

Open Questions on Geant4 for NuMI-X Simulation

J. Yarba
Fermilab

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Ongoing Work and Open Questions

- Experimental physics list NuBeam in g4numi (Robert's talk) - **please test and give feedback, it's the only way to improve !!!**
- Exp.data for further fine-tune of experimental list(s):
 - (Obviously) NA61 & NA49 - p+C, p+p
 - HARP data
 - Proton beam on C, Be, Al, Cu, Ta; p or pions production
 - Energy range 3-12GeV (so far we concentrate on 8-9GeV)
 - Please suggest what (other) energies would be of interest
 - BNL-802 data
 - 14.6GeV proton on Be, Al, Cu, pion production, also kaons and p on the Cu target
 - **Any new dataset(s) will be most welcome !!!**



Ongoing Work and Open Questions(cont.)

- We're also trying to refine/expand the collection of observables/metric (direct overlay, MC/Data,...)
- Important question from the Geant4 side:
 - The NuMI-X criteria for telling if a G4 physics list (or FLUKA, for that matter) is good or bad is to benchmark it vs "flux of neutrinos X cross section".

This eventually boils down to the flux of neutrinos, because that's what comes from Geant4 (maybe weighted).

But the flux of neutrinos can't be measured "traditionally".

Is there any other associated observable(s) that one can measure ? Muons perhaps ? (if not pions directly) Something that we can simulate and compare vs data ?