

# Steps for MINERvA decommissioning

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# Overview

- All of MINERvA is going to be disassembled to allow moving of MINOS
- Many MINERvA parts will be reused in the ArgonCube 2x2 prototype, aka “Proto DUNE-ND”
- We are saving all the PMTs, FEBs, FESBs, VME crates, CROC-Es, CRIMs and the MvTM
- **Care needs to be taken in removal**
- Suggested PMT/FEB/FE/cable removal by physicists
  - Point 14 of the instructions <https://indico.fnal.gov/event/21541/contribution/3/material/slides/0.docx>
- These slides accompany Howard and Steve’s procedures:  
<https://indico.fnal.gov/event/21661/contribution/3/material/slides/0.pdf>



# Overview of task

- Get the master list of which FEB is where
  - Check each FEB against the list: correct list when wrong
- Unplug and store the yellow and blue CAT5 cables connecting each FEB in each chain
- Unplug the gray FEB power cables
- Remove FEB, check FEB number, check against master list and store FEB
- Unplug the 2 black LI fibers
- Unplug the 8 optical cables and store them
- Remove the PMT, check the PMT number with master list, and store it



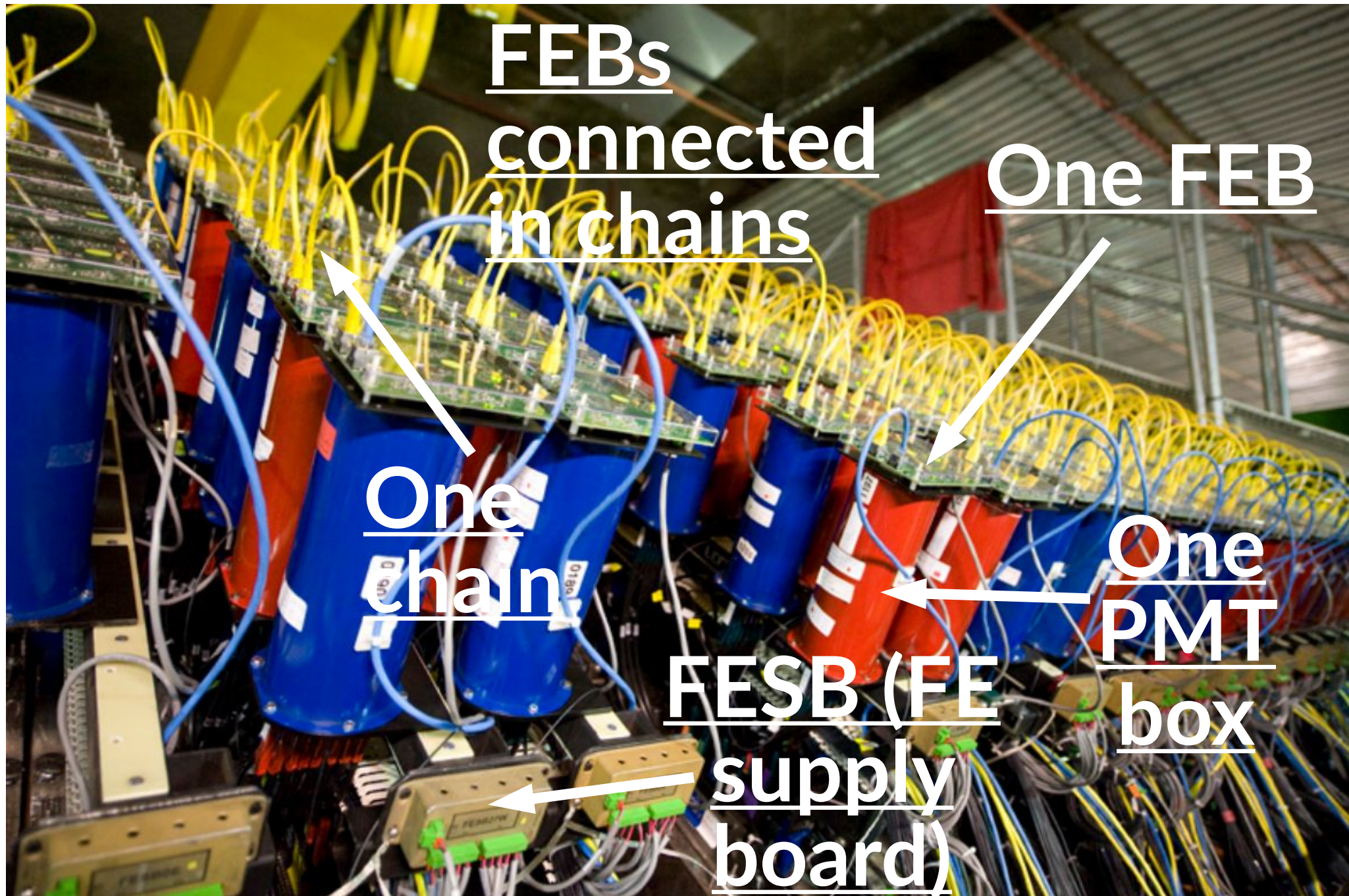
# Overview of task

- Pull back the FESB power cables on east and west sides. Remove the power cables and label them
- Remove FESB power cable from the fuse box in the DAQ rack and store properly
- Remove the FESB
- Pull back the LI bundle to the LI box
- Remove the PMT unistrut mount: John Voirin's group in charge (?)
- Rack disassembly in separate instructions?
  - Veto rack hardware won't be used
  - Main DAQ rack will be reused fully, LI rack depends on higher-level decisions on disassembly





