

LArSoft - Bug #25587

Can't generate events with no neutrino interactions with GENIEGen

03/03/2021 04:20 PM - Gianluca Petrillo

Status:	Assigned	Start date:	03/03/2021
Priority:	Normal	Due date:	
Assignee:	Robert Hatcher	% Done:	0%
Category:	Simulation	Estimated time:	0.00 hour
Target version:		Spent time:	0.00 hour
Occurs In:		Co-Assignees:	
Experiment:	ICARUS		

Description

I am not able to obtain events with no neutrino interaction from GENIEGen. This is relevant when generating a "realistic" beam+background sample.

As an example, the configuration [simulation_genie_background_icarus_bnbJan2020_300us.fcl](#) (icaruscode v09_17_01) should, *in my intention*, produce less than one neutrino interaction every 100 events: at least, I thought it was enough to set no fixed interaction number per event (EventsPerSpill: 0), a reasonable amount of protons on target per spill (POTPerSpill: 2.8e12) and the instruction to keep events with no interactions (PassEmptySpills: true).

This request is in between "support" and "bug". It may be that I haven't figured out the right configuration to make magics happen. But given some e-mail exchange with [Robert Hatcher](#) and some step-by-step execution of GENIEhelper code, I am starting with the latter.

Among the things we have tried it was to increase POTPerSpill at ridiculous levels, and likewise reducing it to puny levels. The results were a relevant pile up in the first case, and one event per interaction in the second one. Also, I am pretty convinced that the issue is deeper, in evgb::GENIEHelper rather than GENIEGen.

Steps to reproduce:

```
source /cvmfs/icarus.opensciencegrid.org/products/icarus/setup_icarus.sh
setup icaruscode v09_17_01 -q e19:debug
lar -c simulation_genie_background_icarus_bnbJan2020_300us.fcl -n 10
```

on a ICARUS GPVM or anywhere where /pnfs/icarus/persistent and /cvmfs/icarus.opensciencegrid.org are accessible (override to physics.simulate: ["generator"] to run only GENIEGen).

History

#1 - 03/08/2021 10:26 AM - Kyle Knoepfel

- Assignee set to Robert Hatcher

- Status changed from New to Assigned