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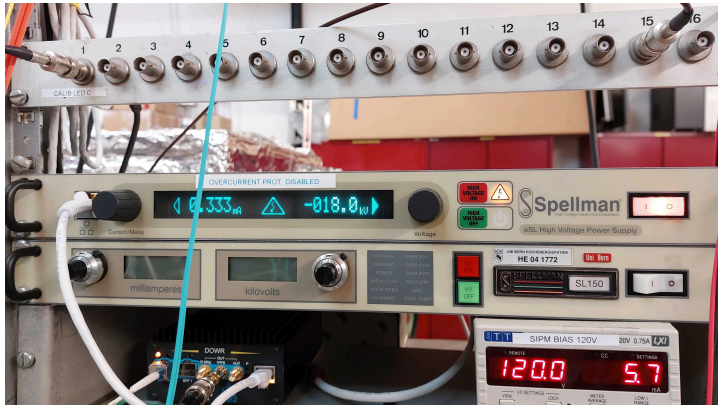
AEC
ALBERT EINSTEIN CENTER
FOR FUNDAMENTAL PHYSICS

HV system status, Module-3 run

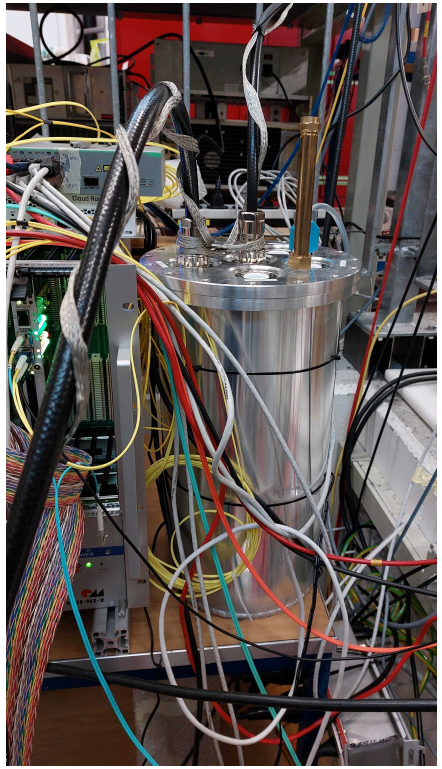
