



# Status Mass Test SiPM

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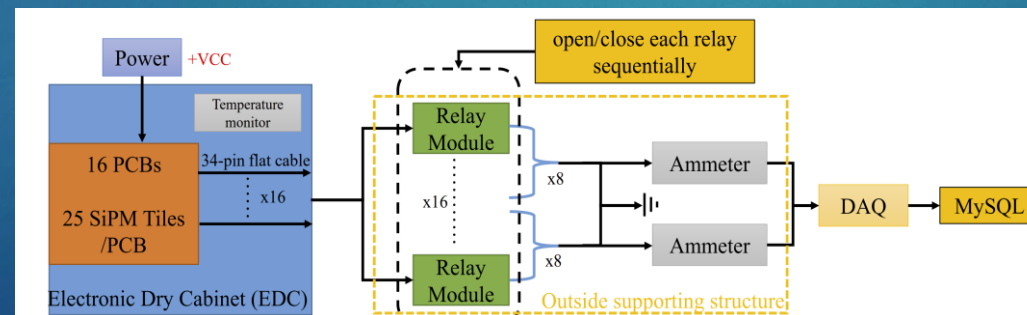
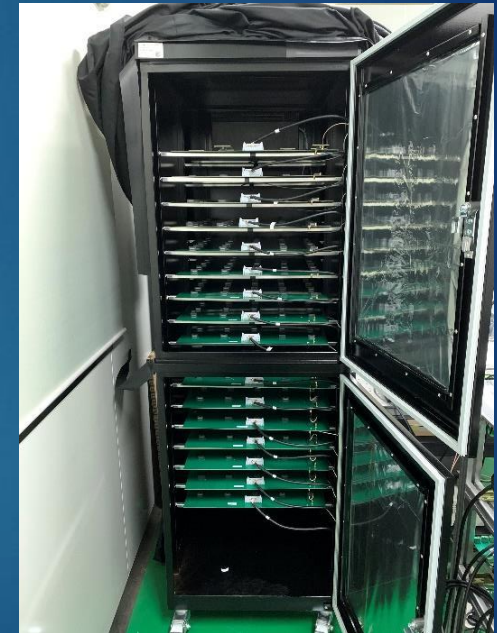
# Short recap

