What is the study output? What is the figure of merit (FOM)?

Elaboration: This is a question about the output of the studies. What will we need to look at? How do we judge it?

Mike Kordosky

WILLIAM & MARY