

Status of ICARUS MC production at FNAL

ICARUS Collaboration Meeting

September, 19-20, 2018

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Overview

- *Current status of production (by F. Tortorici)*
- *Some plots from the simulated events (by C. Farnese)*
- *ICARUS & POMS: the future of production (by M. Wospakrik)*

Production generalities

- The production of an event is conventionally divided in **stages** (called respectively gen, g4, detsim and reco) processed in succession
 - **gen**: creation of the particle according to a given distribution of energy, momentum and position;
 - **g4**: propagation of the particle in the detector using GEANT4;
 - **detsim**: simulation of detector response (essentially, read-out electronics output);
 - **reco**: reconstruction of event (hit finding, tracking and pattern recognition,...); this phase is the most demanding in terms of CPU and memory.
- Each stage produces a **root file** which **includes the output of the previous stage** (of course, gen stage does not depend on anything previous!).

MCC 1 production

- The present MCC 1 production was launched to simulate and fully reconstruct events, including TPC, PMT and CRT information, to qualify the presently available simulation, reconstruction and analysis tools.
 - This process started in July with the preparation of the photon library (~2 weeks) and continued during August and September.
 - Meanwhile, relevant optimization of the code has been realized (see G. Petrillo talk).
 - The goal was to provide the collaboration with large samples (~100k events) of different categories:
 - **Neutrinos**: electronic and muonic neutrino CC interactions;
 - **Cosmics** (with and without neutrinos);
 - Single particles
 - **Muons**: BNB-like* and cosmics*;
 - **Electrons**: isotropic*, intrinsic*, oscillated*;
- * **Definitions of these names from next slide**

Summary of production status 1/2

- Muons (completed including reco stage)
 - Single muons inside the TPC mimicking the muons from **BNB** numuCC interactions;
 - Events of close to vertical muons entering the detector from **above** the CRT top wall: ~169k done through reco.
- Electrons (completed including reco stage):
 - Momentum distribution of "intrinsic" sample is the one expected from interactions of ν_e from BNB beam;
 - Momentum distribution of "oscillated" sample is expected from ν_e after oscillation from ν_μ from BNB beam;
 - "Isotropic" sample with flat momentum distribution between 0 and 1 GeV.

Summary of production status 2/2

- Neutrinos (generated with Genie; **completed including reco stage**)
 - ν_e : ~148k
 - ν_μ : ~142k
- Cosmics (overlapping in 3 ms window; generated with CORSIKA)
 - Most complex kind of "particle" to simulate
 - Done a **small scale test** of the workflow: 1k events done through reco
 - **Cosmics + ν_e** : ~21k done through detsim
 - **Cosmics + ν_μ** : ~26k done through detsim
 - **Cosmics w/o ν** : ~26k done through detsim

Why are there no reco root files for cosmics?

- Small scale test was fine. 1k events available to be studied.
- Full scale production of complex cosmics events overlapping in 3 ms window was not completed.
- Different problems were experienced related to large requirements in CPU and memory resources in the final reconstruction stage
 - Issue under investigation (see backup slide for details).
- Similar problem holds for cosmics + neutrinos

Performance improvements

- Version v07_05_00 of icaruscode has introduced **dramatic improvements** in performance at reco stage. For example:

Flavour	“OLD” Larsoft version	CPU time [per event] Average/max with OLD version with v07_05_00		RAM Peak [MB] OLD/v07_05_00
Muons: BNB-like	V07_02_00	93 s / 1h 50'	6.3 s / 525 s	5000 / 1700
Muons: cosmics-like	V07_03_00	230 s / 5h 15'	9.9 s / 22'	5700 / 1700
Electrons: intrinsic	v07_02_00	73 s / 3h 50'	12.2 s / 23 '	9640 / 1560
Electrons: oscillated	V07_02_00	36 s / 4h 24'	11 s / 19'	9300 / 1530
Electrons: isotropic	V07_02_00	32 s / 2h 20'	7.8 s / 19'	10300 / 1512
Cosmics: small test	V07_05_00	24' / 8h 47'		7070

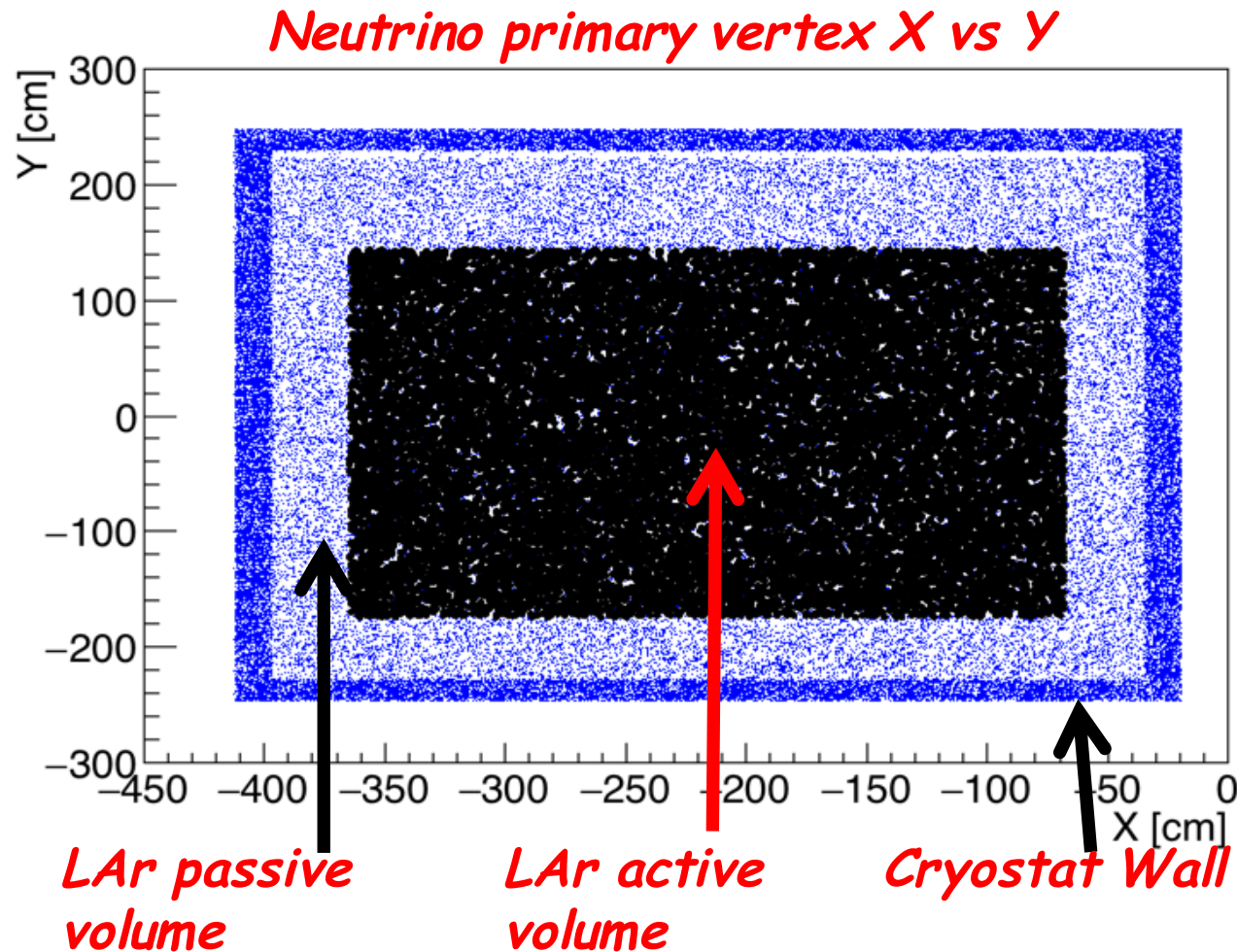
- Info on the production in general** (paths of root files, more details on current status, and so on) may be found in wiki: https://cdcvns.fnal.gov/redmine/projects/icarus-production/wiki/Simulation_production_August_2018

