



VD Coldbox PNS runs (April 24)

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ok Overview

Runs with PNS (TPC+PDS) since 16.04.2024.

Flat	View Threaded V	iew Ne	ew Entry Advanced Sea	rch Display Thread Notification	Configuration			
Entries from last: Default © Fet				cch Search all cols:		Showing 1 to 15 of 500 entries Show 15 + << < > >>		
	Date_Time 🔶	Status 🗍	Author 🔶	Subject 🔶	Message Type 🛛 🗍	System Affected	Text	
Reset	Search Date_Time	Search Stat	Search Author	Search Subject	Search Message Type	Search System Affected	Search Text	
	2024-04-17 10:33	open	dvargas	Run 25050 (PROD) started on	Automatic	DAQ	PNS run Configuration:	
	2024-04-17 10:30	open	dvargas	RE: Run 25049 (PROD) started on	Automatic	DAQ	Run 25049 (PROD) stopped on np02vdcoldbox log	
	2024-04-17 10:11	open	dvargas	Run 25049 (PROD) started on	Automatic	DAQ	testing the readout server fix Configuration:	
	<u>2024-04-16 20:06</u>	open	Dominique Duchesneau	CRP HV bias setting changed (-1.7,	Default	CRP	The CRP HV biases are changed to: shield: -1.7 kV	
	2024-04-16 17:07	open	wketchum	RE: Run 25036 (PROD) started on	Automatic	DAQ	Run 25036 (PROD) stopped on np02vdcoldbox log	
	2024-04-16 12:09	open	wketchum	Run 25036 (PROD) started on	Automatic	DAQ	CRP + PDS, PNS turned back on Configuration:	
	2024-04-16 12:08	open	wketchum	RE: Run 25035 (PROD) started on	Automatic	DAQ	Run 25035 (PROD) stopped on np02vdcoldbox log	
	2024-04-16 12:05	open	wketchum	Run 25035 (PROD) started on	Automatic	DAQ	CRP + PDS, PNS turned off to try to compare tp rate	
	2024-04-16 12:05	open	wketchum	RE: Run 25034 (PROD) started on	Automatic	DAQ	Run 25034 (PROD) stopped on np02vdcoldbox log	
	2024-04-16 11:56	open	Wesley Robert Ketchum	RE: Run 25033 (PROD) started on	Automatic	DAQ	run 25033 also with no neutrons, as we were debugging the	
	2024-04-16 11:55	open	wketchum	Run 25034 (PROD) started on	Automatic	DAQ	CRP + PDS + PULSED NEUTRON SOURCE!! (100 prescale,	
	2024-04-16 11:54	open	wketchum	RE: Run 25033 (PROD) started on	Automatic	DAQ	Run 25033 (PROD) stopped on np02vdcoldbox log	
	2024-04-16 11:38	open	wketchum	Run 25033 (PROD) started on	Automatic	DAQ	CRP + PDS + PULSED NEUTRON SOURCE!! (100 prescale,	

Running now

Reading out 10 DAPHNE channels: 0-7, 10-17, 20-27, 40-47, 1, 36;

All channels are in the streaming mode;

