Atmospheric Neutrinos and Far Detector Performance Requirements

H. Gallagher, 11/9/2015, Atmos Nu/PDK WG Meeting

A set of requirements are being assembled in dune-doc-112, (in particular LBNF-DUNE-V1.8-parameters).
"This is the official managed set of LBNF-DUNE Science/ Engineering and Project Programmatic Requirements."

These will provide linkage between the high-level science, detector performance, and technical requirements.

Inevitable that they will evolve over time, however it is important that we provide the best information we can to these documents now, and work to refine our answers in the near term.

	This is the range of values needed to achieve the scientific performance. Validation will be a continuous process as experimental design progresses	
Electron Neutrino Charged Current (CC) Efficiency	70-95	percent
NC to nue CC misidentification rate	0.4-2.0	percent
Muon neutrino CC misidentification	0.5-2.0	percent
Other Backgrounds	0	percent
Signal Normalization Error	1.0-5.0	percent
Background Normailzation Error	2.0-15.0	percent
Muon Neutrino Charged Current (CC) Efficiency	80-95	percent
NC to numu CC misidentification rate	0.5-10	percent
nue CC to mu-CC misidentification	1.0-10.0	percent
Other Background	0	percent
Signal Normalization Error	1.0-5.0	percent
Background Normaliation Error	2.0-10.0	percent
NC efficiency	70-95	percent
numu-CC misidentification	2.0-10.0	percent
nue-CC misidentification	1.0-10.0	percent
Other backgrounds	0	percent
Signal Normalization	1.0-5.0	percent
Background Normalization	2.0-10.0	percent

Some Questions for our WGs

- Are they complete? Do the high level requirements capture our full physics program?

- .When quantitative goals are given, are they well justified?

- Is the list of performance parameters given in these documents complete?

- What are the technical specifications most likely to affect performance for our physics topics?