Saba Parsa

University of Bern

HV system, Module-3

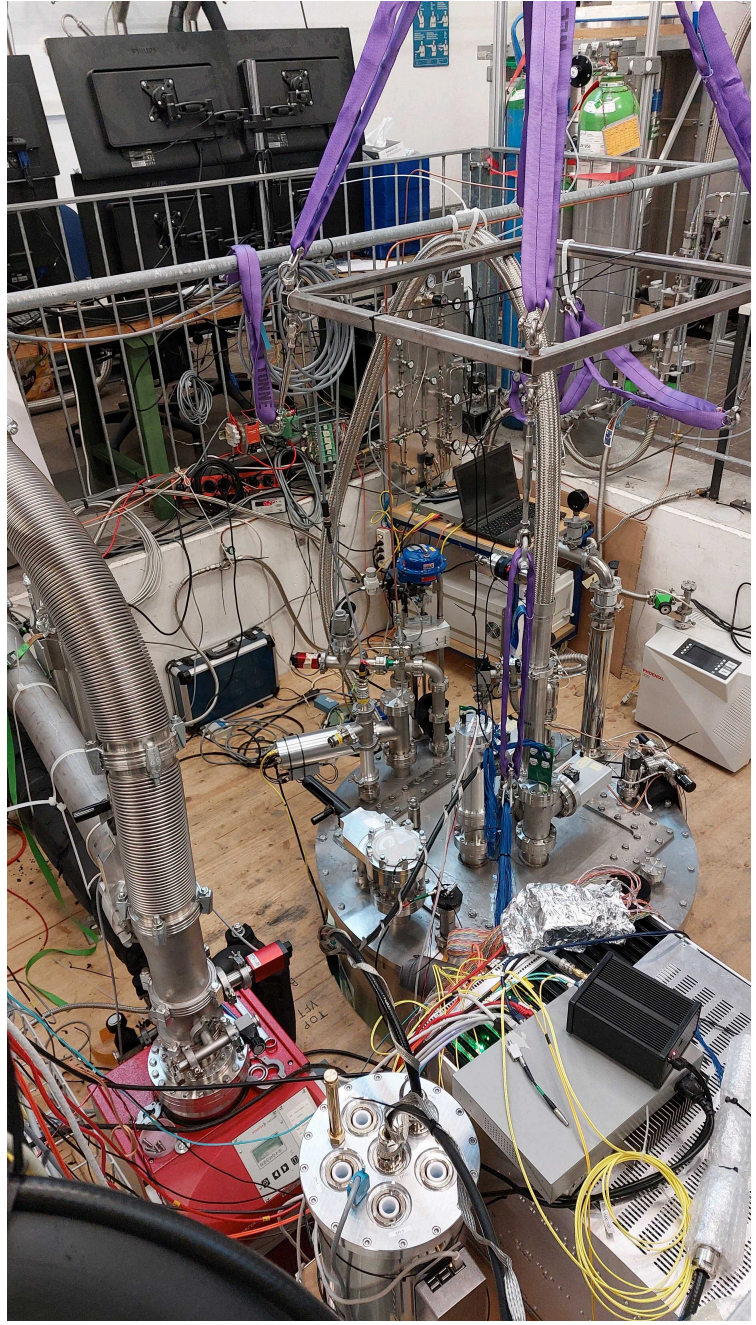


HV supply, Spellman



PFD-5

HV cable connection to the feedthrough



Overview of the HV system at Bern

HV ramp up