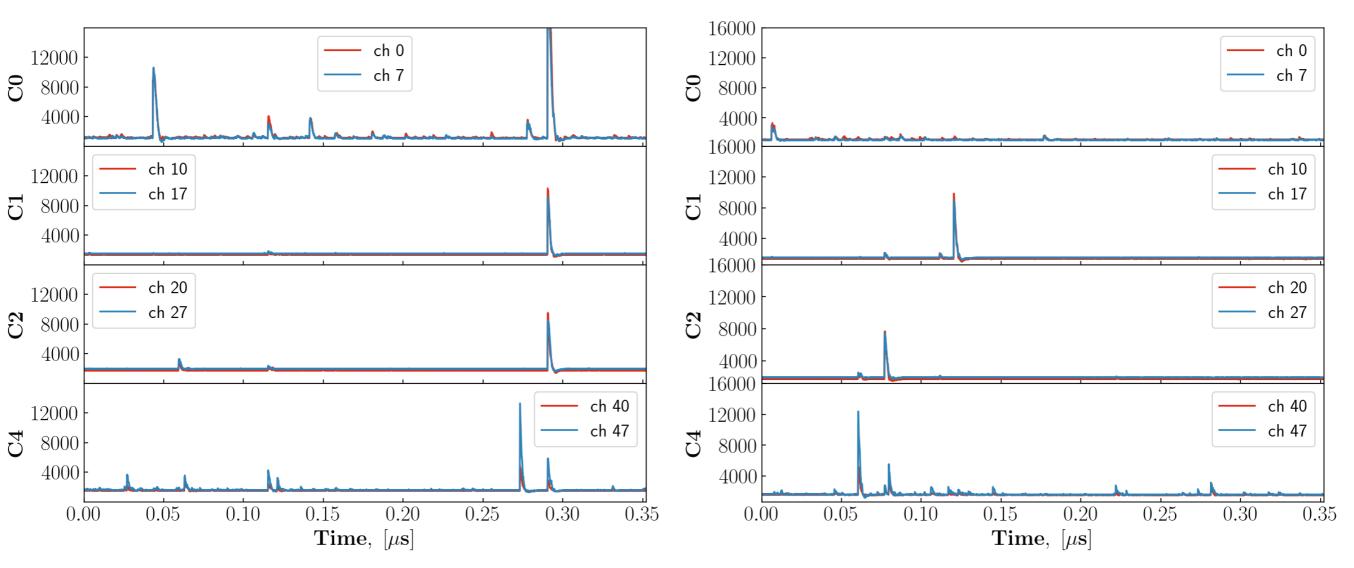
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Readout window – 65536 clock ticks ( \sim 1 ms);
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Trigger -4 Hz (80 Hz from PNS prescaled);

\equiv Home \rightarrow Dashboards \rightarrow DUNE DAQ v4.4.0 \rightarrow DAQ overview \sim \bigcirc \bigcirc 10s \sim \land							
Partition name np02vdcoldbox ~		≡ Subsystems	\equiv Global	NP04 Network \equiv NP0	4		
~ Status							
np02vdcoldbox		25050					
14:10	14:15 14:20	14:25	14:30		14:35		
Current Status Sending triggers at	App Fwk Error State Run time	Current Run number Trigger St	tatus Cu	urrent Issued trigge	Current Written TRs		
RUNNING 4 Hz	NO ERRORS 3.07 hour	25050 C	OK 4	44105	44101		
Trigger Rate	Data Writers Information	Message Reporting					
4	48 MiB/s	se [,] ⊽ time ⊽	applic: 🖓 me		is		
<u><u></u> Х 2</u>		WA 2024-04-17 14:38:07	hermes Fail	Failed to retrieve hermes code statsIPBus exce h			
-	40 MiB/s	WA 2024-04-17 14:35:44	hermes Fail	led to retrieve hermes coo	de statslPBus exce h		
0 14:10 14:20 14:30	32 MiB/s	WA 2024-04-17 14:35:13	hermes Fail	led to retrieve hermes coo	de statslPBus exce h		
Generated triggers Sent triggers	14:10 14:20 14:30	WA 2024-04-17 14:33:00	hermes Fail	led to retrieve hermes coo	de statslPBus exce h		
Completed TR Written TR	 dataflow0 datawriter_0 — tpwriter tpswriter 	WA 2024-04-17 14:31:48	hermes Fail	led to retrieve hermes coo	de statslPBus exce h		
DFO time	Network I/O	WA 2024-04-17 14:30:46	hermes Fail	led to retrieve hermes coo	de statsIPBus exce h		
100%	5.00e+1	WA 2024-04-17 14:29:44	hermes Fail	led to retrieve hermes coo	de statsIPBus exce h		
1%	4.00e+1	WA 2024-04-17 14:27:01	hermes Fail	led to retrieve hermes coo	de statsIPBus exce h		
	<u>ଞ୍ଚ</u> 3.00e+1	WA 2024-04-17 14:26:19	hermes Fail	led to retrieve hermes coo	de statsIPBus exce h		
	\$\$ 3.00e+1 2.00e+1 ¥	WA 2024-04-17 14:22:35	hermes Fail	led to retrieve hermes coo	de statsIPBus exce h		
14:10 14:15 14:20 14:25 14:30 14:35	1.00e+1	WA 2024-04-17 14:21:23	hermes Fail	led to retrieve hermes coo	de statsIPBus exce h		