First studies of the simulated events

C. Farnese

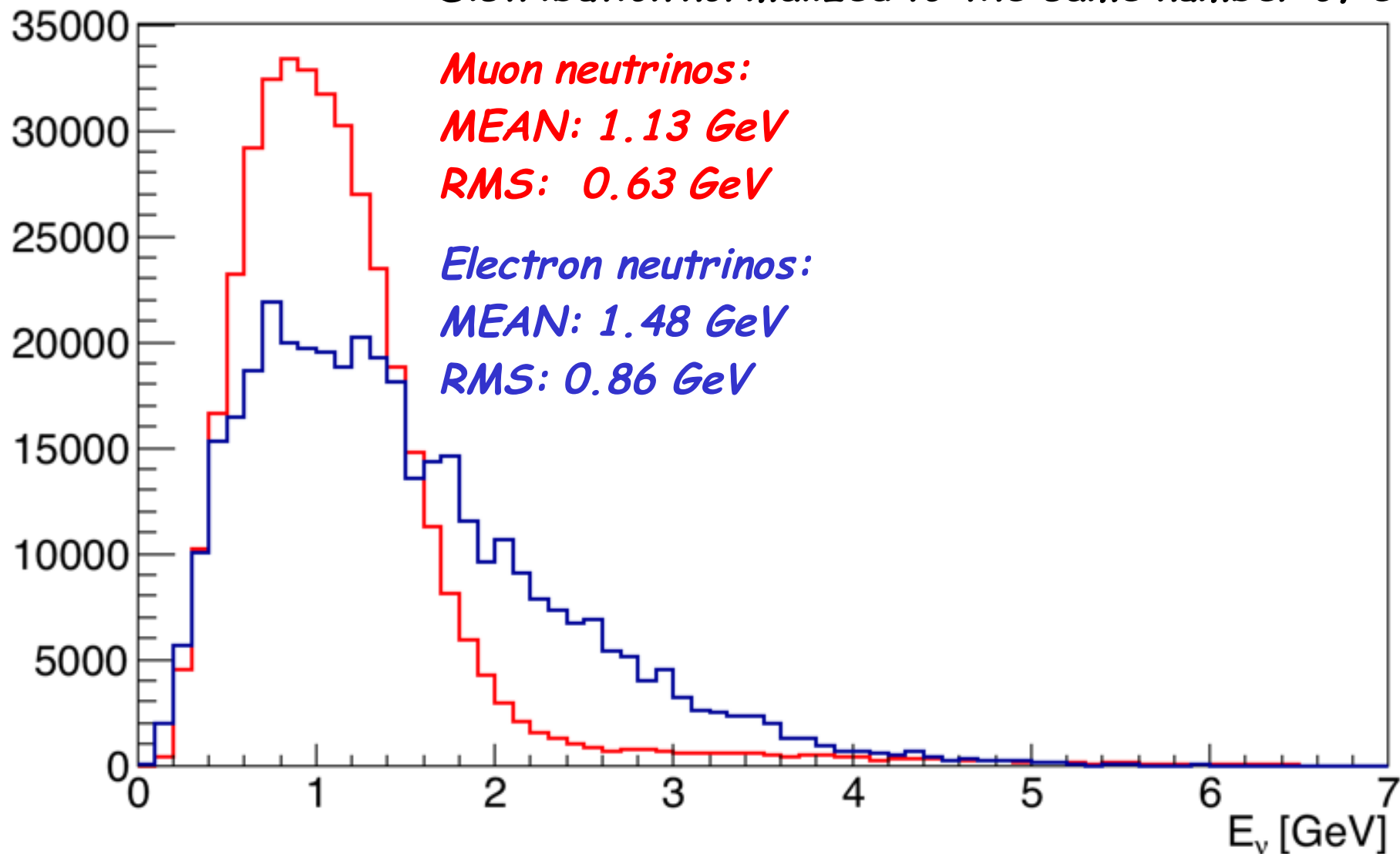
BNB Neutrino simulation - vertex coordinates

- The neutrino events have been simulated (**blue points**) in a large volume (the first cryostat) and then the interaction with the primary vertex in the active volume have been selected and reconstructed (**black points**);