# Short Recap

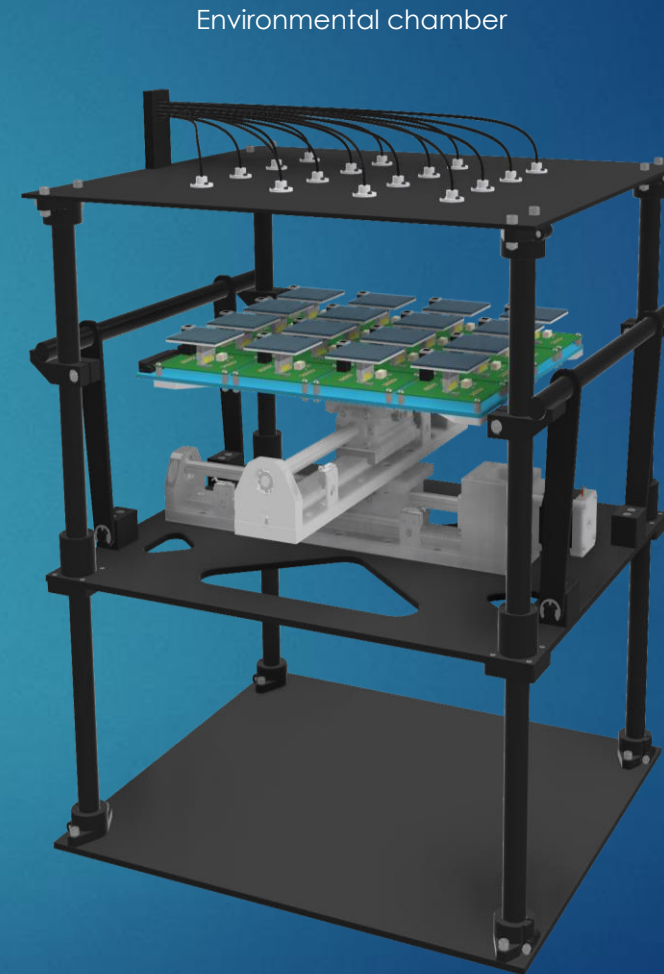
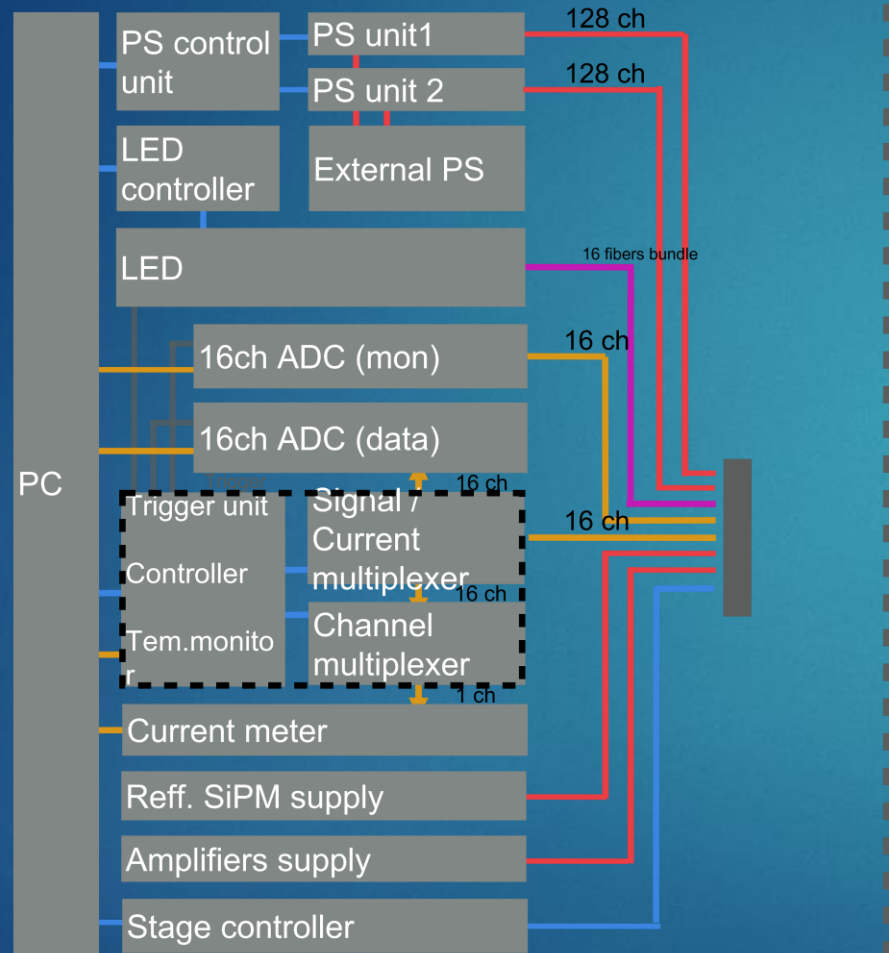
- ▶ Visual check;
- ▶ Burning test (400 tile, 2 weeks);
- ▶ Mass test (3h30' – 4h each test, 16 tiles/test);
  - ▶ Both in dark and under light;
  - ▶ Light field scan to check the homogeneity of light;
- ▶ ~4000 tiles, 4x8 produced by Hamamatsu and directly shipped in China.

# Burn-in test

- ▶ Refer to **DocDB-8580** for details of the burn-in test setup
- ▶ Operating SiPM Tiles for two weeks with the over voltage of  $\sim 3$  V at room temperature
  - ▶ Can handle up to 400 tiles in one test
- ▶ The dark current of each Tile was sampled and ambient temperature was monitored
  - ▶ One tile one channel by connecting SiPMs in parallel