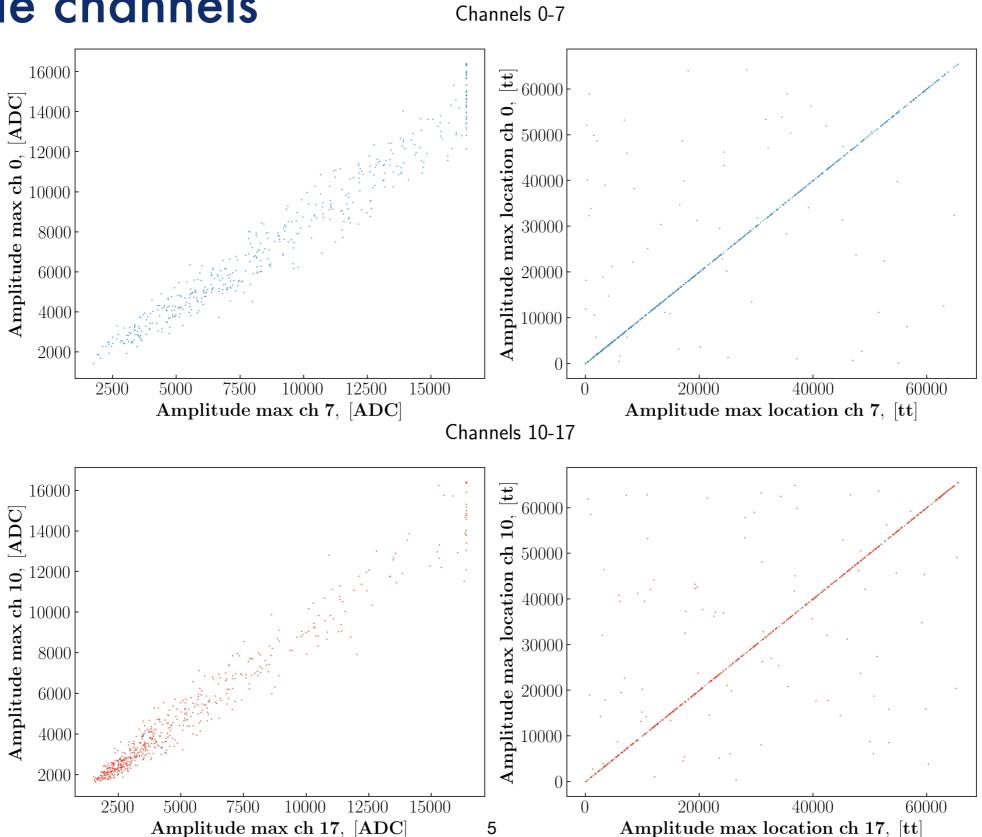
Waveform examples

Run 25034 Record 36



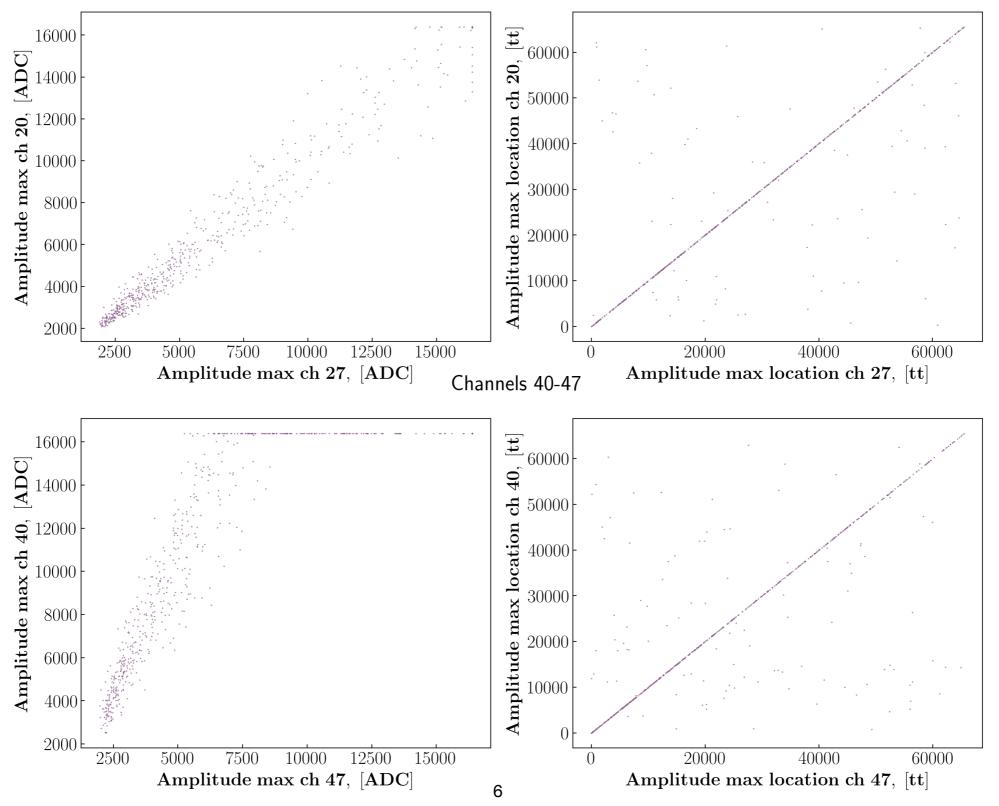
Run 25034 Record 15

Module channels



Module channels

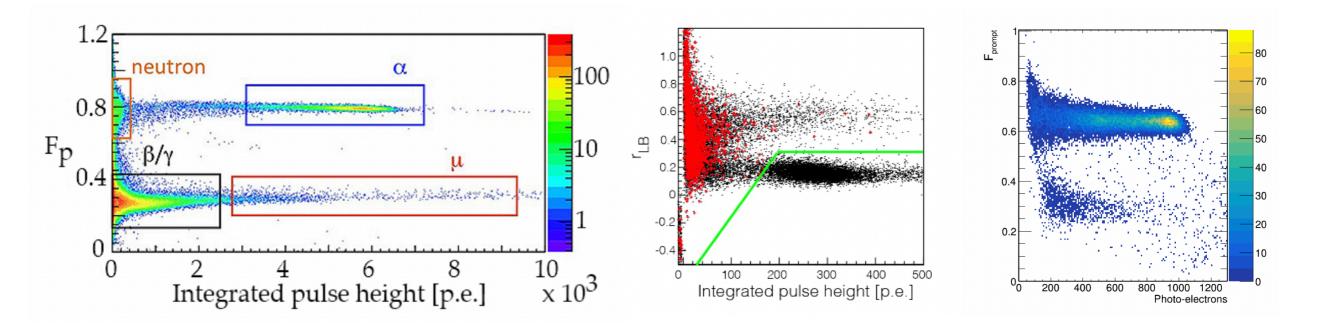
Channels 20-27



