

dunetpc - Task #20621

Update noise simulation for ProtoDUNE single phase

08/15/2018 05:15 PM - Tingjun Yang

Status:	Feedback	Start date:	08/15/2018
Priority:	Normal	Due date:	
Assignee:	David Adams	% Done:	0%
Category:		Estimated time:	0.00 hour
Target version:			
Description			
It would be great if we could update the noise simulation for ProtoDUNE single phase.			

History

#1 - 08/31/2018 03:22 AM - David Adams

The goal is to have noise level and frequency spectrum similar to that seen in the data.

The simulation uses ExponentialNoiseService which has exponentially falling noise with a flat floor at high frequency. The data also flattens out at low frequency below 200 kHz.

The service has parameters for a low frequency rollover but when I change one of those, I see a sharp drop below the specified frequency.

I have modified the code so that a negative value for the rollover frequency give a flat spectrum below the magnitude of that value. I will now try to tune the params so sim matches data.

#2 - 08/31/2018 12:49 PM - David Adams

- Status changed from New to Closed

I have added a tune pdsp_chnoiseAug2018 to dunetpc/dune/DetSim/fcl/detsimmodules_dune.fcl. See my talk at the Sep 5 DRA meeting: <https://indico.fnal.gov/event/18166>.

The changes are pushed to dunetpc.

#3 - 09/10/2018 09:28 AM - David Adams

- Status changed from Closed to Feedback

Tingjun:

Should we make this the default for protoDUNE simulation?

da

#4 - 09/10/2018 09:32 AM - Tingjun Yang

Hi David,

Do you expect things will change when the electrons are immersed in the liquid? I am OK with making this default now and update it later if there are changes.

Thanks,
Tingjun

#5 - 09/10/2018 11:48 AM - David Adams

I guess we will see tomorrow. We can wait until then to make any changes. Thanks. --david