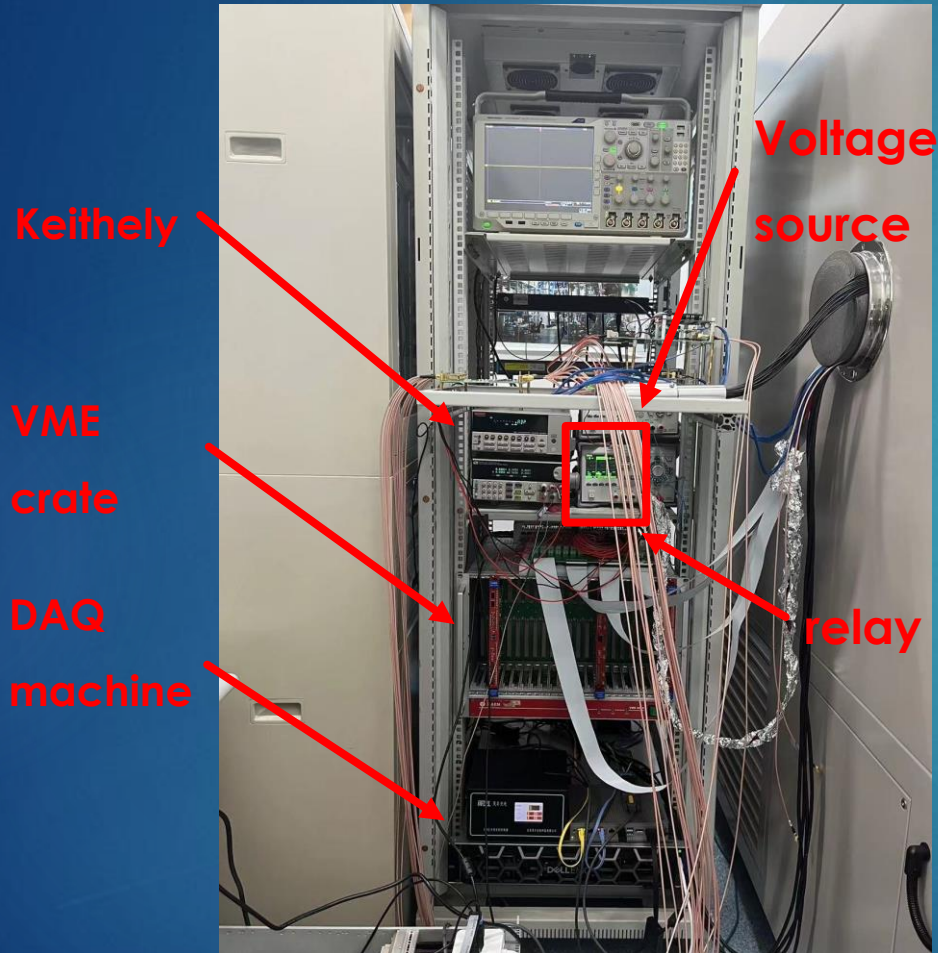
# Mass test setup



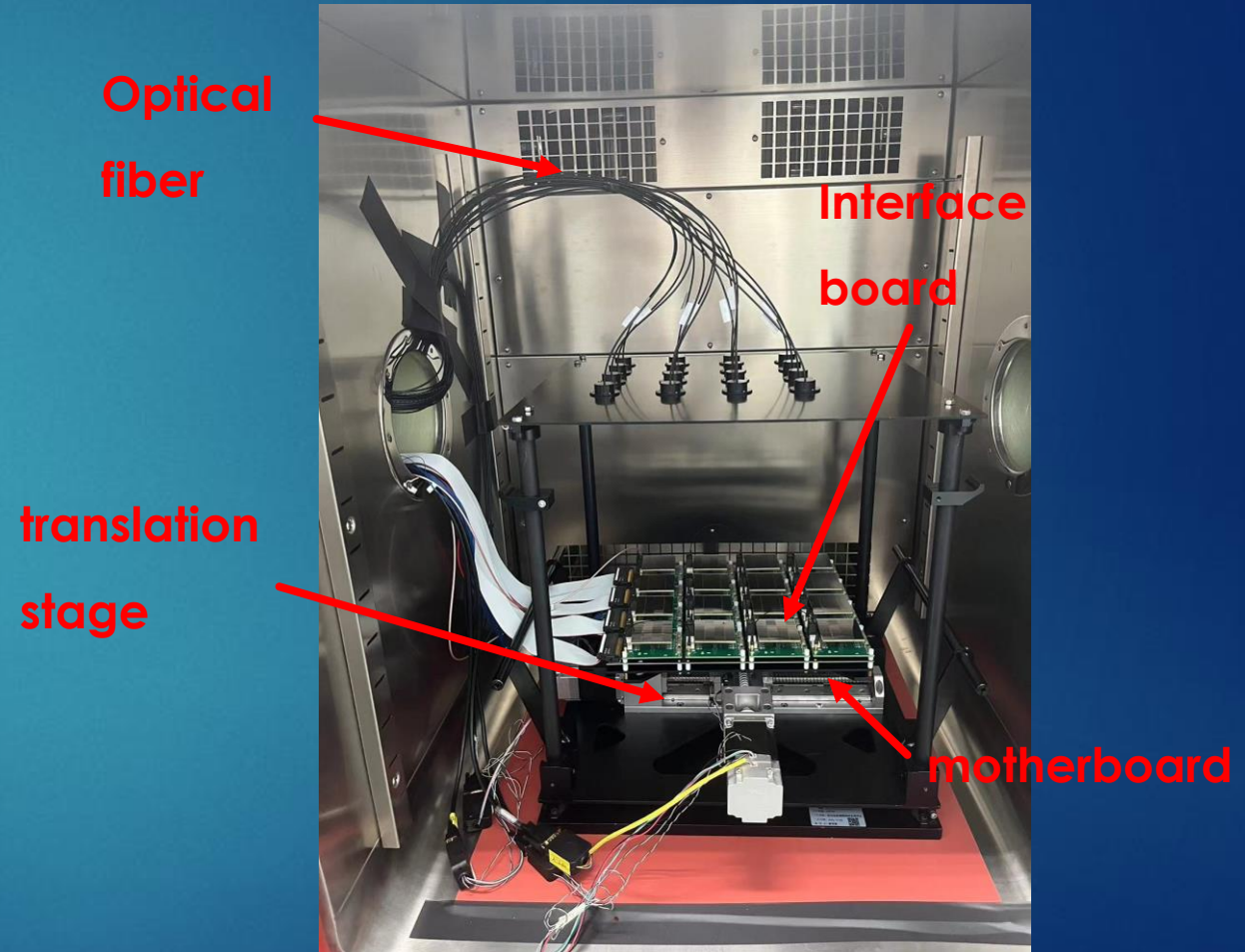
# Status Mass Test

CURRENT STATUS IN CHINA

# Mass testing System onsite



outside of cryogenic chamber



Inside of cryogenic chamber

# Light field scan

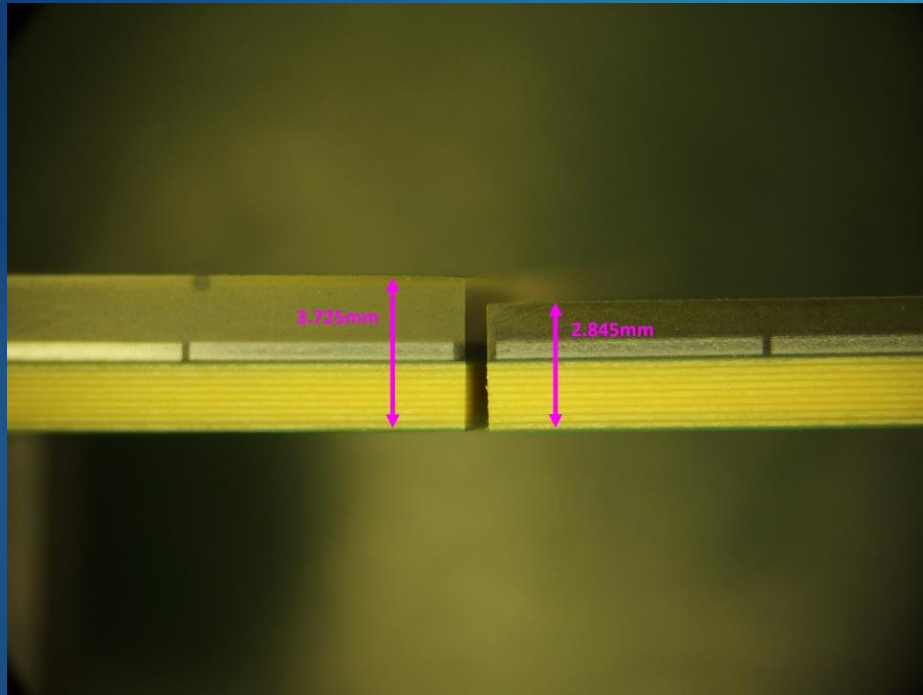
- ▶ The reference SiPMs are used (HPK single channel S13360):
  - ▶ to provide the reference point of the absolute PDE
  - ▶ to scan the light map in the SiPM mass testing system
- ▶ 16 single channel SiPMs are mounted in the PCBs close to the tile under test
- ▶ Mechanical issue during the translation, working on a solution.