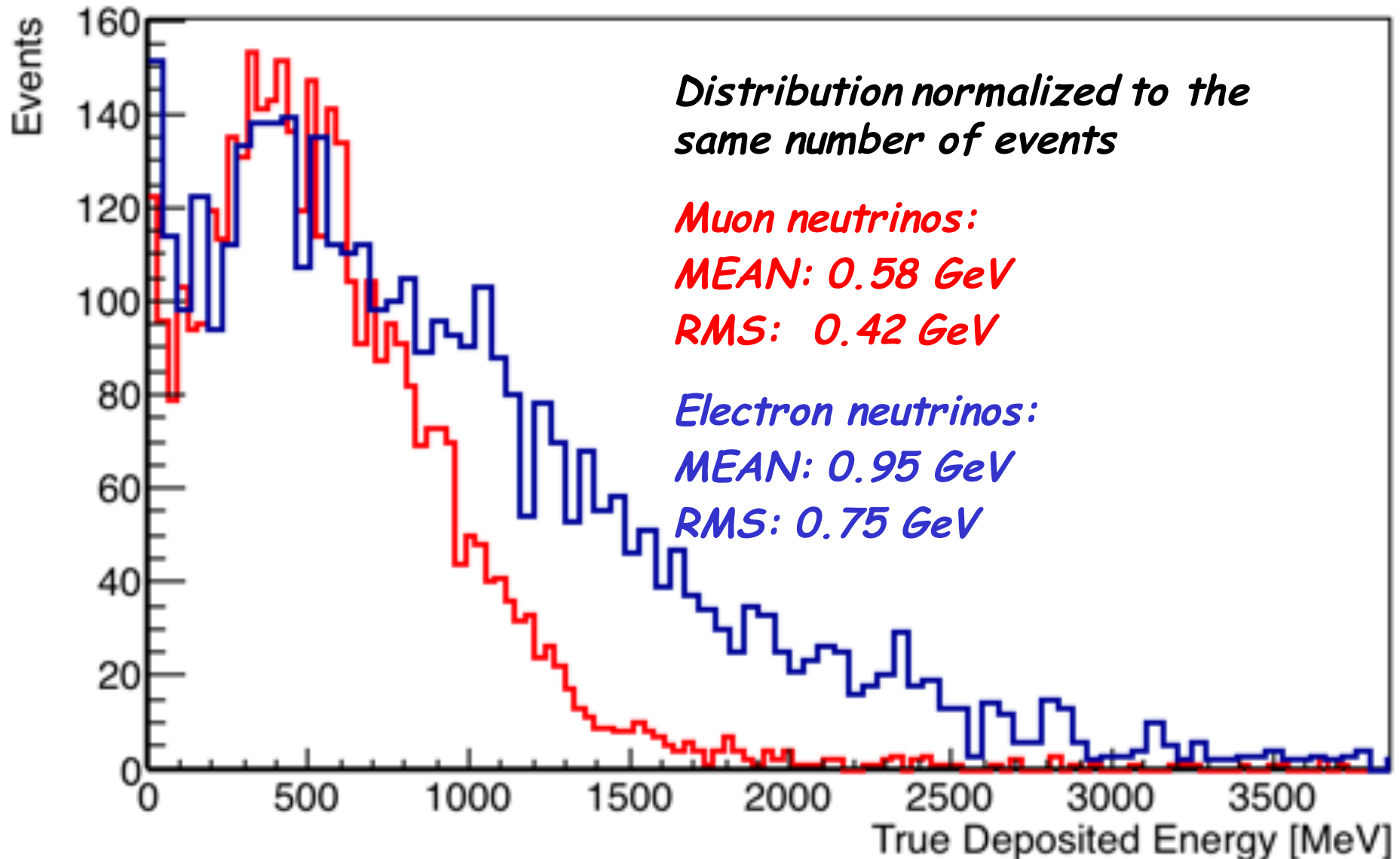


BNB Neutrino simulation - neutrino energy

Distribution normalized to the same number of events

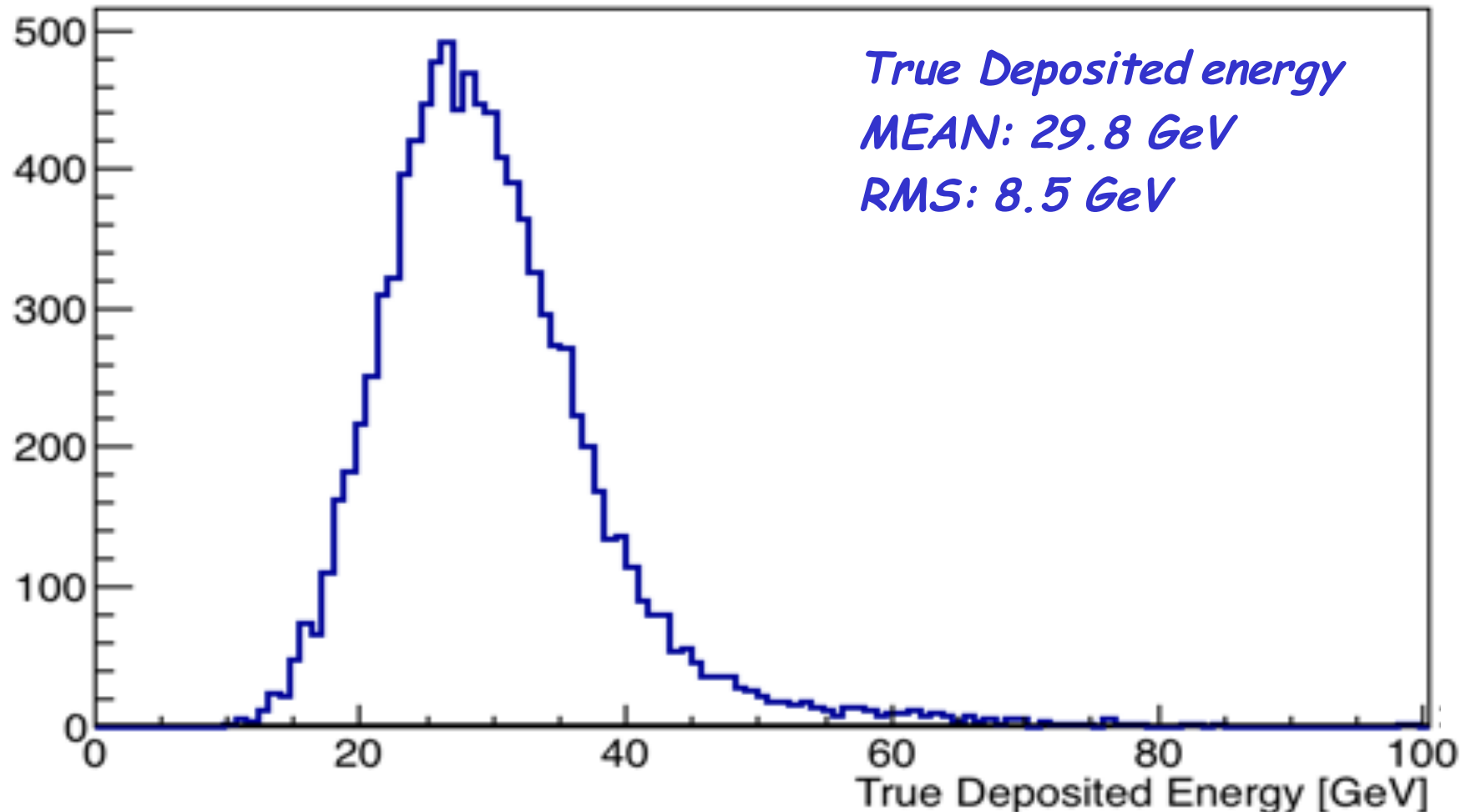


BNB Neutrino simulation - deposited energy



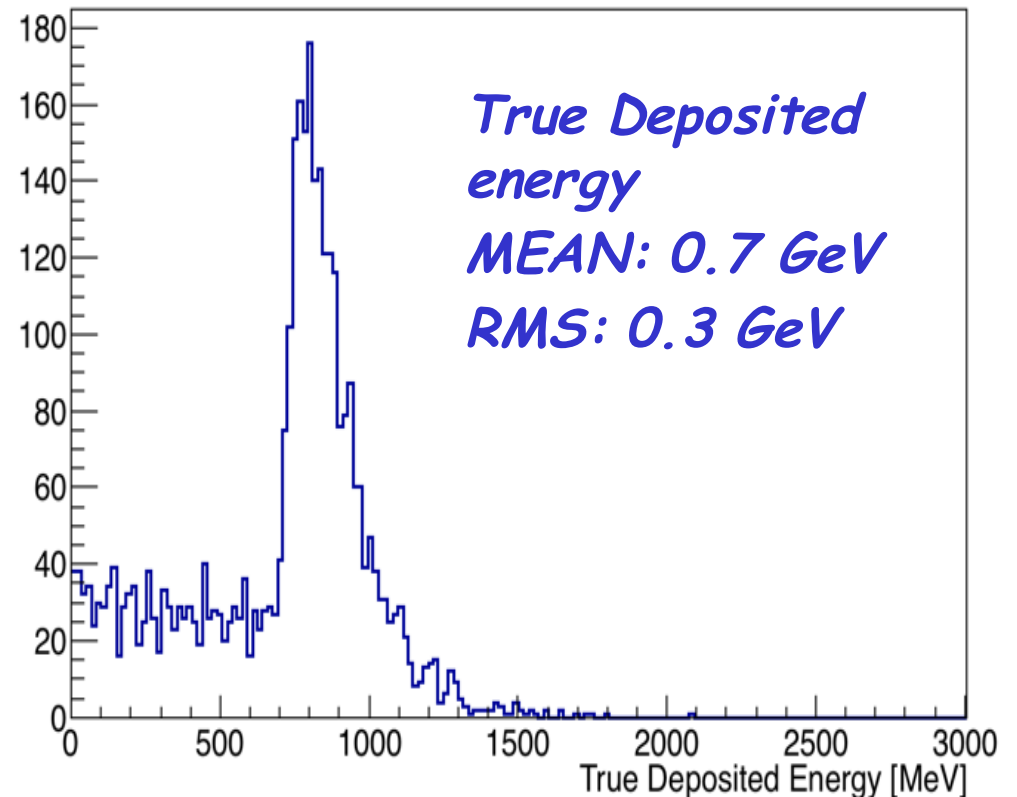
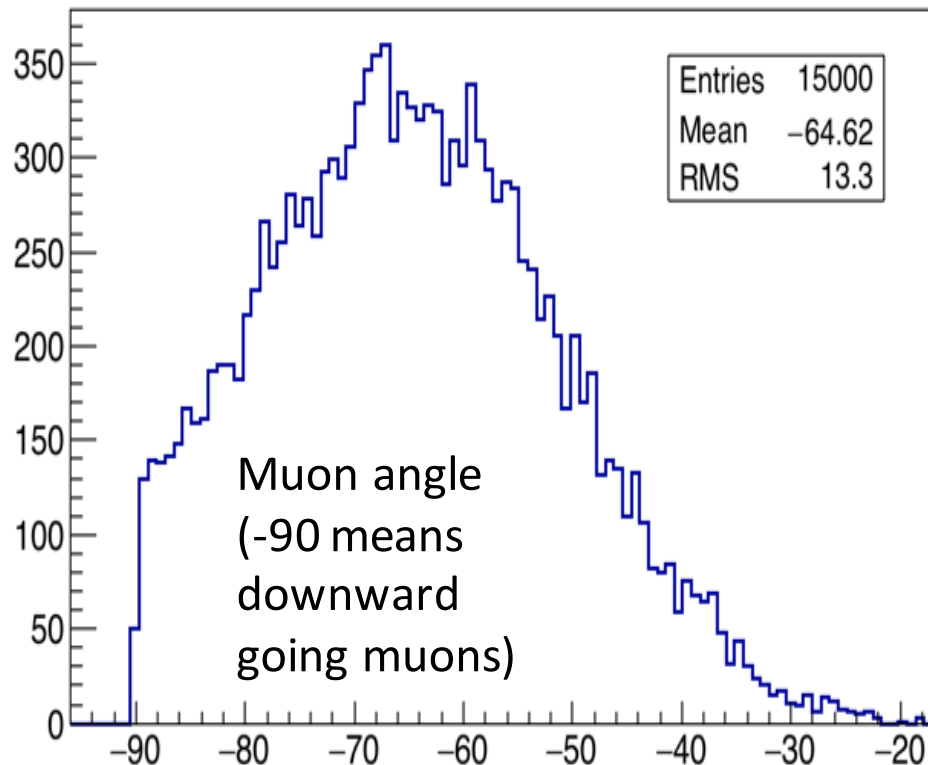
Cosmic rays event simulation - deposited energy

- The deposited energy of the cosmic events has been calculated considering all the tracks/particles that produce a signal in the detector, even if out of time with respect to the t_0 trigger



