Effects of PN Interactions on Reconstructed Energy in ECAL

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October 21, 2019



Clarifications

interactions are inactivated Two different options for plot: 1 Upstream of Target $\sim 0.5B$ events are near target 2 Downstream of Target

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Simulation is inclusive except electronNuclear, positronNuclear, and GammaToMuPair

- $\sim 1B$ events are far upstream of target with tagger veto
- Applied a cut on momentum transfer to remove over-estimated wide angle brems
- 1.2 GeV electron and 2.8 GeV photon shot directly into ECal Mimics plot previously created without PN interactions









Option 1 Upstream Target with Vetos



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3/6

Option 2 Downstream Target



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4 / 6

Cumulative Option 1 Upstream Target with Vetos

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Cumulative Option 2 Downstream Target

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Backup

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Keep Updated

 \blacksquare sim \Longrightarrow Simulation event files generated by geant4 macro below http://homepages.spa.umn.edu/~eichl008/ecal-PN-study **ROOT** file with histograms **Directory with plots**

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Github Branch | ecal-PN

- Geant4 Macro file being used for simulation

Module::Processor | Ecal::AnalyzePN

/nfs/slac/g/ldmx/users/eichl008/data/one4GeVelectronNearTarget_v9_keepPNParentsChildren_noEN_noGammaToMuPair

/nfs/slac/g/ldmx/users/eichl008/data/one4GeVelectronFarUpstream_v9_keepPNParentsChildren_noEN_noGammaToMuPair

Simulation Details

Ran on installation of Idmx-sw master branch at SLAC Used /process/inactivate to turn off unwanted interactions Used TrackFilterPlugin to keep parents and daughters of PN interactions No other plugins/biasing used Full geant4 macro available at: http://homepages.spa.umn.edu/~eichl008/ecal-PN-study

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