# Current Status

- ▶ 2nd batch received (1023), 400 pieces in burn-in test, 100 pieces done with visual check;
- ▶ 3rd batch will arrive in short term;
- ▶ Some issues with the system, Arseny is in China trying to solve them:
  - ▶ Mechanical structure;
  - ▶ Light field scan procedure;
  - ▶ Re-testing PCBs, possible redesign.

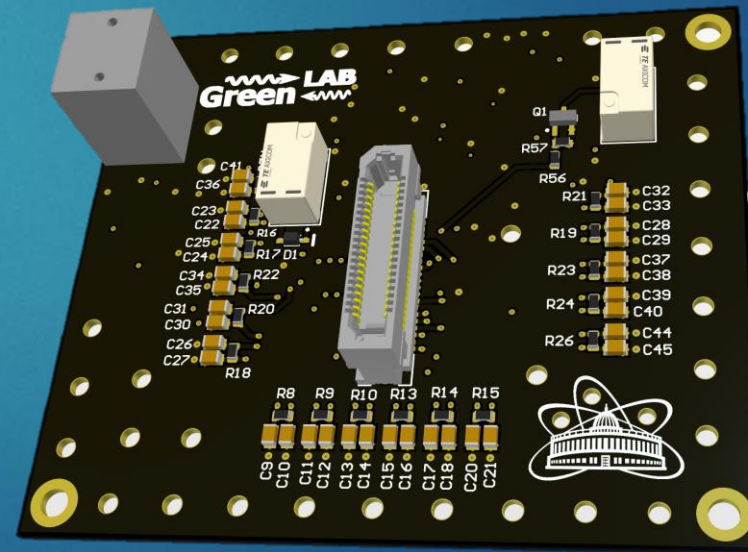
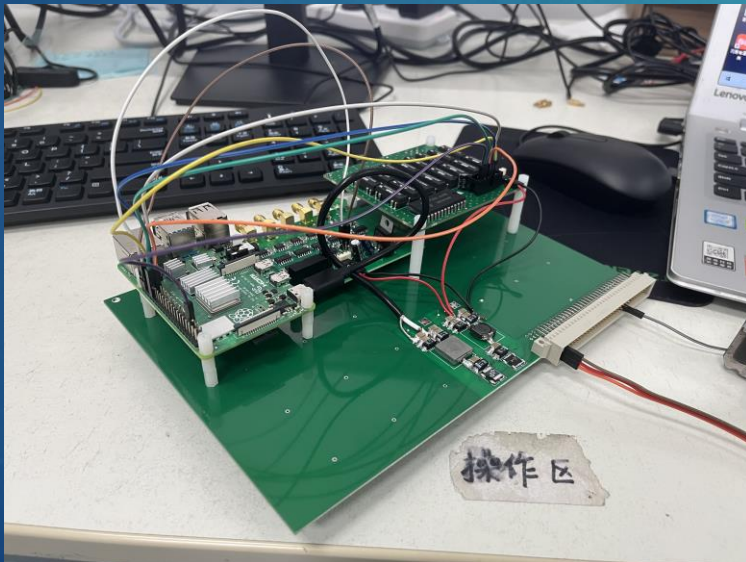
# Current Status



- ▶ About half of the tiles of the second batch has thicker resin window ( $\sim 3.8$  mm),  $2.7 \pm 0.3$  mm in contract:
  - ▶ Negligible impacts on mechanics and assembling
  - ▶ Impacts on optical performance will be checked
- ▶ Arrived at IHEP with short delay