Pulse shape discrimination

Main goal: Neutrons identification in DUNE with light Pulse Shape Discrimination (PSD) technique.

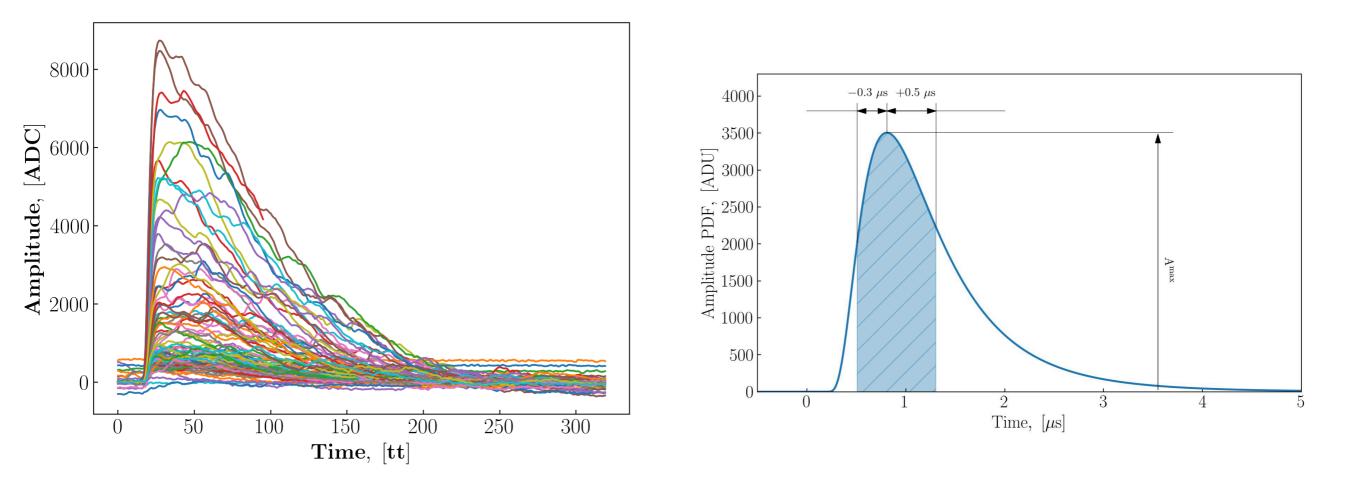
[*JINST 10 (2015) 08, P08002*] [Phys. Rev. B **27**, 5279] [*JINST* 16 (2021) 09, P09027]



