

Adding the Atmospheric Neutrino to the simulations

Roxanne Guenette
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In order to study atmospheric neutrino background (for proton decay for example), we need to have the possibility to generate events from Atmospheric neutrino fluxes

Several fluxes are available: Bartol, Fluka, Honda...

Within LArSoft/Genie

- In EventGeneratorBase/GENIEHelper, several options for simulation inputs are available: SimpleFlux, Histograms, NTuple...
- This is the obvious place to add the Atmospheric fluxes

Proposed modifications

- Add a new *FluxType* (atmo)
- This option will use the already available flux drivers in GENIE: *GAtmoFlux*, *GBartolAtmoFlux* and *GFlukaAtmoFlux*
- These will need some new user-defined variables from fcl file: *AtmoFluxSim*, *Emin*, *Emax*, *RT(?)*, *RL(?)*

~ Progress

- First implementation test:
- With help of Costas Andreopoulos, I got around calling the FluxDrivers (tricky to access the different functions/members)
- Compilation achieved
- Now debugging to see why it's not working
- Only tested with Bartol but seems to be contradictions in the flux format...
- Fluka tests coming (Andy Blake sent me the Fluka flux files)