# PCBs status

- ▶ Trigger board, multiplexer → OK
- ▶ Motherboard → almost OK
- ▶ Interface board → final tests in China



# PCBs status

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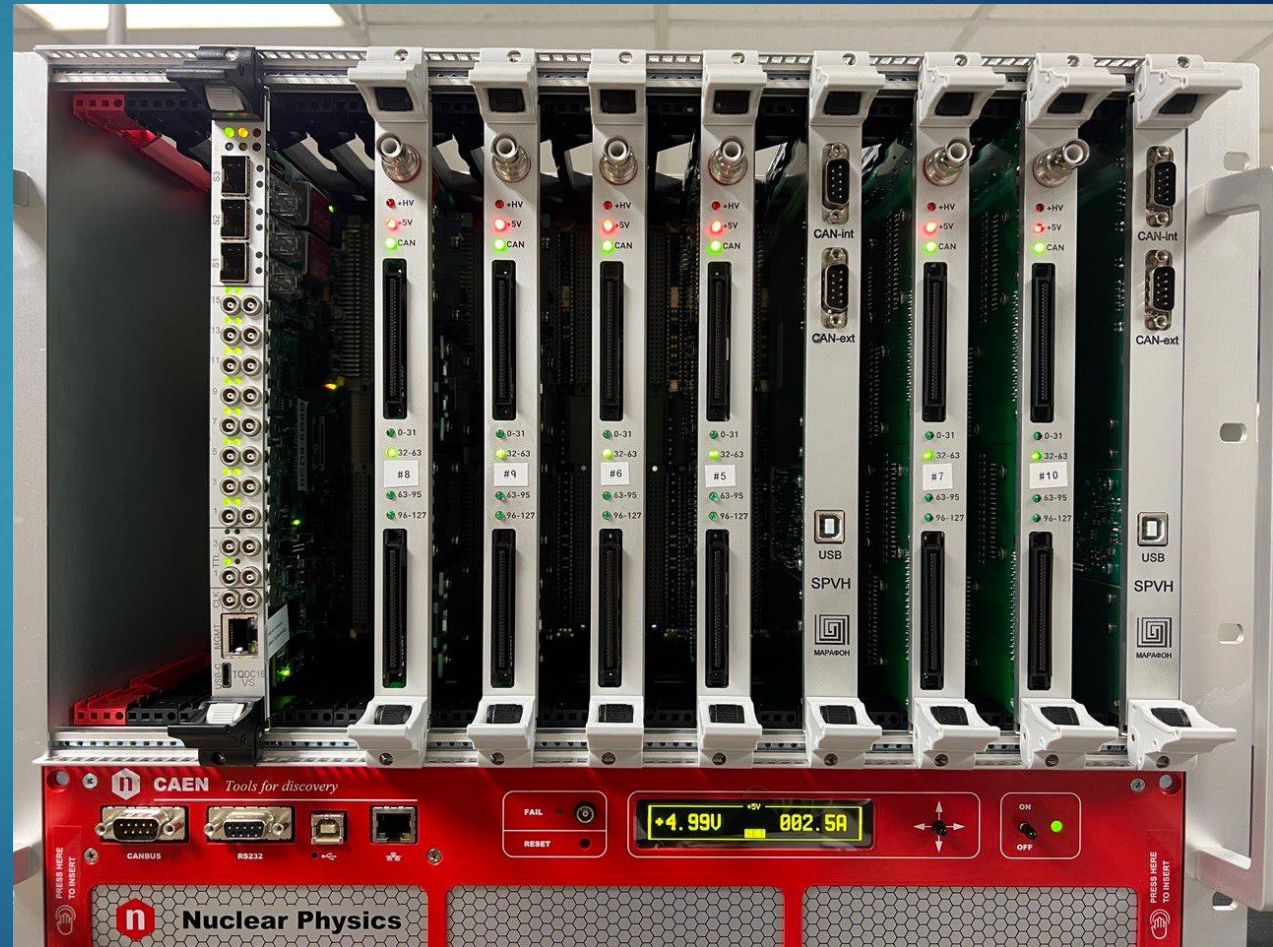
- ▶ Trigger board, multiplexer → OK
- ▶ Motherboard → almost OK
- ▶ Interface board → final tests in China
  
- ▶ Catania ready to produce them, 8 weeks needed (production + collection and soldering of all the components). Waiting Arseny green light.

