Plan towards next M1

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VDPDS CE Meeting - 31/01/2024

Module 1 – first run

- Data taking from 11th of January to Feb 2nd
  - With CAEN digitizer
    - uploaded to eos: /eos/experiment/neutplatform/protodune/experiments/ColdBoxVD
  - With DAPHNE
    - some runs taken can be seen in elog (need CERN proxy)
    - Trying to keep track of them in the common google spreadsheet
    - Can be listed with rucio (needs fermilab and lxplus account)
    - Conversion of hdf5 files only done upon request by Vitaliy

- Latest news: last minute data taking with DAPHNE and cathode, trying to have a calibration
  - Thanks a lot Manuel, Federico, Renan, Esteban and Filippo!
- Next M1 run “not before March” but maybe even later: propose 8/03 as earliest closing date?

Towards M1-run 2: fibers

- At least need to change all fibers in C3 and ch2 of C4
  - There should be a box at CERN with some 10m 62,5um fibers brought by Flavio?
- Alternatively: replace all fibers with FD-like potted feedthrough, as done in C1.
  - Requires modification of:
    - Current fiber feedthrough, or the potted one?
    - Inversion of all electronic boxes, so as to connect the fibers once the cathode is in place
  - Difficult to have the material in time
  - New fiber testing should be implemented
- Extraction of the cathode will be delicate, need to discuss with Filippo
  - Post-mortem to be done on C3 and C4 fibers (optical inspection, attenuation evaluation)

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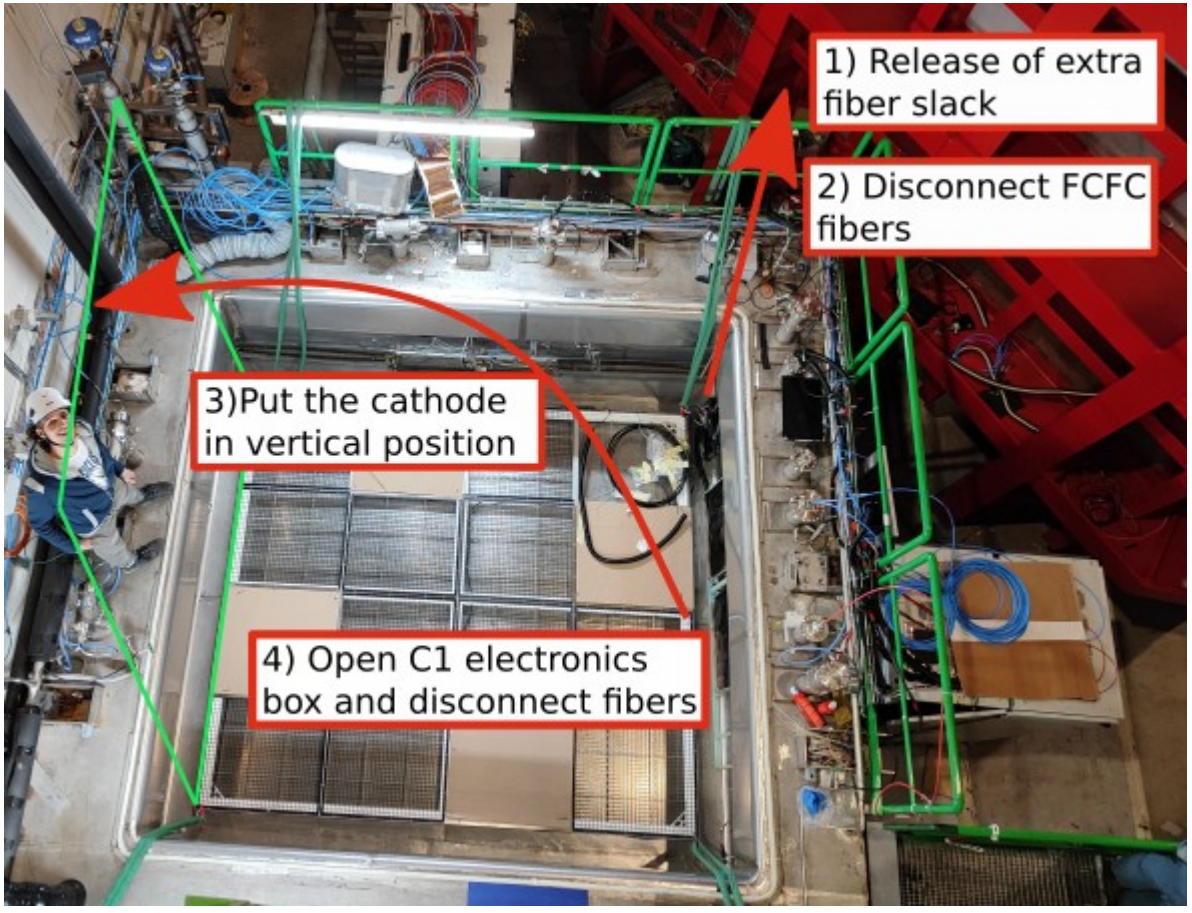

Towards M1-run2 : SoF electronics

- SoF electronics is using a CMOS amplifier
  - Some literature describes possible issues when operating in LAr due to hot carrier effect
  - Efforts attempted to validate the CMOS parts (on hold)
- An alternative circuit configuration using a bipolar amplifier has been prepared and evaluated for performance
  - Requires the use of a transistor MT3S11 needs grand-daughter card. Otherwise BFP650
  - Results show similar performance in terms of noise but smaller dynamic range (possibly still acceptable)
- Enough boards have been produced
  - Need to be cabled with the new opamp and transistor
  - Trying to locate lasers (possibly some at APC and some at CERN).
- Will require full new installation → another round of electronics and module testing at CERN
  - **Could change electronics in only 2 modules.] → only two modules to be tested**

Towards M1-run2 : Membrane

- Opportunity to fine tune VD cold electronics with FBK SiPMs
- Make SPE smaller? (since attenuation is necessary in DAPHNE?)
- Blinding top of modules → use piece of G10 with vikuity

Towards M1-run2 : DAQ

- More experts are needed on certain items / need to make things more accessible
  - Script to start run selecting a few DAPHNE parameters?
  - Conversion of hdf5 files to root files
- Data taking organization:
  - Defined list of data to take each day
  - Spreadsheet to complete with information on each run
  - 2nd spreadsheet to complete with summary of analysis results
- FYI some info already compiled in the M1doc