27-28 Jan cooldown and filling

28-31 Jan Subsystem bring up and optimization

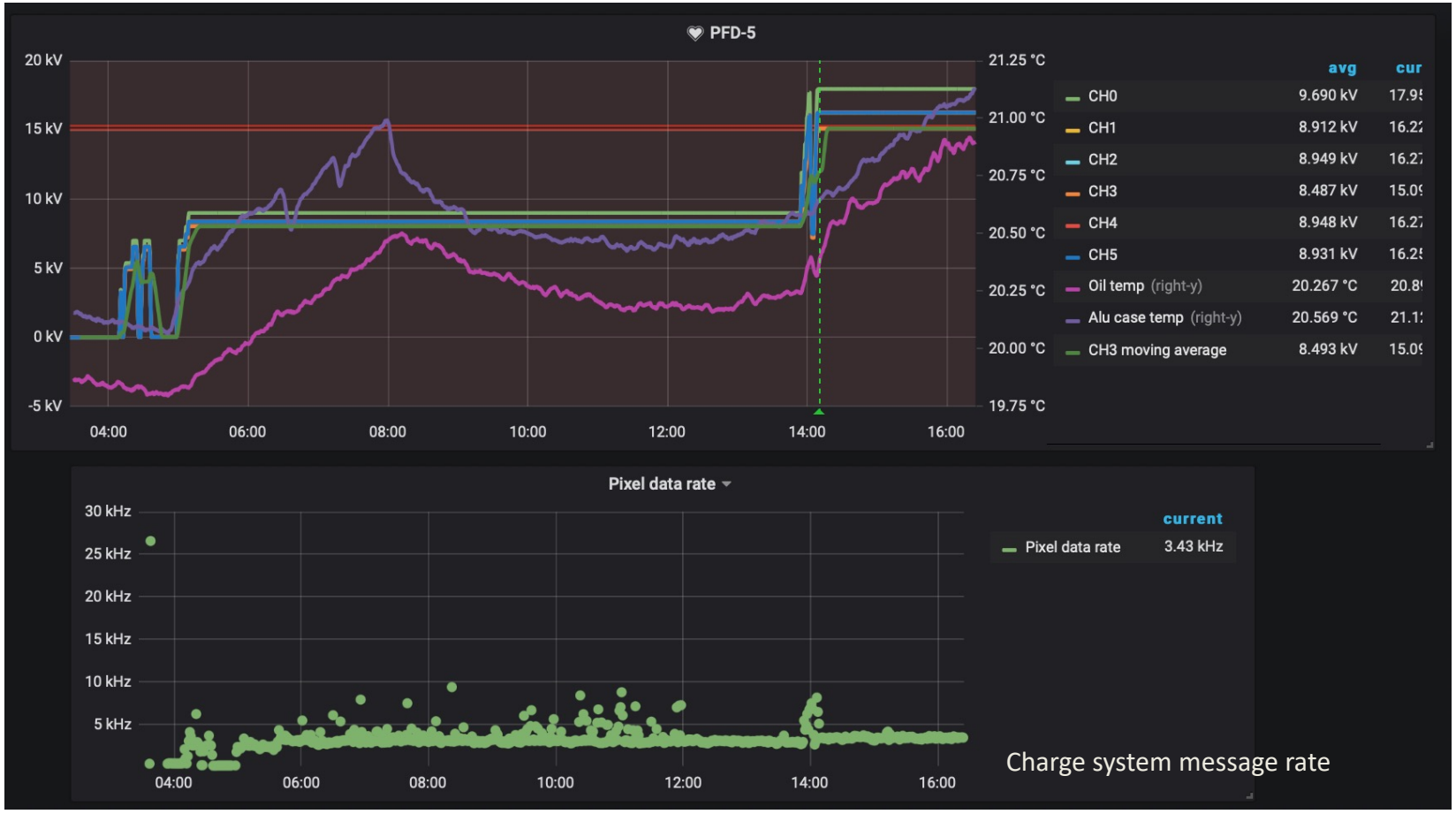
1 Feb Ramp up of HV

Half nominal 8 kV @Cathode

8 hours of charge and light data