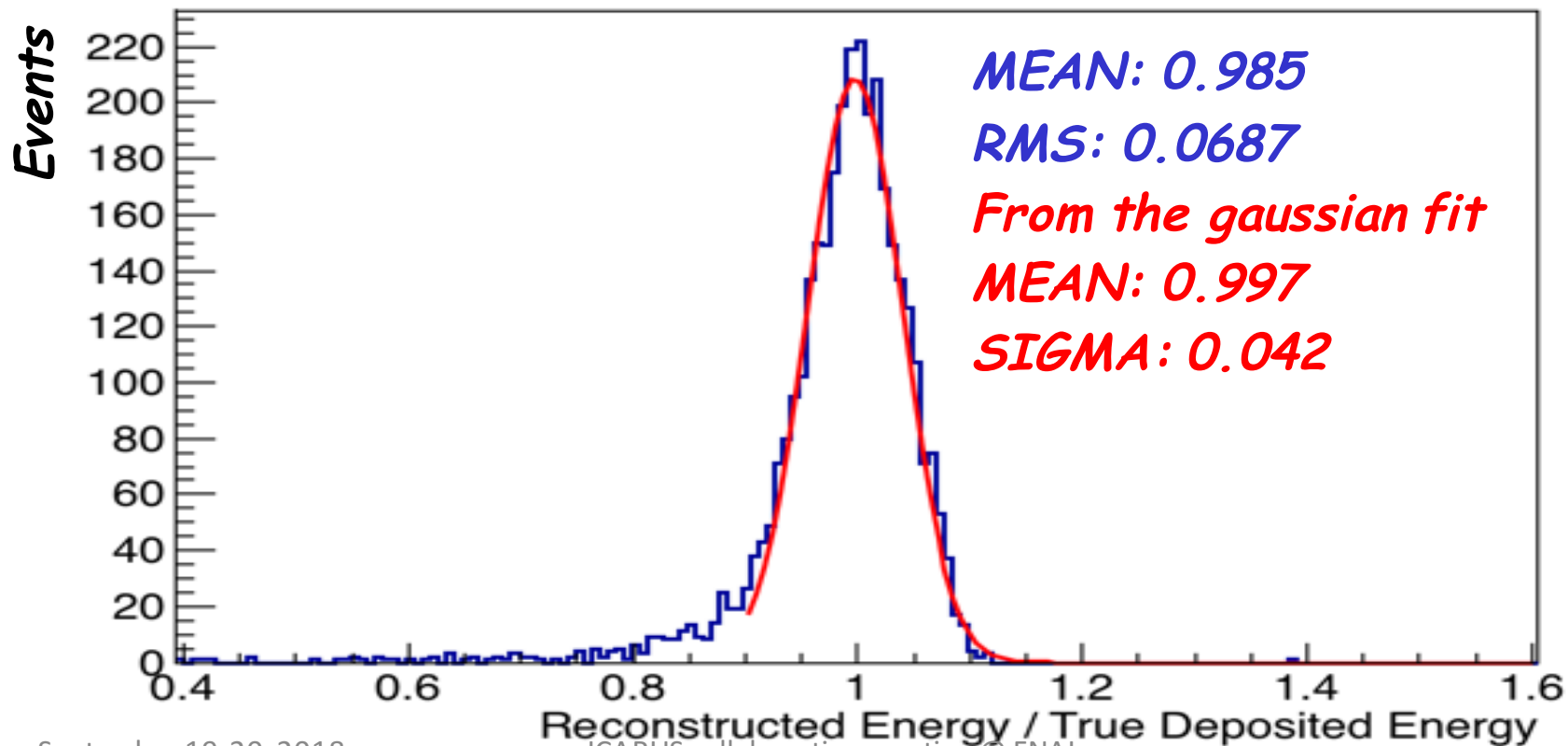
Single muons similar to cosmic tracks

- In order to have a first study of the reconstruction of the signals from the 3 detectors (TPC+PMTs+CRT) in a simplified situation, a sample of single muon tracks have been prepared
 - Uniform muon momentum distribution in the $4.9 \div 5.1 \text{ GeV}/c$ range
 - Muon starting point just below the concrete: $\sim 50\%$ of the simulated tracks crosses all the detectors



Single muon with an angular distribution similar to cosmics

- A first test on the deposited energy measurement in collection view performed in this simulated events, using:
 - the "gaus" hits, identified after the signal deconvolution,
 - the clusters that occupy at least 2 wires and using
 - an average value for the recombination correction factor
 - the ADC \rightarrow collected e^- conversion factor introduced in the simulation



POMS Test for ICARUS Production

M. Wospakrik

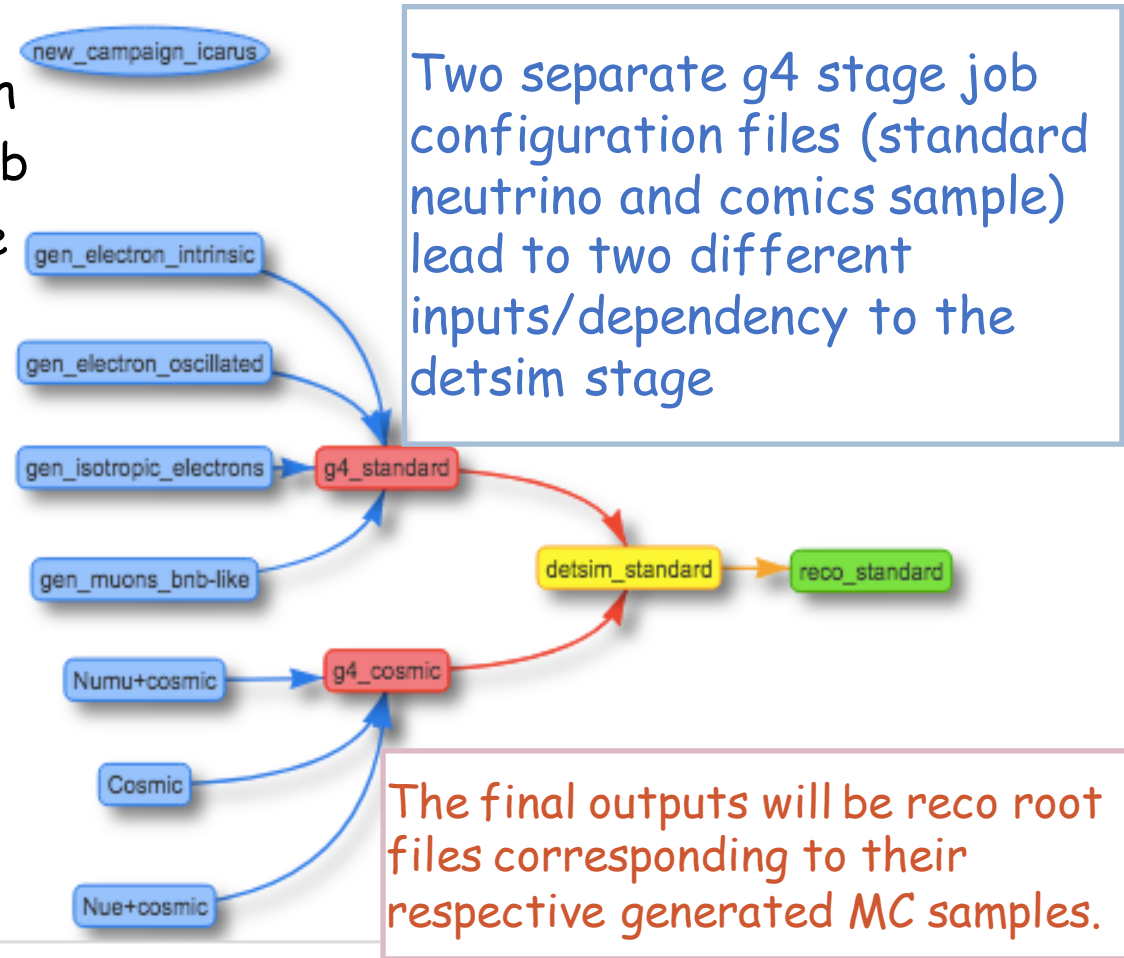
What is POMS?

- The Production Operations Management Service (**POMS**) is a project to design a service which will assist the production teams and the analysis groups of the experiments in their scientific computational work.
- POMS aims to provide a system that enables **automated jobs submission on distributed resources** according to the customers' requests **by setting up dependency** between different stages of production. It also provides subsequent monitoring and recovery of failed submissions, debugging and record keeping.
- The ultimate goal is to reach the most **efficient utilization of all computing resources** available to experiments, while providing a simple and transparent interface between users and the complexity of the grid.
- The production instance of POMS can be found in <https://pomsgpvm01.fnal.gov/poms>

ICARUS POMS Workflow

POMS sets up a campaign workflow comprising of different nodes. Each node corresponds to a particular job configuration file used to configure a particular stage's execution ("FHiCL file")

Different FHiCL files are used at the gen stage to generate various MC samples for ICARUS. This leads to multiple inputs/dependencies to the g4 stage



Two separate g4 stage job configuration files (standard neutrino and comics sample) lead to two different inputs/dependency to the detsim stage

The final outputs will be reco root files corresponding to their respective generated MC samples.

Campaign Login/Setups and Jobtypes

One launch template is used for all campaigns.

icarus_launch_template

icarus_job_type

One job type template is used for all campaigns.

How to use POMS

1. Create/Edit Configuration File

- A configuration file handles all info needed for the job submission and data handling, including what fhicl file to use and configure all the things related to data handling (SAM) Database.
- It is passed to POMS through the web interface.
- A stable/working configuration file can be found in:
/icarus/app/poms_test/cfg/icarus_test_launch.cfg

2. Compose Login/Setup Template

- Main purpose is to strictly setting up the environment for fife_utils and POMS.
- One login/setup template is used for all campaigns.

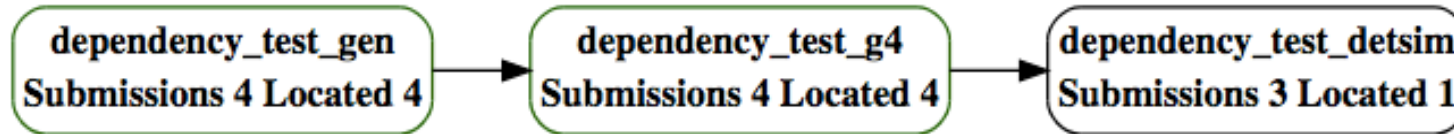
3. Compose Job Type

- Main purpose is to launch the configuration file to interface with POMS.
- One job type template is used for all campaigns.

4. Compose Campaign Stage

- This stage define the specific campaign (related with a specific production task).
- This stage is also used to launch the login/setup template and the job type defined in the previous steps as well as launching the campaign jobs.