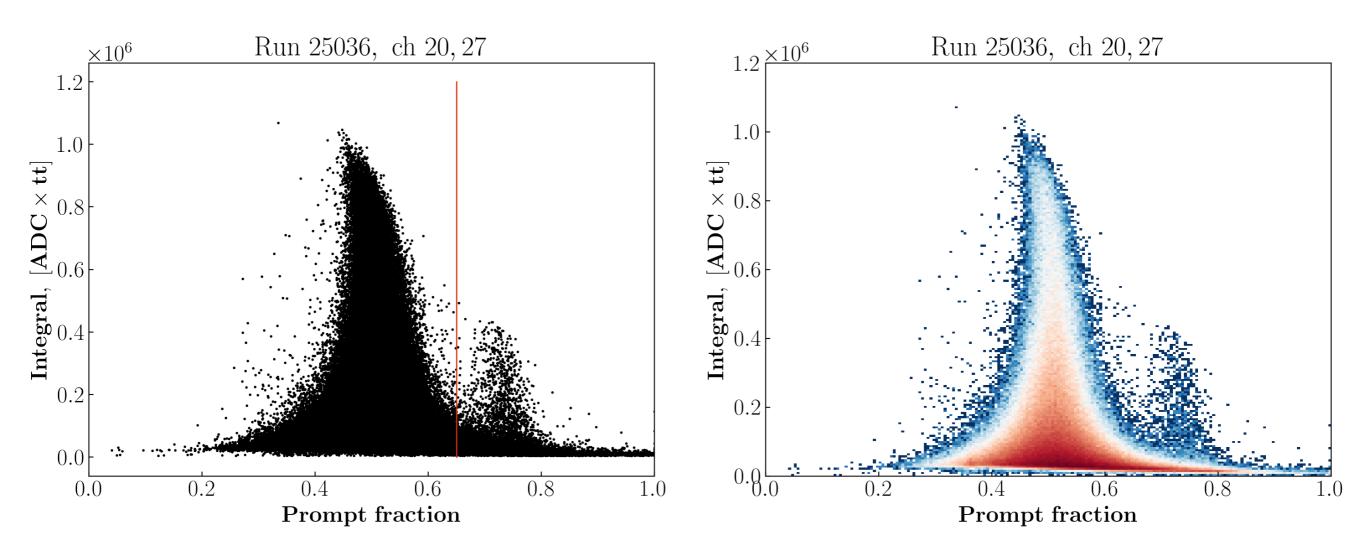
PNS data: first look

Prompt light fraction
$$-F'_p = \frac{\int_{t_{max}}^{t_{max}+0.5} A(t)dt}{\int_{t_0}^{t} A(t)dt};$$