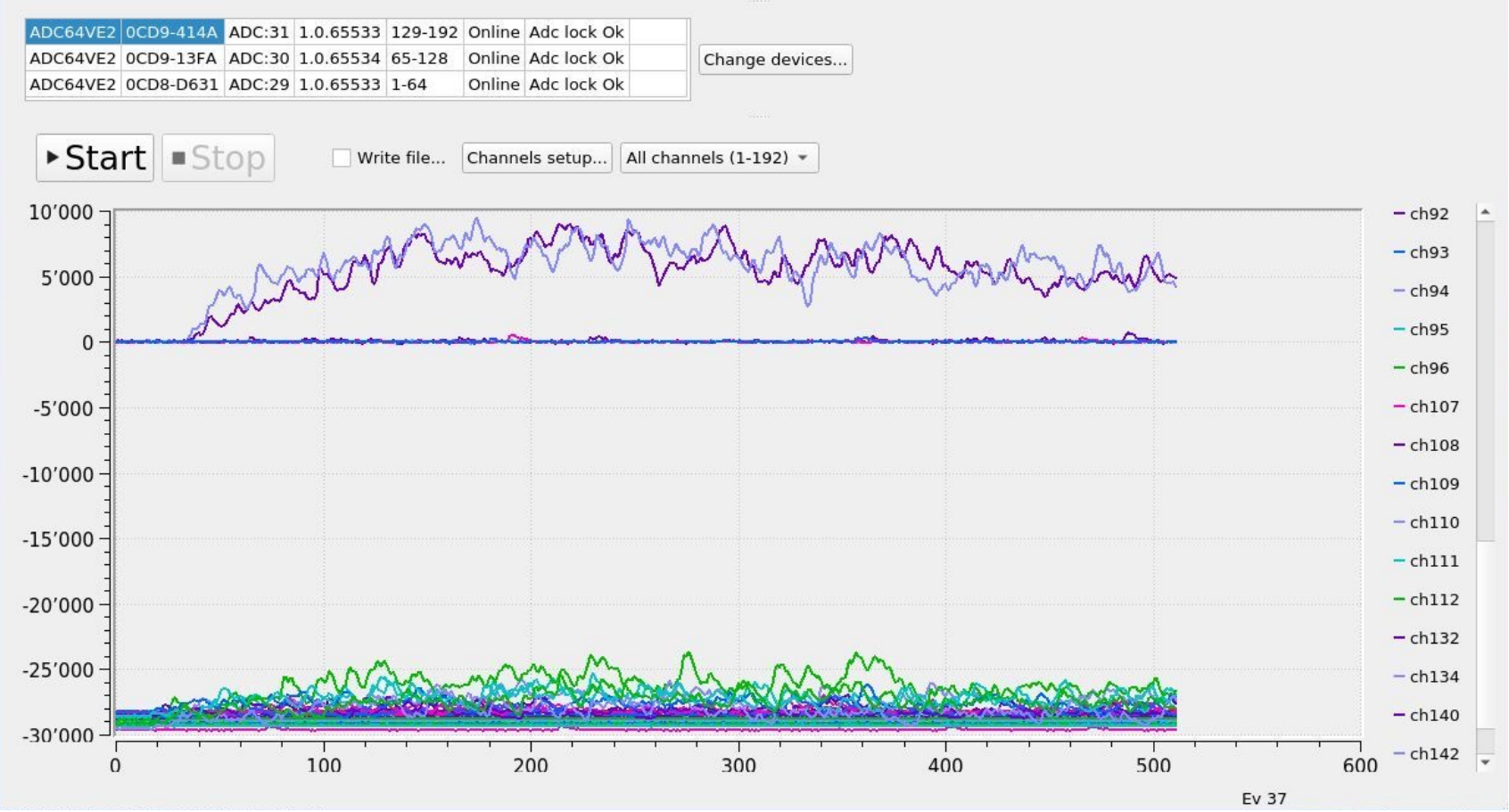
Nominal 15.1 kV @Cathode

Since 15:00 charge and light data



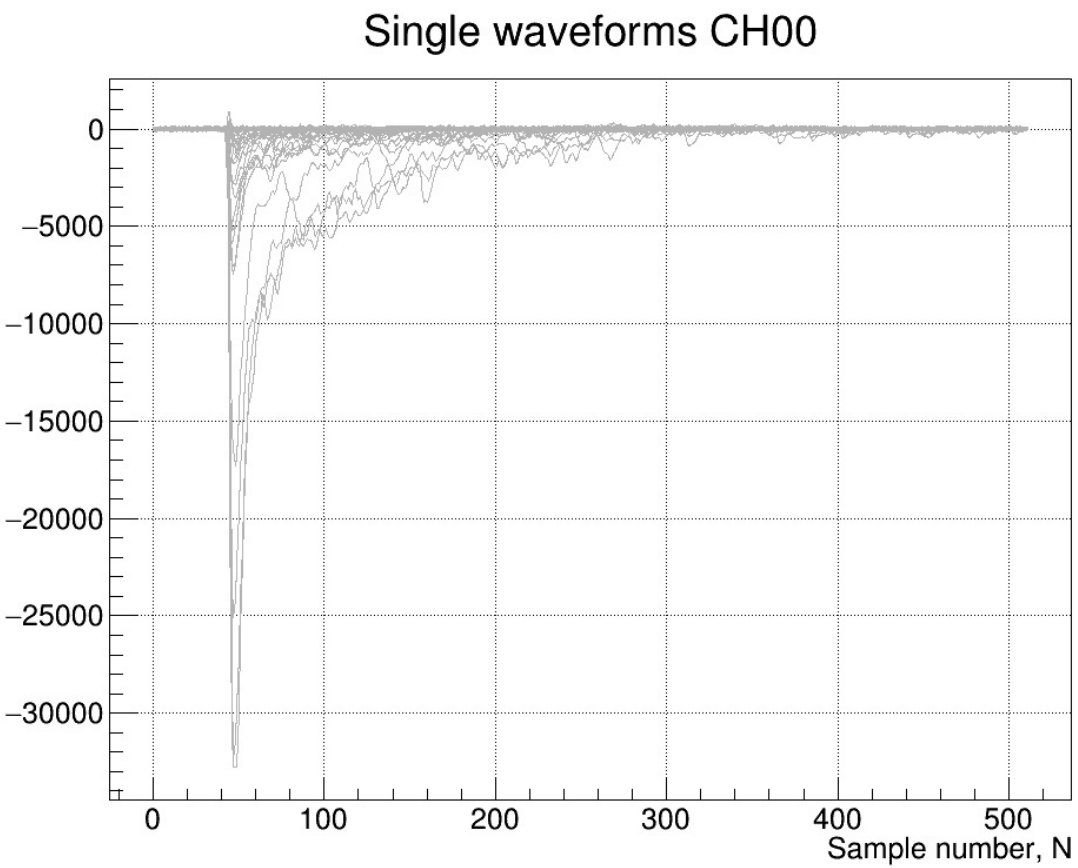
Charge system message rate

Spark signal observed by the light readout