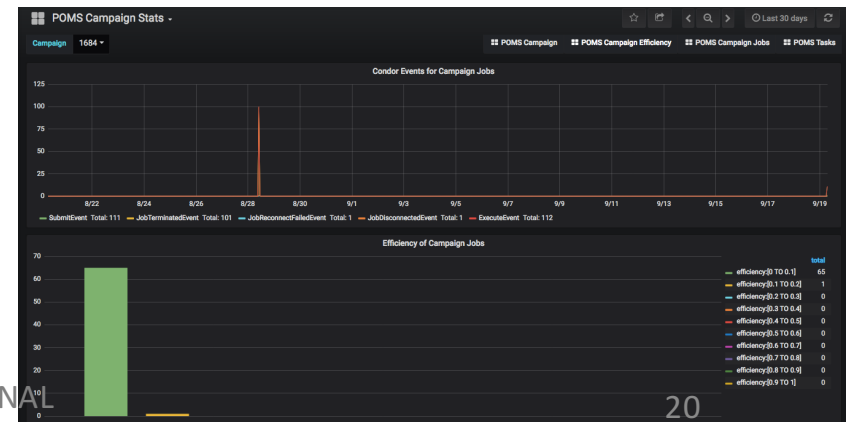
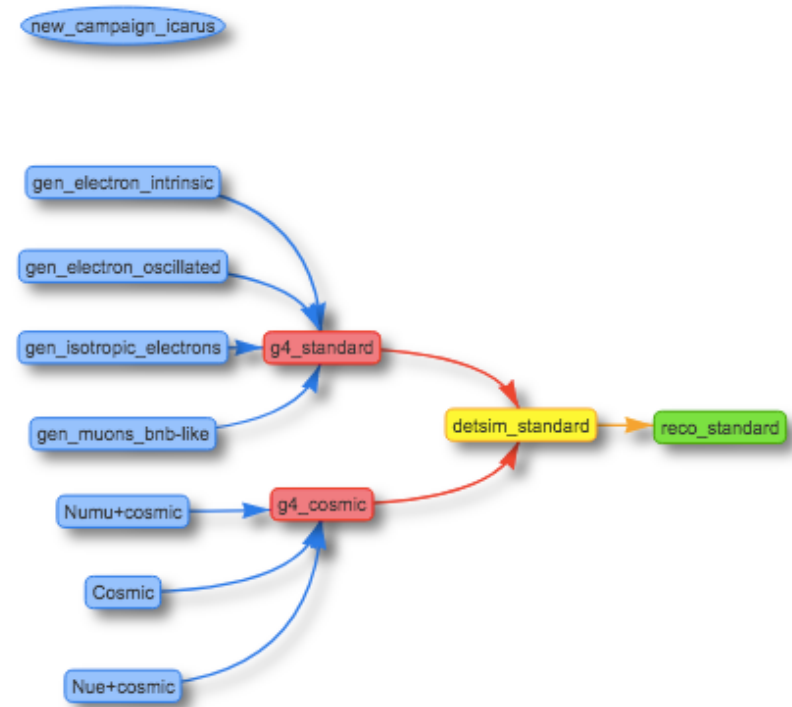
Status of test



- Individual stage test for gen, g4, and detsim have been tested using small number of jobs (10 jobs per submission). Results are successful so far.
- Currently testing the dependency/automated submission feature using (20 jobs per submission).
 - Dependency between gen and g4 stage is ~100% successful.
 - Not always the case with detsim. Some g4 stage jobs do not reach the required completion percentage to automatically trigger the start of the job submission for detsim stage.
 - Strategies to handle this:
 - Lower the completion percentage to anticipate for failing jobs or increase the number of jobs being submitted also implement the automatic recovery launch (still tested).
- Thank you to Anna Mazzacane from Fermilab Scientific Computing Division who has provided significant help in getting the POMS test running smoothly.

Outlook

- The Fermilab Computing will be upgrading POMS to the newest version this **Thursday, September 20**
- Major new features in this version will be:
 - New GUI campaign/workflow editor
 - Possibility to clone an entire Campaign (set of campaign stages).
 - Revised documentation for users, with workflow examples.
 - Monitoring fully integrated with the offline jobs monitoring tools "Fifemon".
 - Experiment Analysis users have view access to monitor the production during production shifts.
- Plan is to perform comprehensive tests at all stages and iron out all the bugs and features to allow ICARUS to migrate to POMS for the next production campaign.



BACKUP PART 1

Why are there no reco root files for cosmics?

- Small scale test was fine. 1k events available to be studied.
- BUT full scale production was not completed misbehaves:
 - After less than 10 minutes, jobs on grid hang
 - Time is barely enough to elaborate very few events (if any). So, CPU time limit on grid is not the culprit
 - A quite common reason for hanged jobs is process used more memory than allocated at its launch (user defined). Increased limit up to 20 GB(!). Jobs still fail
 - Small scale test required only ~7 GB max
 - Issue under investigation. Some ideas are being considered (split detsim files? Somehow reduce impact of hits?, ...)
 - Same problem holds for cosmics + neutrinos

Muons 1/2 : BNB-like ones

- BNB-like = single muons inside the TPC mimicking the muons from BNB numuCC interactions

Total number of events	Path of root files of final stage (include the data from previous stages)
100 000	/pnfs/icarus/scratch/icaruspro/prod_v07/musimilBNB/v07_05_00/reco/prod_muons_BNB/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Memory Peak [MB]	Data size on disk [MB/event] Average/max
gen	prod_mu_workshop2018.fcl	V07_02_00	50	0.14 s / 1 s	700	3 kB
g4	standard_g4_icarus.fcl	V07_02_00	50	3.4 s / 228 s	2700	1 / 1.2
detsim	standard_detsim_icarus.fcl	V07_02_00	50	61 s / 83 m	1290	3.2 / 3.65
reco	reco_icarus_driver_reco_all.fcl	V07_02_00	50	93 s / 1h 50'	5000	10.5 / 11.9
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	6.3 s / 525 s	1700	10.7 / 14.6

Muons 2/2 : cosmics-like ones

- Cosmics-like = events of close to vertical muons entering the detector from above the CRT top wall

Total number of events	Path of root files of final stage (include the data from previous stages)
169 000	/pnfs/icarus/scratch/icaruspro/prod_v07/mucosmics/v07_05_00/reco/prod_muons_cosmics/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Memory Peak [MB]	Data size on disk [MB/event] Average/max
gen	prod_muon_as_cosmics.fcl	V07_03_00	50	<0.1 s / 1.3 s	710	2.6 kB
g4	standard_g4_icarus.fcl	V07_03_00	50	4.4 s / 5 m	2800	2
detsim	standard_detsim_icarus.fcl	V07_03_00	50	66 s / 1h 35'	1400	4.9 / 6
reco	reco_icarus_driver_reco_all.fcl	V07_03_00	50	230 s / 5h 15'	5700	15.9 / 19.7
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	9.9 s / 22 m	1700	15.8 / 23.2

Electrons 1/3 : "intrinsic" ones

- The momentum distribution of the single electrons in the "intrinsic" sample is the one expected from interactions of ν_e from BNB beam.

Total number of events	Path of root files of final stage (include the data from previous stages)
100 000	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_05_00/reco/prod_electron_intrinsic/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Mem Peak [MB]	Data size on disk [MB/event] Average/max
gen	prod_electrons_intrinsic_workshop2018.fcl	V07_02_00	50	-	-	-
g4	standard_g4_icarus.fcl	V07_02_00	50	-	-	-
detsim	standard_detsim_icarus.fcl	V07_02_00	50	63 s / 4h 17'	1424	4.9 / 6.2
reco	reco_icarus_driver_reco_all.fcl	V07_02_00	50	73 s / 3h 50'	9640	13.5 / 16.5
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	12.2 s / 23 m	1560	13.5 / 16.5

Electrons 2/3: "oscillated" ones

- The momentum distribution of the single electrons in the "oscillated" sample is expected from ν_e after oscillation from ν_μ from BNB beam

Total number of events	Path of root files of final stage (include the data from previous stages)
100 000	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_05_00/reco/prod_electron_oscillated/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Mem. Peak [MB]	Data size on disk [MB/event] Average/ max
gen	prod_prod_electrons_oscillated_workshop2018.fcl	V07_02_00	50	-	-	-
g4	standard_g4_icarus.fcl	V07_02_00	50	-	-	-
detsim	standard_detsim_icarus.fcl	V07_02_00	50	55.5 s / 1h 41'	1350	4.4 / 8.7
reco	reco_icarus_driver_reco_all.fcl	V07_02_00	50	36 s / 4h 24'	9.3 GB	6.2 / 12
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	11 s / 19 m	1530	12.5 / 24.2