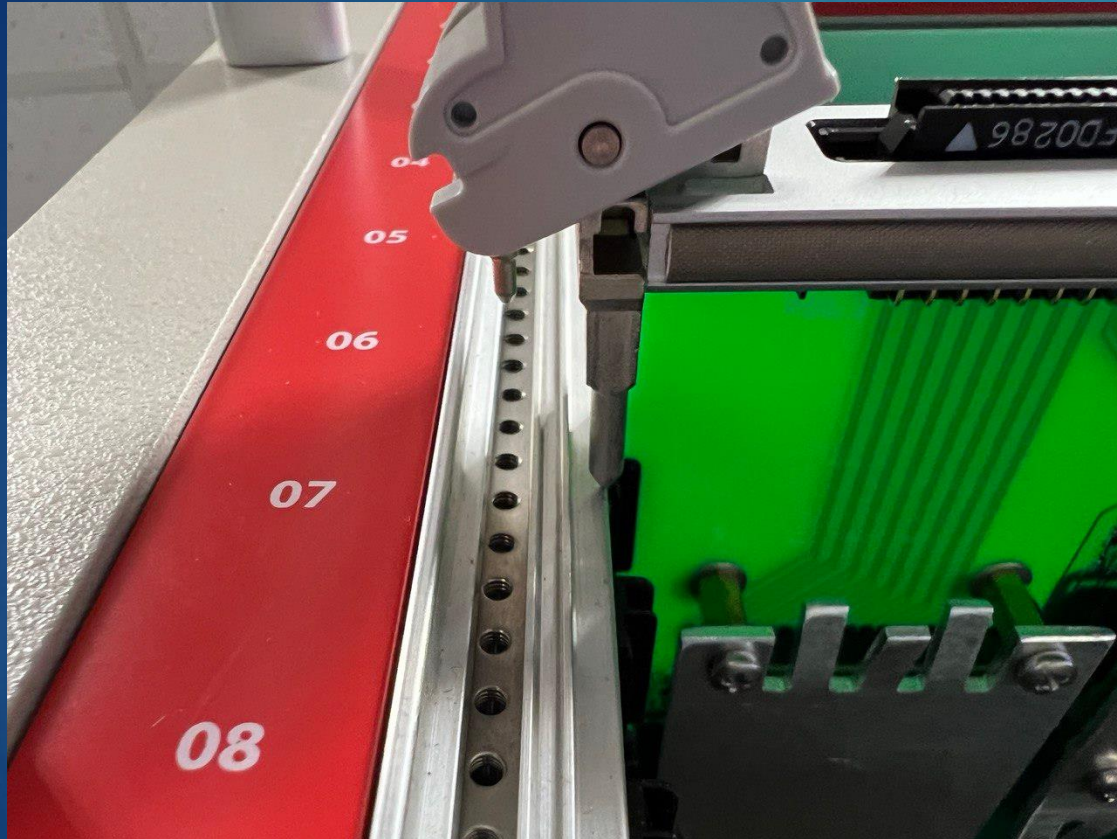
Status@Catania

# Status@Catania

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- ▶ After more than 1 years, finally the VMW cards are arrived in Catania:
  - ▶ 6 Power Supply (4 +2)
  - ▶ 2 Controller (2 PS/ 1 Controller)
  - ▶ 1 Digit@16chs
- ▶ Disclaimer! VME64x Crate is a short loan from other experiment (friend of us)