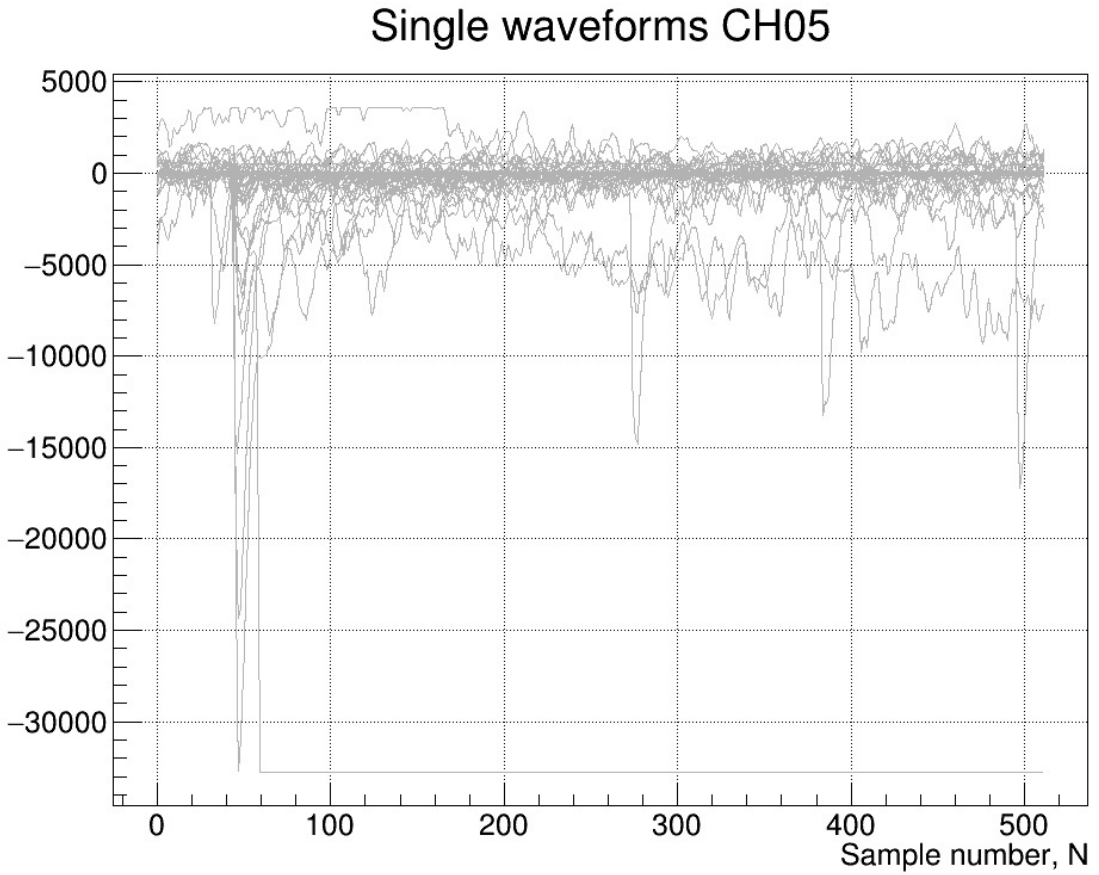


Example of a spark event triggered by the light system

Spark signal



A healthy sum channel



Sum channel seeing sparks

Spark signal

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