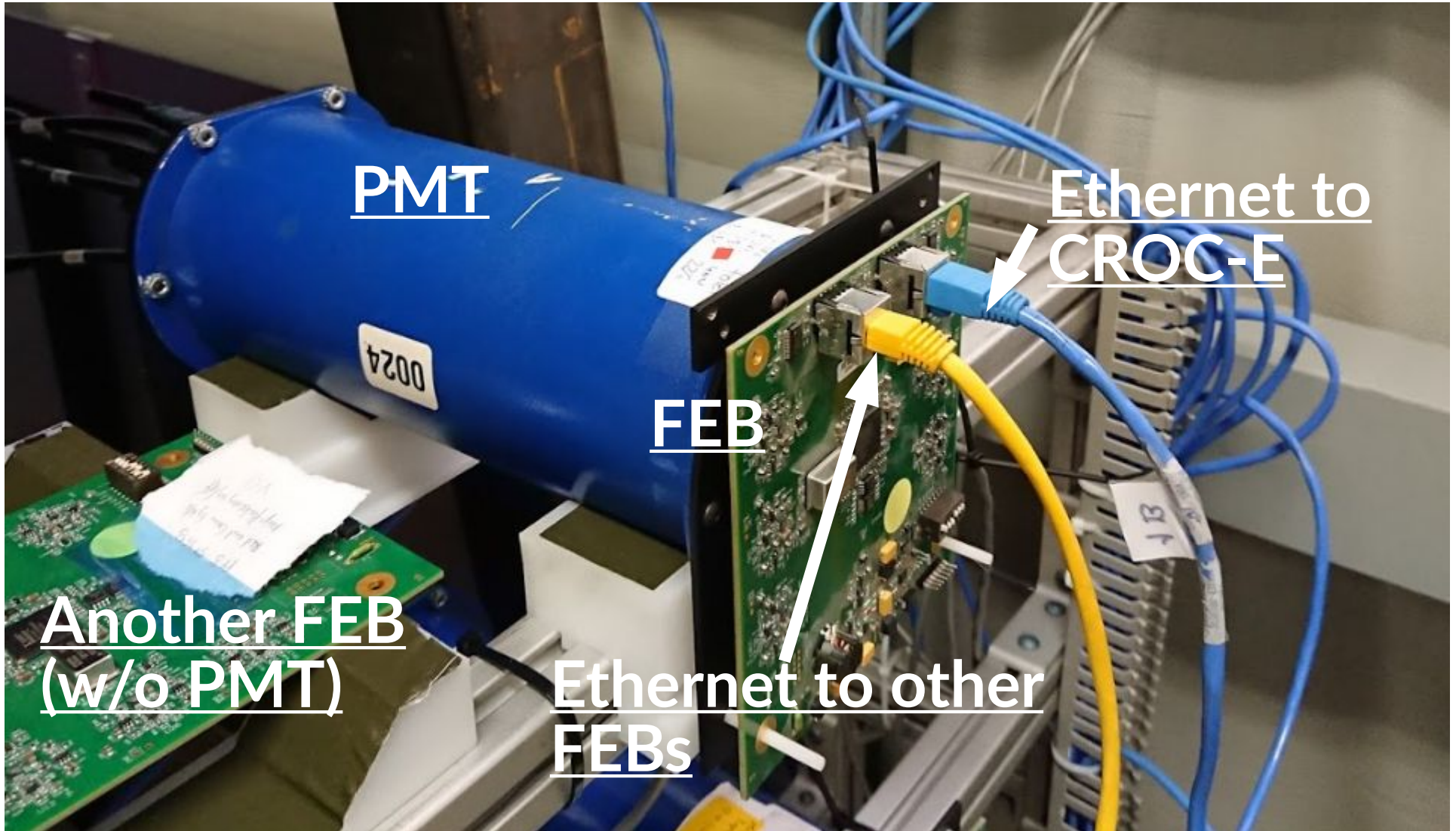
# Overview of chain downstairs







# Overview of chain in test-stand



PMT

Ethernet to CROC-E

FEB

Another FEB (w/o PMT)