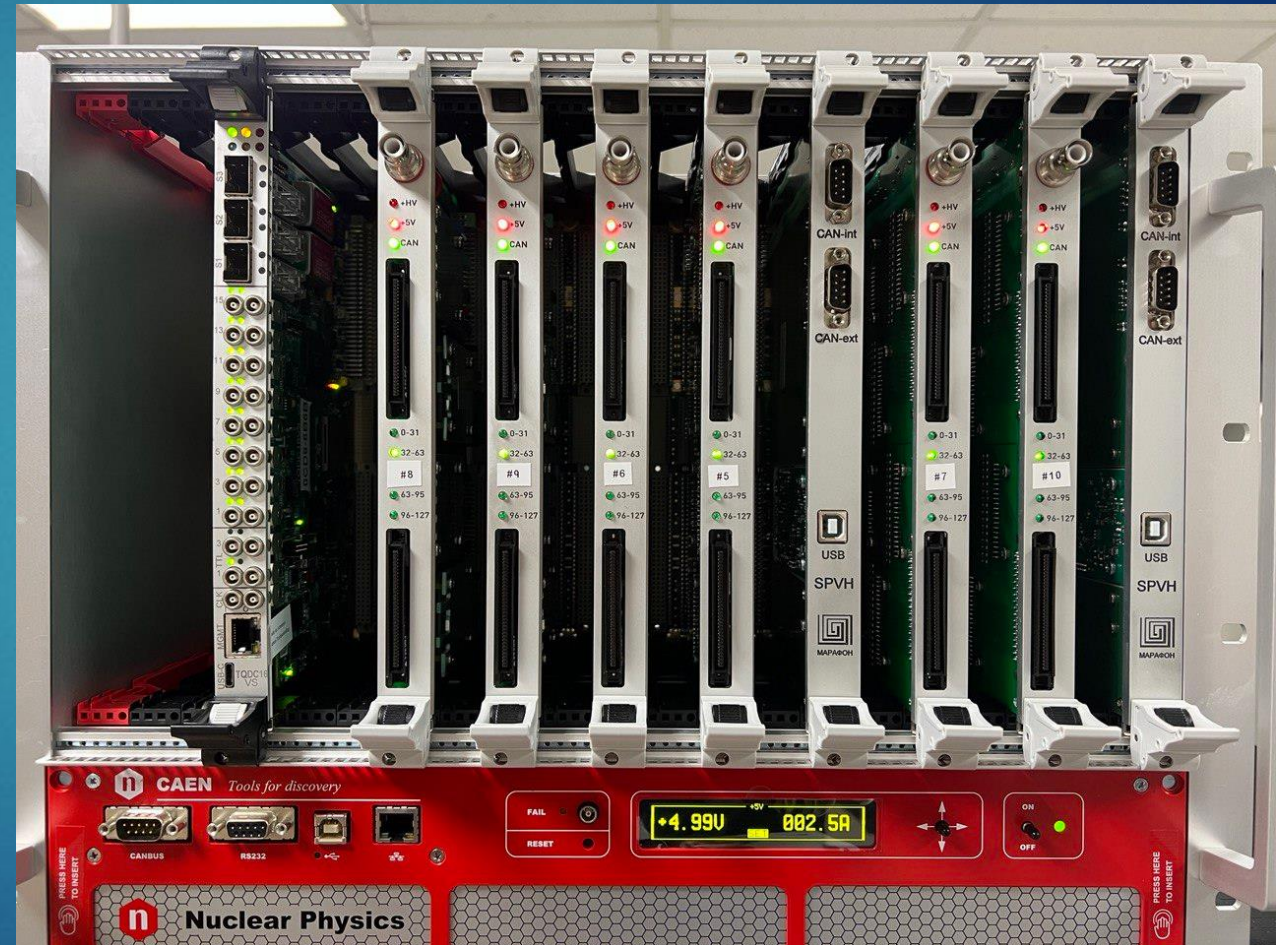


- ▶ Disclaimer! VME64x Crate is a short loan from other experiment (friend of us) and we need a VME64x

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- ▶ After 1 years a firmware update is needed for the PS, we received the firmware just last Friday
- ▶ Still fixing some issues
  - ▶ PC communications
  - ▶ Software
- ▶ Disclaimer! VME64x Crate is a short loan from other experiment (friend of us)





# Status@Catania

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- ▶ Other stuffs are needed for the final setup:
  - ▶ Mechanical structure
  - ▶ Crate VME64x
  - ▶ Flat cables PS – Motherboard
  - ▶ Diffusers
  - ▶ PCBs

**School&Workshop**  
**4 – 14 July**

Palazzo Grimaldi, Modica (Italy)  
mayorana2023@ct.infn.it

Hope to see you in Modica



# MAYORANA

Multi-Aspect Young-ORiented Advanced Neutrino Academy

# Thank you