Electrons 3/3: "isotropic" ones

- "Isotropic" sample has flat momentum distribution between 0 and 1 GeV

Total number of events	Path of root files of final stage (include the data from previous stages)
100 000	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_05_00/reco/prod_electron/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Memory Peak [MB]	Data size on disk [MB/event] Average/max
gen	prod_eminus_0-1GeV_isotropic_icarus.fcl	V07_02_00	50	-	-	-
g4	standard_g4_icarus.fcl	V07_02_00	50	-	-	-
detsim	standard_detsim_icarus.fcl	V07_02_00	50	49.4 s / 5h 45'	1260	2.6 / 6.1
reco	reco_icarus_driver_reco_all.fcl	V07_02_00	50	32 s / 2h 20'	10.3 GB	8.2 / 19.4
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	7.8 s / 19 minutes	1512	8.2 / 19.4

gen & g4 root files deleted by the time of these measures

Neutrinos 1/2 : electronic ones

Total number of events	Path of root files of final stage (include the data from previous stages)
148 000	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_05_00/reco/prod_nue/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Mem Peak [MB]	Data size on disk [MB/event] Average/max
gen	simulation_genie_icarus_Aug2018_nue.fcl	V07_02_00	50	-	-	-
filter	filter_genie_active.fcl	V07_05_00	50	< 0.01 s / 6.5 s	830	3 kB / 3.6 kB
g4	standard_g4_icarus.fcl	V07_05_00	50	20.9 s / 33 m	3.3 GB	22.8 / 39.3
detsim	standard_detsim_icarus.fcl	V07_05_00	50	97 s / 2h 5'	1.9 GB	10.2 / 15.8
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	46 s / 44 m	1.9 GB	31.5 / 48.2

gen root files deleted by the time of these measures

Neutrinos 2/2 : muonic ones

Total number of events	Path of root files of final stage (include the data from previous stages)
142 000	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_05_00/reco/prod_numu/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Mem Peak [MB]	Data size on disk [MB/event] Average/max
gen	simulation_genie_icarus_Aug2018_numu.fcl	V07_02_00	50	-	-	-
filter	filter_genie_active.fcl	V07_05_00	50	< 0.01 s / 9.5 s	826	3 kB / 3.6 kB
g4	standard_g4_icarus.fcl	V07_05_00	50	6.3 s / 22.7 m	3 GB	4.8 / 7.7
detsim	standard_detsim_icarus.fcl	V07_05_00	50	80 s / 16h 53'	1700	6.6 / 9
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	20.6 s / 1h	2300	19.5 / 27

gen root files deleted by the time of these measures

Cosmics 1/4 : generalities

- Generated using CORSIKA
- Cosmics + ν_e/ν_μ : also Genie
- Most complex kind of events to produce
- Done a small scale test of the workflow:

Total number of events	Path of root files of final stage (include the data from previous stages)
1 000	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_05_00/reco/prod_cosmics_smalltest/out

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Memory Peak [MB]	Data size on disk [MB/event] Average/max
gen	prodcorsika_standard_icarus.fcl	V07_02_00	10	-	-	-
g4	cosmics_g4_icarus_volDetEnc.fcl	V07_02_00	10	123 s / 34' 20"	5800	97 / 119
detsim	standard_detsim_icarus.fcl	V07_02_00	10	6'24" / 3h 6'	4700	198 / 230
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	10	24 m / 8h 47'	7100	503 / 564

Cosmics 2/4 : cosmics + no ν

Total number of events	Path of root files of final stage (include the data from previous stages)
75 750	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_02_00/detsim/prod_cosmics_corsika/out

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Memory Peak [MB]	Data size on disk [MB/event] Average/max
gen	prodcorsika_standard_icarus.fcl	V07_02_00	50	-	-	-
g4	cosmics_g4_icarus_volDetEnc.fcl	V07_02_00	50	101 s / 5h 4'	12.6 GB	96 / 115
detsim	standard_detsim_icarus.fcl	V07_02_00	50	8' / 2h 52'	10.3 GB	198 / 222.4
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	No files yet	-	-

gen root files deleted by the time of these measures

Cosmics 3/4 : cosmics + ve

Total number of events	Path of root files of final stage (include the data from previous stages)
20 650	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_02_00/detsim/prod_cosmics_nue/out/

Stage	Fhicl used	Larsoft version	Events /file	CPU time [per event] Average / max	Mem Peak [MB]	Data size on disk [MB/event] Average/max
gen	prodcorsika_genie_standard_icarus_Aug2018_nue.fcl	V07_02_00	50	7.8 s	1350	< 0.1
g4	cosmics_g4_icarus_volDetEnc.fcl	V07_02_00	50	1.6 m	3400	100
detsim	standard_detsim_icarus.fcl	V07_02_00	50	9.5 m	3000	180
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	No files yet	-	-

Cosmics 4/4 : cosmics + $\nu\mu$

Total number of events	Path of root files of final stage (include the data from previous stages)
25 650	/pnfs/icarus/scratch/icaruspro/prod_v07/v07_02_00/detsim/prod_cosmics_numu/out/

Stage	Fhicl used	Larsoft version	Events/ file	CPU time [per event] Average / max	Mem Peak [MB]	Data size on disk [MB/event] Average/ max
gen	prodcorsika_genie_standard_icarus_Aug2018_numu.fcl	V07_02_00	50	-	-	-
g4	cosmics_g4_icarus_volDetEnc.fcl	V07_02_00	50	107 s / 6h 12'	12.6 GB	99.6 / 118.7
detsim	standard_detsim_icarus.fcl	V07_02_00	50	5'15s / 6h 12'	7.9 GB	202.3 / 223
reco	reco_icarus_driver_reco_all.fcl	V07_05_00	50	No files yet	-	-

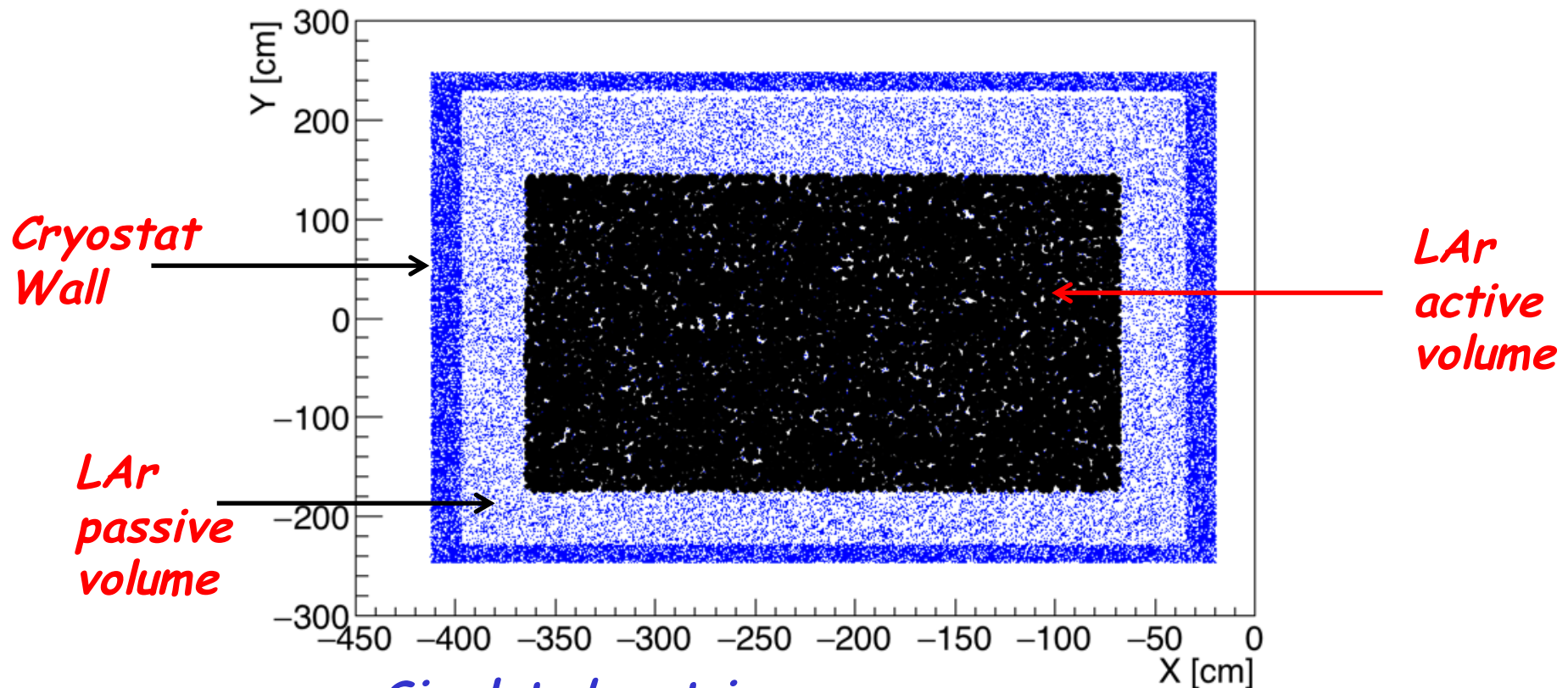
gen root files deleted by the time of these measures

BACKUP PART 2

BNB Neutrino simulation - vertex coordinates

- The neutrino events have been simulated in a large volume (the first cryostat) and then the interaction with the primary vertex in the active volume have been selected;