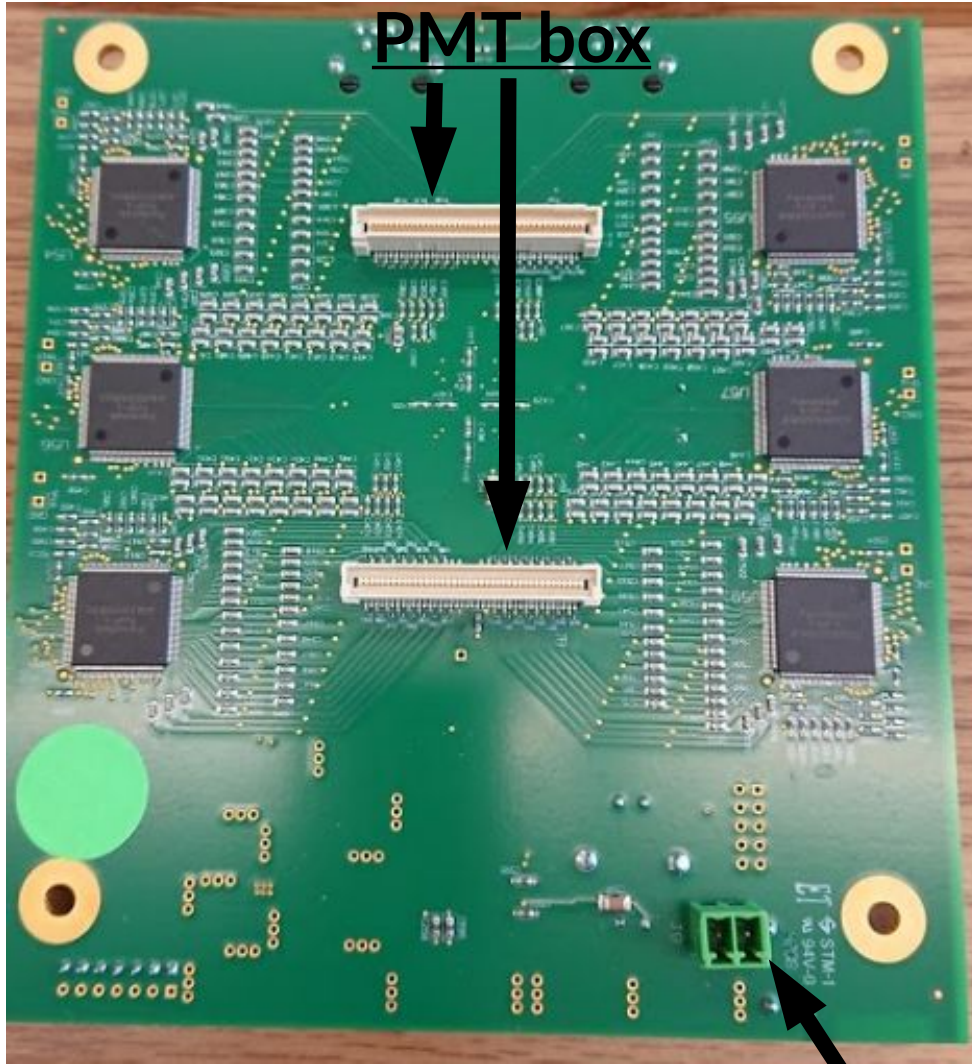
Ethernet to other FEBs





# Overview of FEB

Connects FEB to PMT box



Delivers power to FEB through FESB

