SN fcls

SN pointing – 15/01/2024

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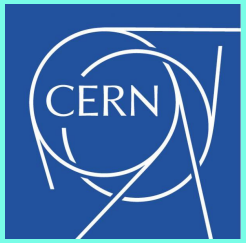


SN gen fcls: default CC?

Using v10_02_02d01.

Dumping **prodmarley_nue_spectrum_dune10kt_1x2x6_dump.fcl,**

it seems that only CC interactions are there, expected?

Propagates to a lot of other fcls downstream.

Comes from **marley.fcl** in larsoft:
https://github.com/LArSoft/larsim/blob/4176a92df6547ebc85dbd3[illegible]o
r/MARLEY/marley.fcl#L65

```
61        # The user must define at least one reaction
62        # by passing MARLEY the name of a matrix element
63        # data file. Three are currently available
64        # for the reaction ve + 40Ar --> e- + 40K*.
65        reactions: [ "ve40ArCC_Bhattacharya2009.react" ]
```

```
# Produced from 'fhicl-dump' using:
#   Input  : prodmarley_nue_spectrum_dune10kt_1x2x6.fcl
#   Policy : cet::filepath_maker
#   Path   : "FHICL_FILE_PATH"

outputs: {
   out1: {
      compressionLevel: 1
      dataTier: "generated"
      fileName: "prodmarley_nue_spectrum_dune10kt_1x2x6_gen.root"
      module_type: "RootOutput"
   }
}
physics: {
   end_paths: [
      "stream1"
   ]
   producers: {
      marley: {
         marley_parameters: {
            direction: {
               x: 0
               y: 0
               z: 1
            }
            reactions: [
               "ve40ArCC_Bhattacharya2009.react"
            ]
            source: {
               namecycle: "NueSpectrum"
               neutrino: "ve"
               tfile: "nue_spectrum.root"
               type: "tgraph"
            }
         }
```

SN gen fcls: typos?

Using v10_02_02d01.

Some 1x2x2 fcls seem to have a name indicating SN spectrum but it's actually flat.

Are these being used somewhere? Created branch of dunesw called fix/SNfcls.

- prodmarley_nue_es_spectrum_radiological_decay0_dune10kt_1x2x2.fcl
- prodmarley_nue_cc_spectrum_radiological_decay0_dune10kt_1x2x2.fcl (images below)

afs > cern.ch > work > e > evilla > private > dune > dunesw > dunesw-config > fcl > prodmarley_nue_cc_spectrum_radiological_decay0_dune10kt_1x2x2_dump.fcl

```
14    physics: {
18        producers: {
1037          marley: {
1038              marley_parameters: {
1042                  ]
1043                  source: {
1044                      E_bin_lefts: [
1045                          4
1046                      ]
1047                      Emax: 70
1048                      neutrino: "ve"
1049                      type: "histogram"
1050                      weight_flux: false
1051                      weights: [
1052                          1
1053                      ]
1054                  }
1055              }
```

Code | Blame | 6 lines (4 loc) · 325 Bytes

```
1  #include "services_dune.fcl"
2  #include "prodmarley_nue_spectrum_radiological_decay0_dune10kt_1x2x2.fcl"
3
4  outputs.out1.fileName:    "prodmarley_nue_cc_radiological_decay0_dune10kt_1x2x2_gen.root"
5
6  physics.producers.marley: @local::dune_marley_nue_cc_flat
```

SN gen fcls: GKVM?

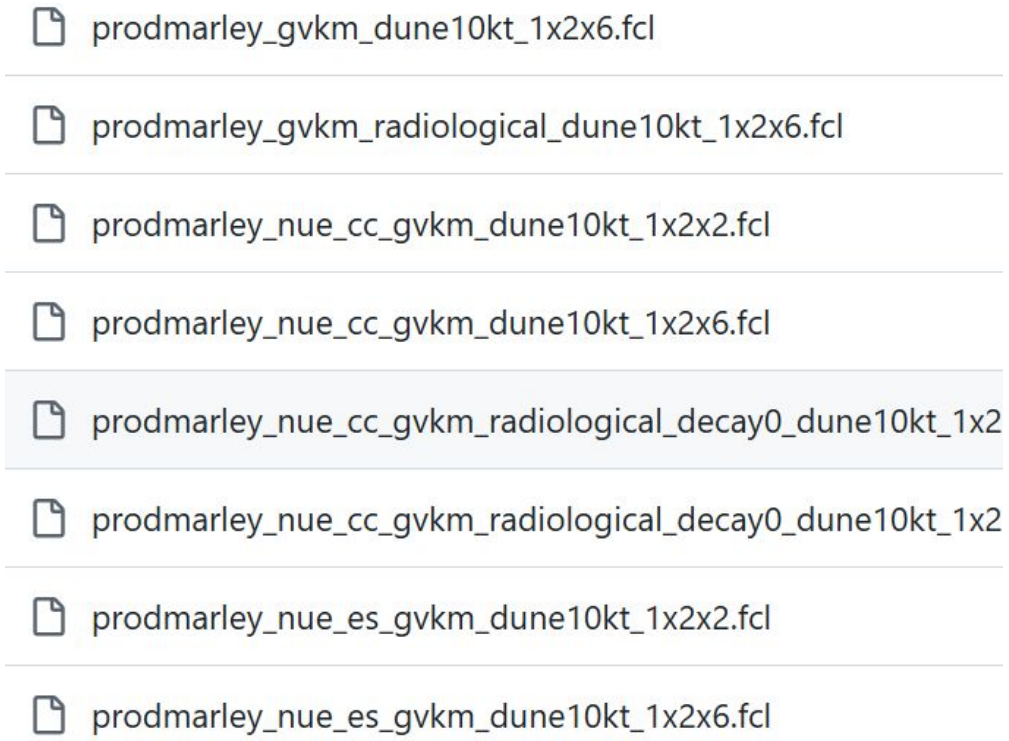
Using v10_02_02d01.

Why all these files saying GKVM in the name?

https://github.com/DUNE/dunesw/tree/develop/fcl/dunefd/gen/supernova/SN_pointing

What's the difference between these spectrum files?

- gvkm_nue_spectrum.root (used in these)
- nue_spectrum.root (standard)



detsim nbits

Using v10_02_02d01.

In all detsim fcls, it seems to me that

tools.adcsim_ideal.Nbit: 12

But the DAQ has Nbit = 14 (since years I think). Discrepancies between simulation and data.

Talking about it in #data-selection.

There might be something about the charge to energy value in the simulation as well, see https://github.com/DUNE/dunesw/pull/163

Possible changes in sim in the future.