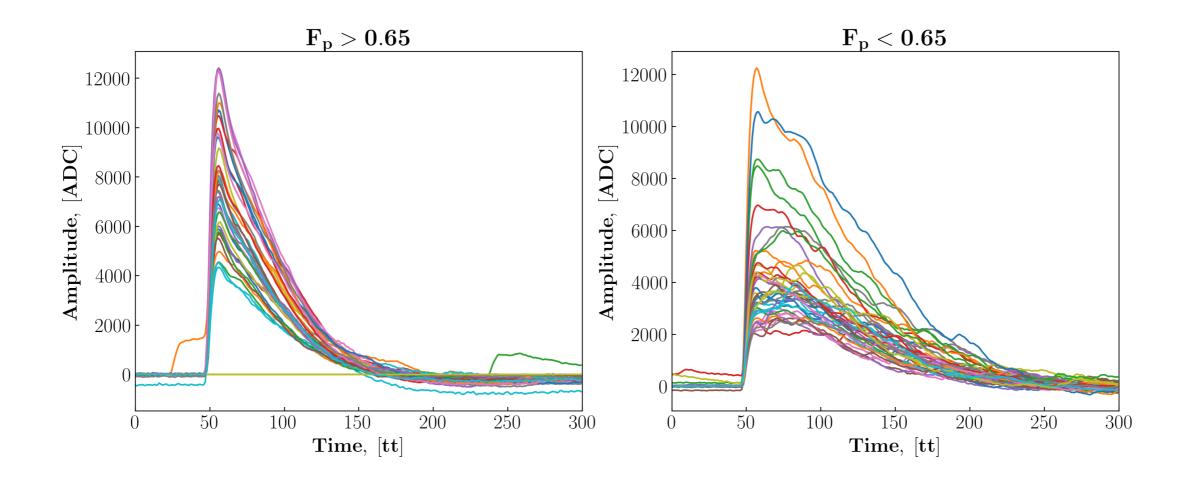
Full run 25036. Waveforms are pedestal subtracted and aligned by the rising edge.