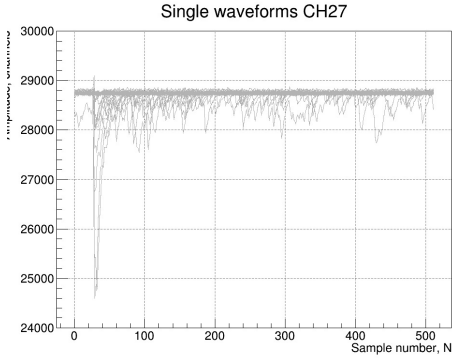
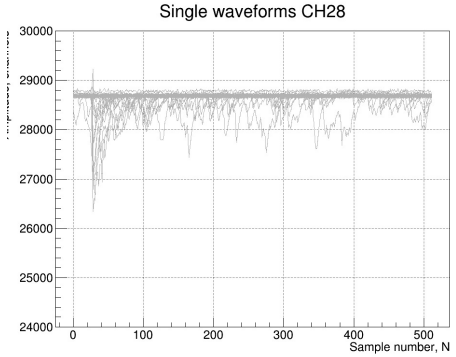
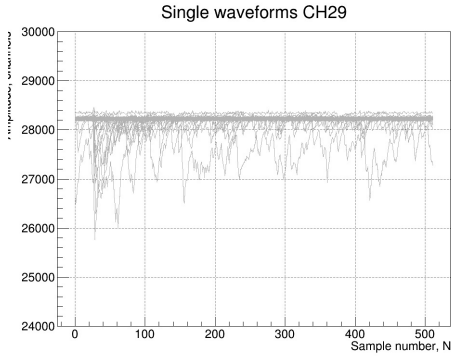
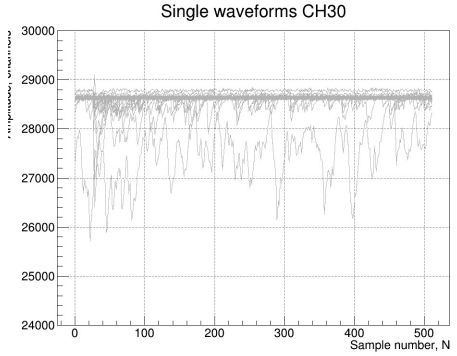
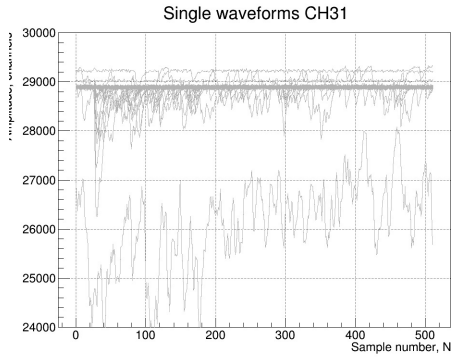
ACL 4