Neutrino primary vertex Y vs X

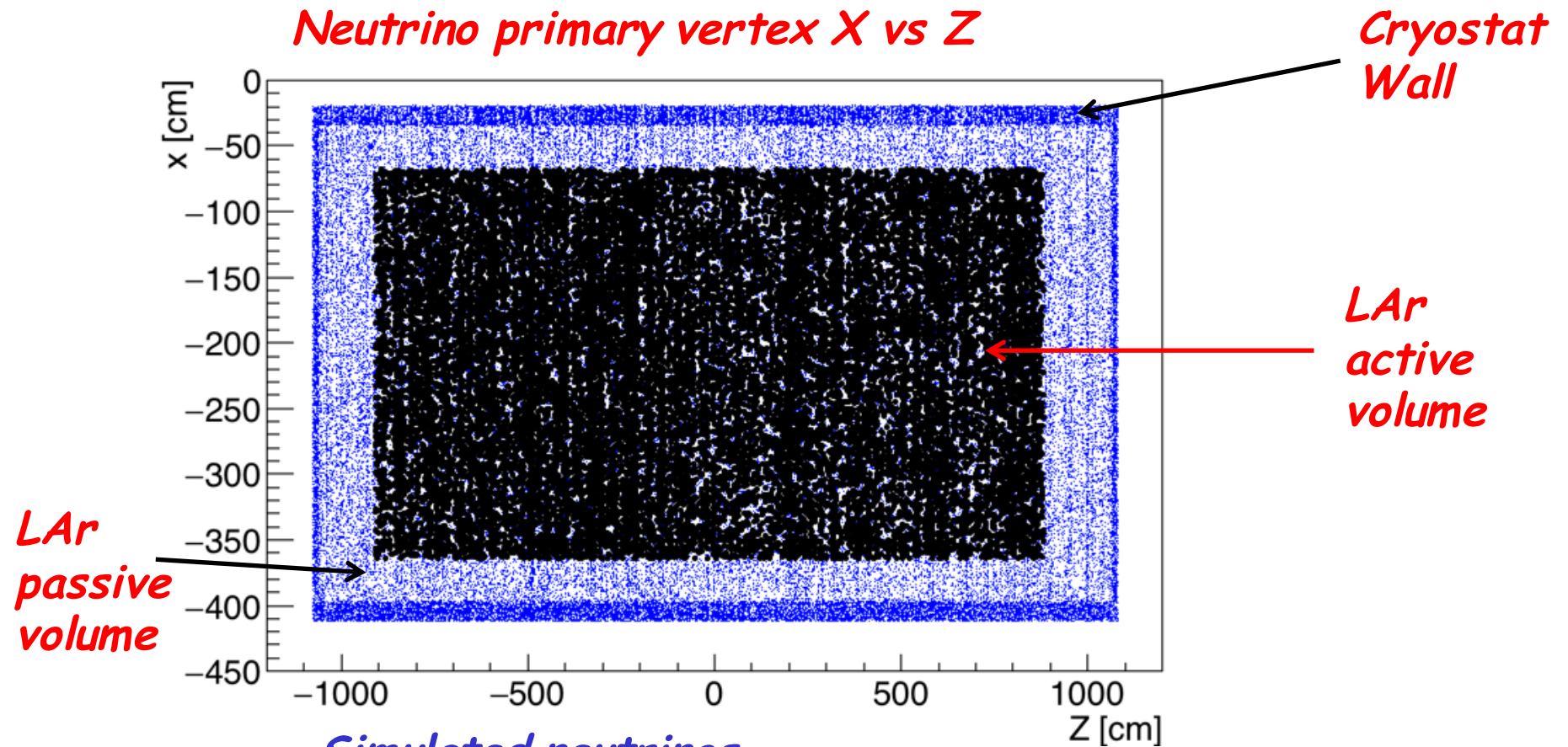


Simulated neutrinos

Selected and reconstructed neutrinos

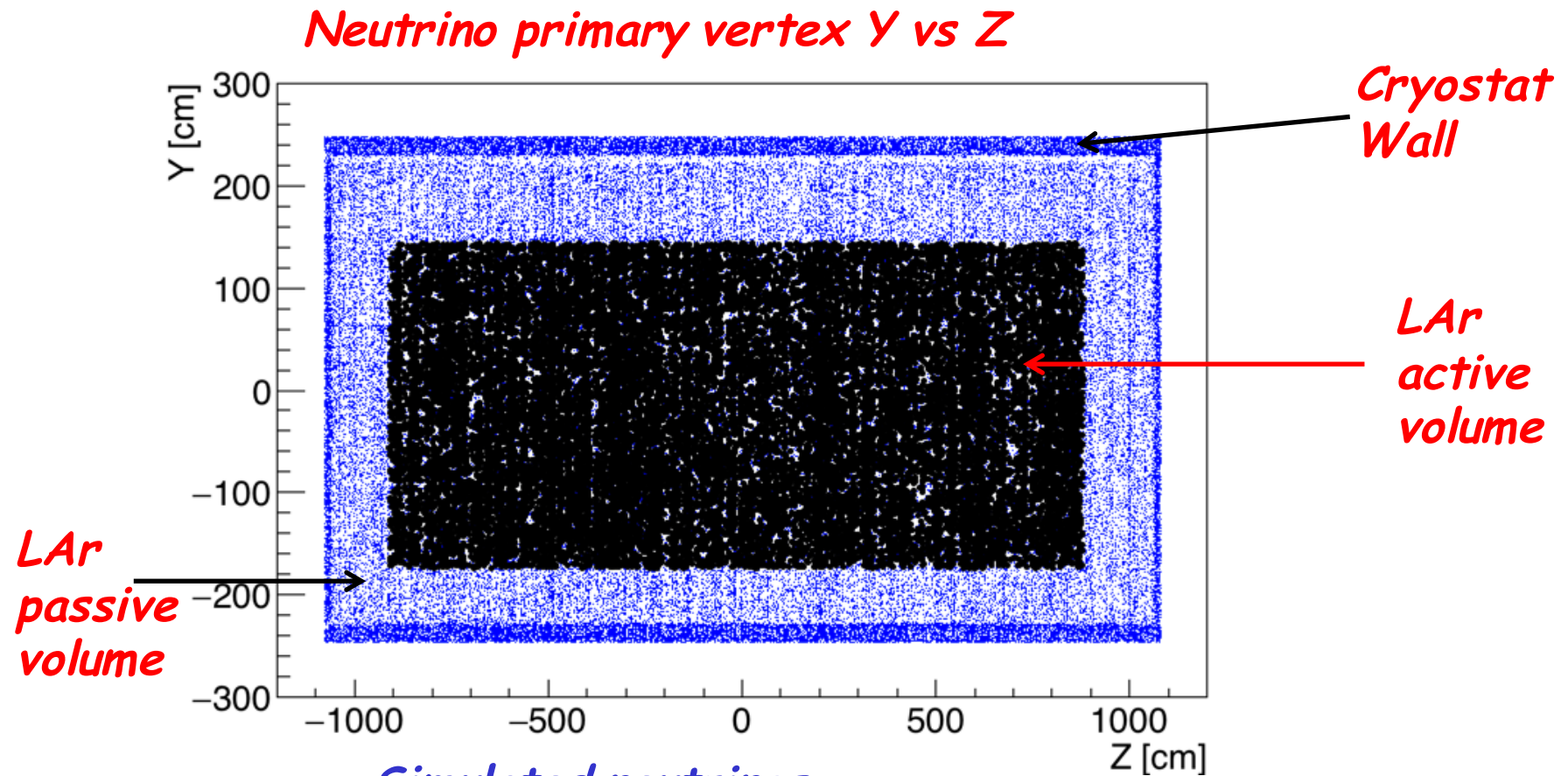
BNB Neutrino simulation - vertex coordinates

- The neutrino events have been simulated in a large volume (the first cryostat) and then the interaction with the primary vertex in the active volume have been selected;



BNB Neutrino simulation - vertex coordinates

- The neutrino events have been simulated in a large volume (the first cryostat) and then the interaction with the primary vertex in the active volume have been selected;



Simulated neutrinos

Selected and reconstructed neutrinos

BACKUP PART 3

1. Create/Edit Configuration File

A configuration file handles all info needed for the job submission and data handling. It is passed to POMS through the web interface. A configuration files mostly hold the experimental setup, job submission configuration including what fhicl file to use and configure all the things related to SAM Database.

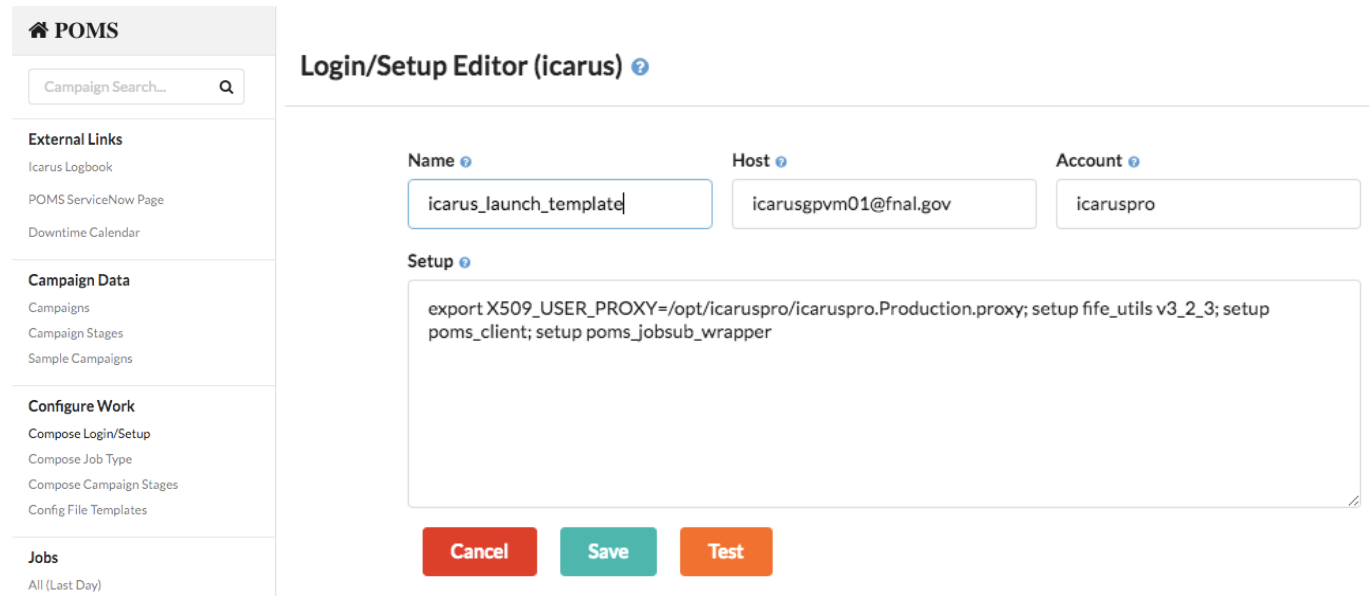
A stable/working configuration file can be found in:
`/icarus/app/poms_test/cfg/icarus_test_launch.cfg`

