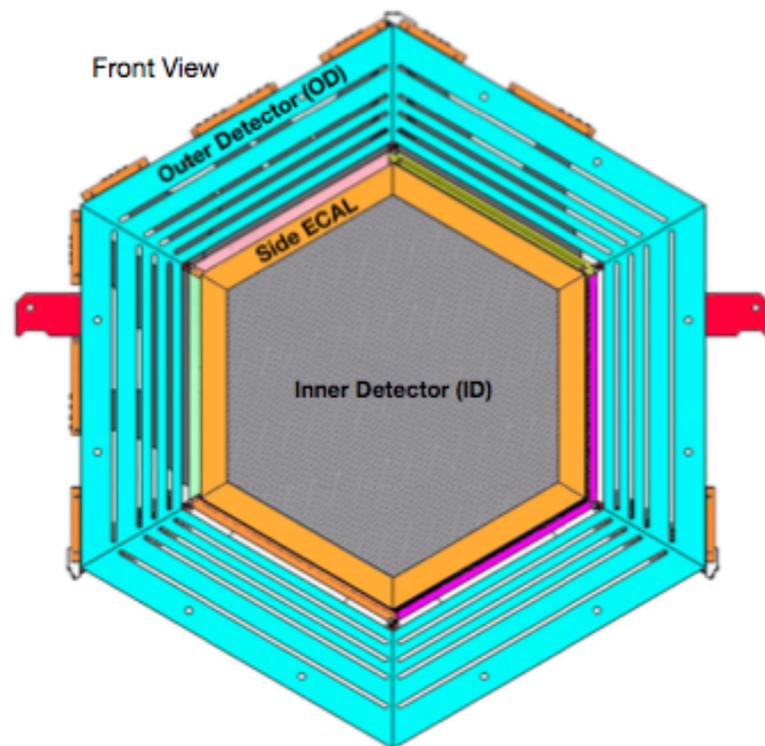


Overview

- The event generator used in MINERvA is GENIE 2.12.6
 - Cross section extraction is developed using neutrino interactions from GENIE, background estimation, efficiency correction, etc...
- The estimate time for processing MC at MINERvA with a new GENIE version is from 6 months to 1 year
- MINERvA finished a MC production a few months ago for the all the medium energy data set
- MC productions are done every two years approximately
- MINERvA is preparing the first results from medium energy beam, it might difficult to get a new MC production soon
- GENIE documentation is crucial for our analyzes, we interpret the results comparing with GENIE predictions
 - When we moved from 2.8 to 2.12 we did a detail study to understand and track down the differences
- Is there any detailed documentation about the changes that went to GENIE v3?

Which Models Are We Using?

- MINERvA is using GENIE 2.12.6



Nuclear Model	Relativistic Fermi Gas
NC Elastic:	Ahrens
CCQE	Llewellyn-Smith with Dipole axial form factor
Resonance	Rein Sehgal
Deep Inelastic	Bodek-Yang
Hadronization	AGKY
FSI	hA model
CC MEC	Valencia model
RPA QE	Valencia model

Model Tuning

Tunning	
Non resonant pion production	has been modified to agree with deuterium data
MEC Valencia	has been tuned to MINERvA data
RPA QE	Valencia RPA
Coherent pion	Reweighed to MINERvA data

- MEC Valencia tuning was done using GENIE 2.8, Phys.Rev.Lett. 116 (2016) 071802
- Recent analyses has been done using GENIE 2.12.6 and with the MEC tuning we see better data-MC agreement Phys.Rev. D97 (2018) no.5, 052002 , Phys.Rev. D99 (2019) no.1, 012004