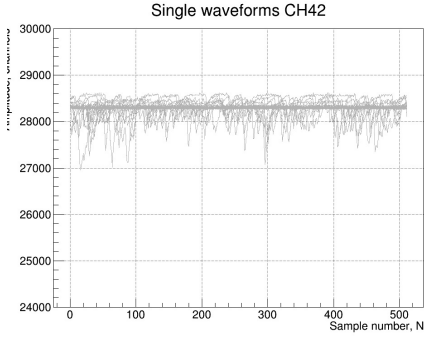


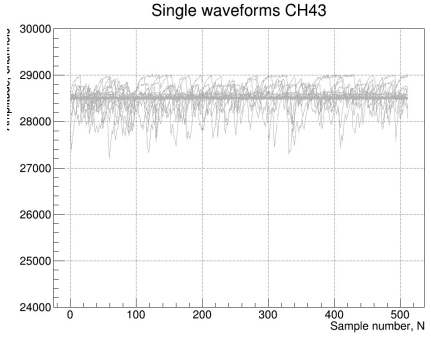


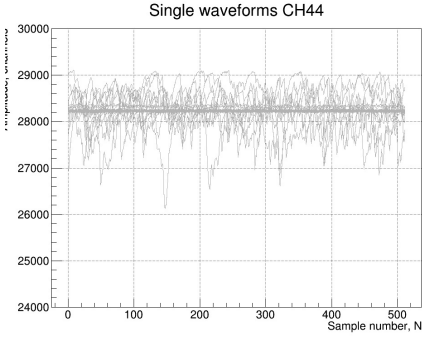


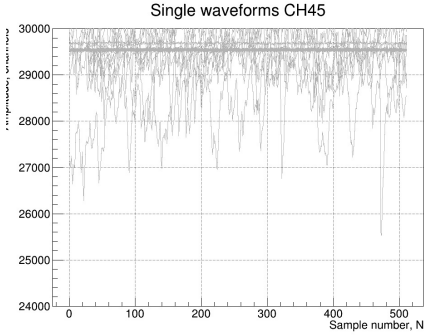


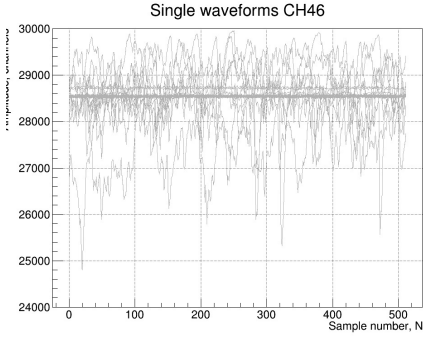
ACL 7











Superimposed single waveforms from individual SiPMs subject to the spark

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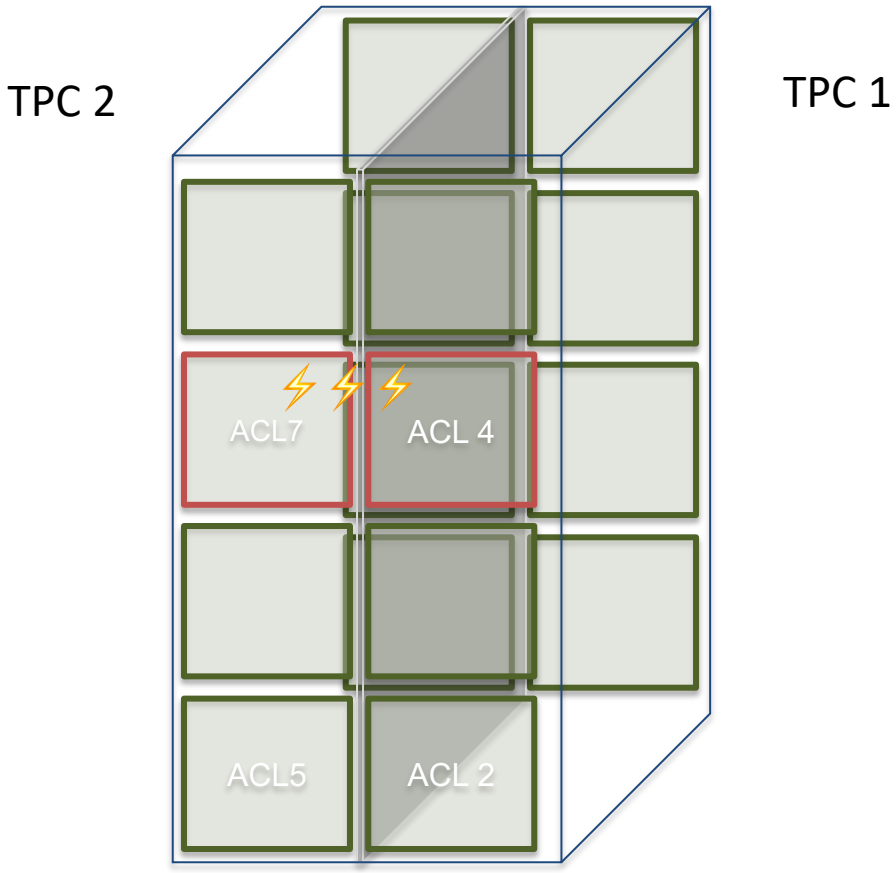
DUNE

Sparks



Location of the ArCLights seeing sparks in Module3

Light Rate study

Raised HV to Nominal and observed 3.6 kHz trigger rate

Removed the sum signals of two ArCLights from the trigger OR

Reached stable trigger rate for Nominal field

14:00 Feb 1st 2023	
Spellmann setpo	Light trigger rate
8	300 Hz
16	2.5 kHz
17	3.5 kHz
17.9	3.6 kHz
Ramp down to 8 kHz	
8	600 Hz
Disabled trigger sum 4 and 6	
Sparks are localized at the cathode between two ArCLights	
Spellman [kV]	rate [Hz]
8	300
10	300
12	300
14	280
16	270
17.9	260