FPS plots

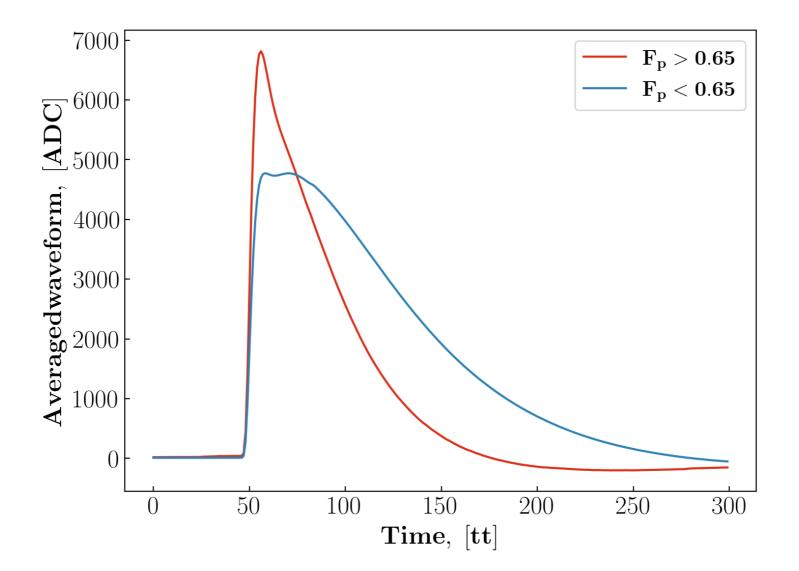


Waveforms

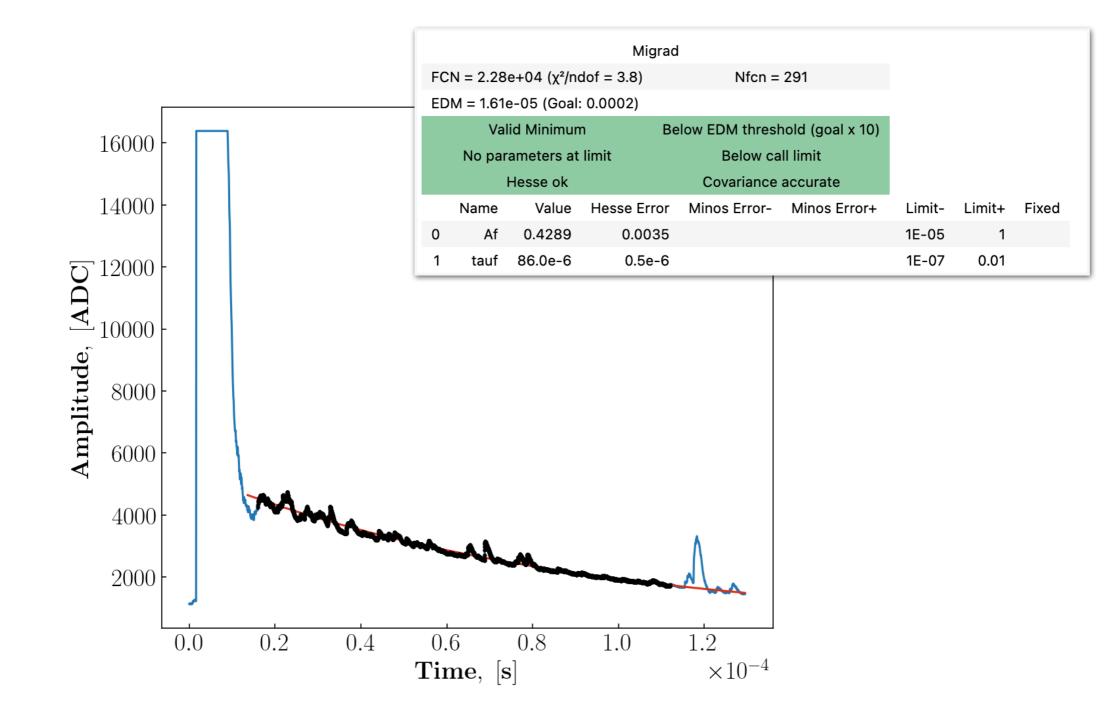


Waveform types

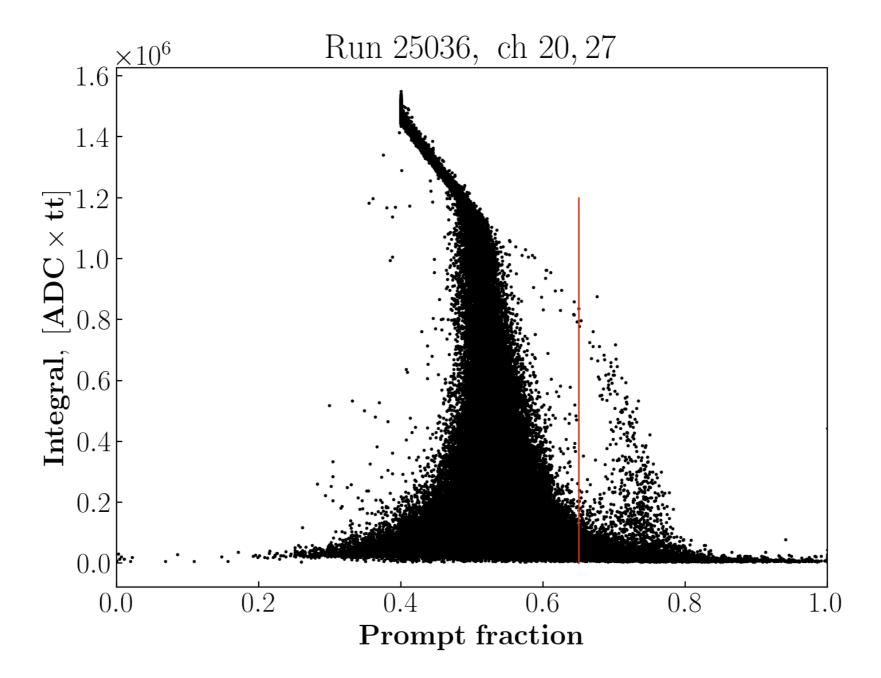
Waiting for the overnight cosmic run to find out of this effect appear while PNS is off.



Tail fit



Allowing saturated waveforms



Run overview

Run No	Configuration	Trigger	Length
25036	TPC+PDS	4Hz	5h
25050	TPC+PDS	4Hz	5h
25068	TPC+PDS	4Hz	4h
25071	TPC+PDS	4Hz	3h
25080	PDS	40Hz	4h

PDS-wise run 25080 has most of the data.

Cosmic runs not mentioned here, but data was taken every night in TPC+PDS mode (1Hz).