How to use POMS

2. Compose Login/Setup Template

Its main purpose is to strictly setting up the environment for fife_utils and POMS. No experimental environment variable set up here. One login/setup template is used for all campaigns.

click here 

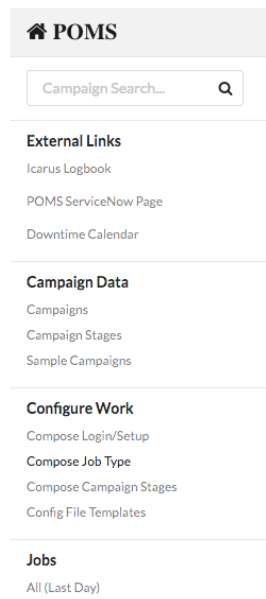


The screenshot shows the POMS interface. On the left is a sidebar with navigation options: External Links (Icarus Logbook, POMS ServiceNow Page, Downtime Calendar), Campaign Data (Campaigns, Campaign Stages, Sample Campaigns), Configure Work (Compose Login/Setup, Compose Job Type, Compose Campaign Stages, Config File Templates), and Jobs (All (Last Day)). The main content area is titled "Login/Setup Editor (icarus)". It contains three input fields: "Name" with the value "icarus_launch_template", "Host" with "icarusgsvm01@fnal.gov", and "Account" with "icaruspro". Below these is a "Setup" text area containing the command: `export X509_USER_PROXY=/opt/icaruspro/icaruspro.Production.proxy; setup fife_utils v3_2_3; setup poms_client; setup poms_jobsub_wrapper`. At the bottom are three buttons: "Cancel" (red), "Save" (teal), and "Test" (orange).

3. Compose Job Type

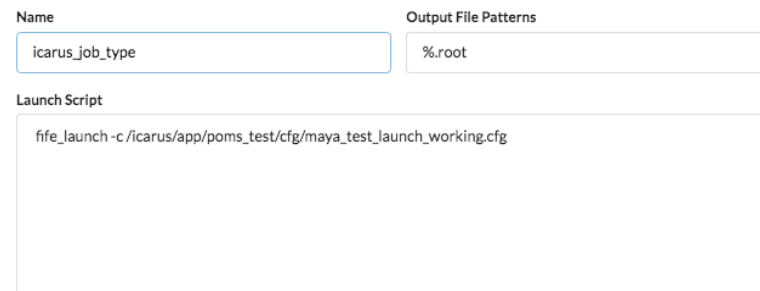
Its main purpose is to launch the configuration file to interface with POMS. One job type template is used for all campaigns.

click here 



The screenshot shows the POMS application sidebar menu. At the top is the POMS logo and a search bar labeled 'Campaign Search...'. Below this are three main sections: 'External Links' containing 'Icarus Logbook', 'POMS ServiceNow Page', and 'Downtime Calendar'; 'Campaign Data' containing 'Campaigns', 'Campaign Stages', and 'Sample Campaigns'; and 'Configure Work' containing 'Compose Login/Setup', 'Compose Job Type', 'Compose Campaign Stages', and 'Config File Templates'. At the bottom is a 'Jobs' section with 'All (Last Day)'.

JobType Editor (icarus)

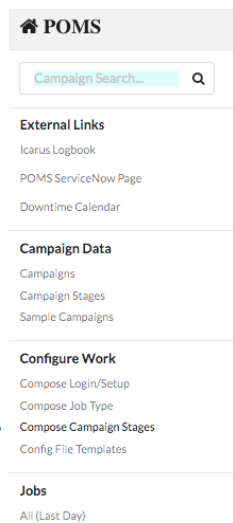


The screenshot shows the JobType Editor form. It has two input fields at the top: 'Name' with the value 'icarus_job_type' and 'Output File Patterns' with the value '%.root'. Below these is a 'Launch Script' text area containing the command: 'fife_launch -c /icarus/app/poms_test/cfg/maya_test_launch_working.cfg'.

4. Compose Campaign Stage

This stage define your specific campaign (related with a specific production task). This step is also used to launch the login/setup template and the job type defined in the previous steps (or you can use an existing one).

click
here 



POMS

Campaign Search...

External Links

- Icarus Logbook
- POMS ServiceNow Page
- Downtime Calendar

Campaign Data





















- Campaigns
- Campaign Stages
- Sample Campaigns


Configure Work

- Compose Login/Setup
- Compose Job Type
- Compose Campaign Stages
- Config File Templates

Jobs

All (Last Day)

	Campaign Name	Stage Name	Active	VO Role	Software Version	Dataset	Split Type	Completion Type	Completion Percent	Parameter Overrides
 	new_campaign_icarus	Cosmic	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage", "gen"}, {"-Oglobal.sam_dataset=", "%(dataset)s"}, {"-Oglob:
 	new_campaign_icarus	detsim_standard	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage", "gen"}, {"-Oglobal.sam_dataset=", "%(dataset)s"}, {"-Oglob:
 	new_campaign_icarus	g4_cosmic	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage", "gen"}, {"-Oglobal.sam_dataset=", "%(dataset)s"}, {"-Oglob:
 	new_campaign_icarus	g4_standard	True	production	v07_02_00	poms_depends_g4	None	located	95	[{"--stage=", "g4"}, {"-Oglobal.basename=", "g4"}, {"-Oglobal.sam_data
 	new_campaign_icarus	gen_electron_intrinsic	True	Production	v07_02_00	from_parent	None	complete	95	[{"--stage=", "gen"}, {"-Oglobal.basename=", "gen"}, {"-Oglobal.fcfile=
 	new_campaign_icarus	gen_electron_oscillated	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage=", "gen"}, {"-Oglobal.fcfile=", "prod_electrons_oscillated_v
 	new_campaign_icarus	gen_isotropic_electrons	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage=", "gen"}, {"-Osubmit.N=", "20"}, {"-Oglobal.basename=", "g
 	new_campaign_icarus	gen_muons_bnb-like	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage=", "gen"}, {"-Oglobal.fcfile=", "prod_mu_workshop2018.fc'
 	new_campaign_icarus	Nue+cosmic	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage=", "gen"}, {"-Oglobal.fcfile=", "prodcorsika_genie_standard
 	new_campaign_icarus	Numu+cosmic	True	production	v07_02_00	poms_depends_detsim	None	located	95	[{"--stage", "gen"}, {"-Oglobal.sam_dataset=", "%(dataset)s"}, {"-Oglob:

 Add

Definition of some of the columns in the Campaign Stage Editor

Campaign name: A name that describes your campaign properly (eg. new_icarus_campaign)

Software Version: In your experiments, you can have different versions of your code, this field help you to track the one that you use for that specific campaign.

DataSet: The SAM definition (dataset) that you want to process, you can also define that in your script then you leave this field as None

Completion type: Then the user have two options: located and complete.

- **Located:** This option suggest that your completed threshold (for launch dependence campaigns) depends on the number of job with all their files located. A located file reference a file which has children declare on SAM.
- **Complete:** This option suggest that your completed threshold (for launch dependence campaigns) depends on the number of jobs that ended with error code 0 but it does not check if the output files are located. A located file reference a file which has the children declare on SAM.

Completion pct: It is the percentage of completion of jobs that you define to determine that specific campaign is successful (complete). If dependency is set up

Parameters override: This field is useful if you want to change the ones that are in the configuration file template

Depends on: If your campaign depends on other campaigns. (eg. g4 depend on gen stage)

Summary

- POMS is currently in good shape when tested at individual stage (gen, g4, detsim).
- The dependency features are mostly working. Still need to formulate the correct configuration to handle errors at SAM declaration stage that is preventing the automated submission for the next stage.
- Plan to run more jobs using more samples to provide comprehensive tests at all stage and iron out all the bugs and features to allow ICARUS to migrate to POMS for the next production campaign.