Ethernet connecting FEB to FEB or CROC-E

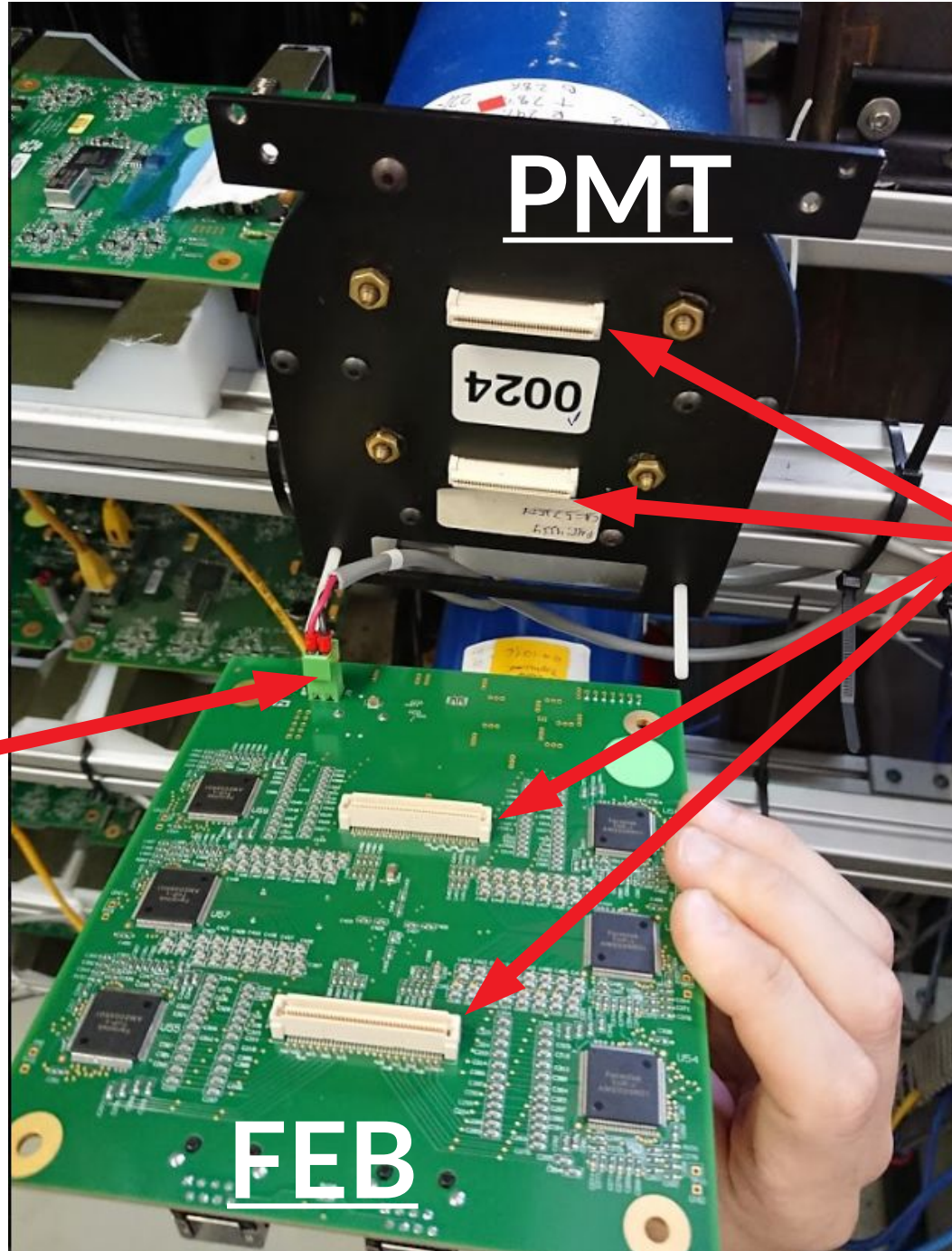


Please don't change these!





# Overview of FEB/PMT connection



PMT

0024

FEB/PMT  
connector

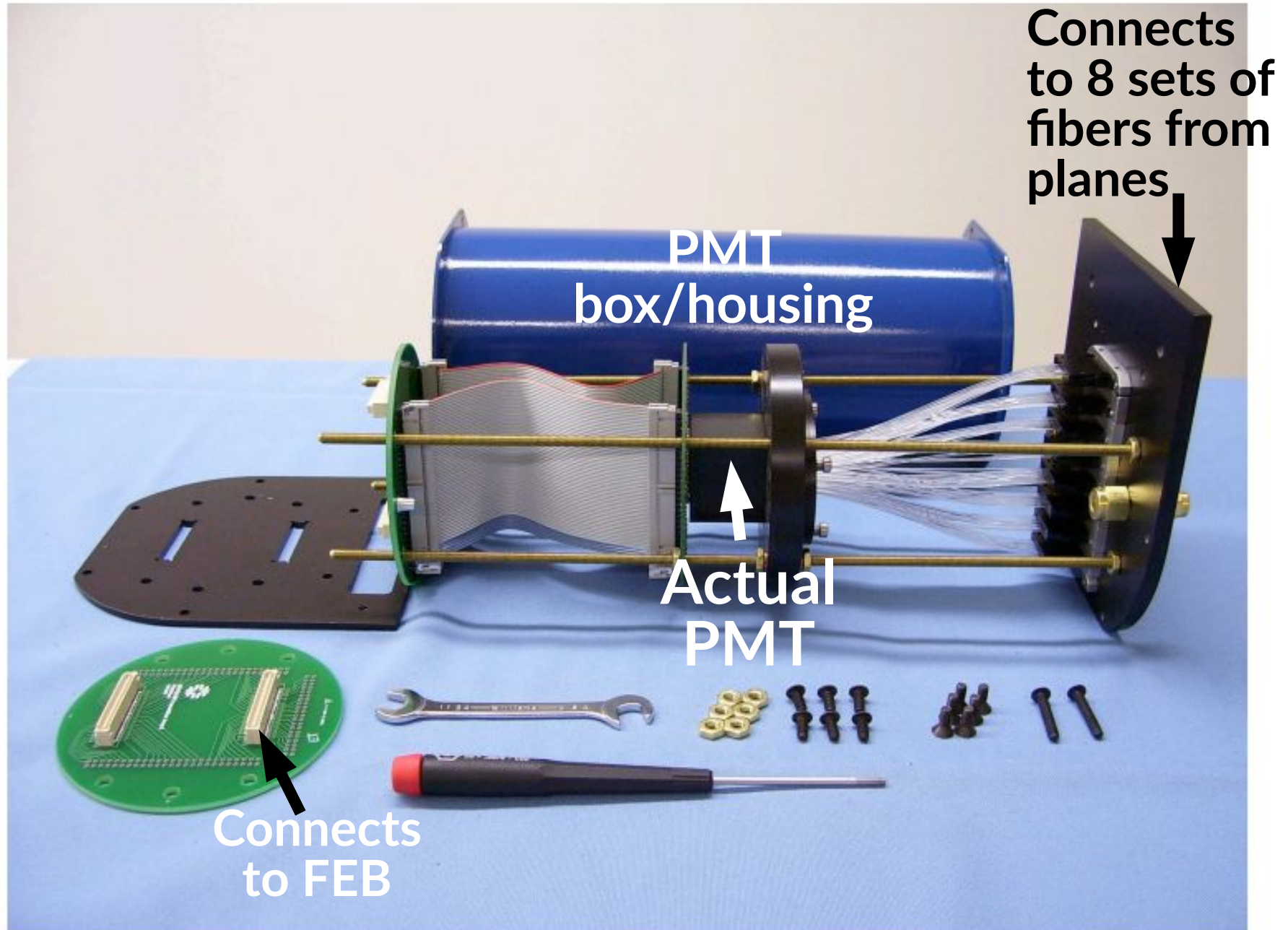
FEB gets power  
here

FEB





# Overview of PMT box





# Step 1

- Unplug and store the yellow CAT5 cables connecting each FE chain





# Step 2

- Unplug and store the blue CAT5 cables connecting each FE chain to the CROC-E

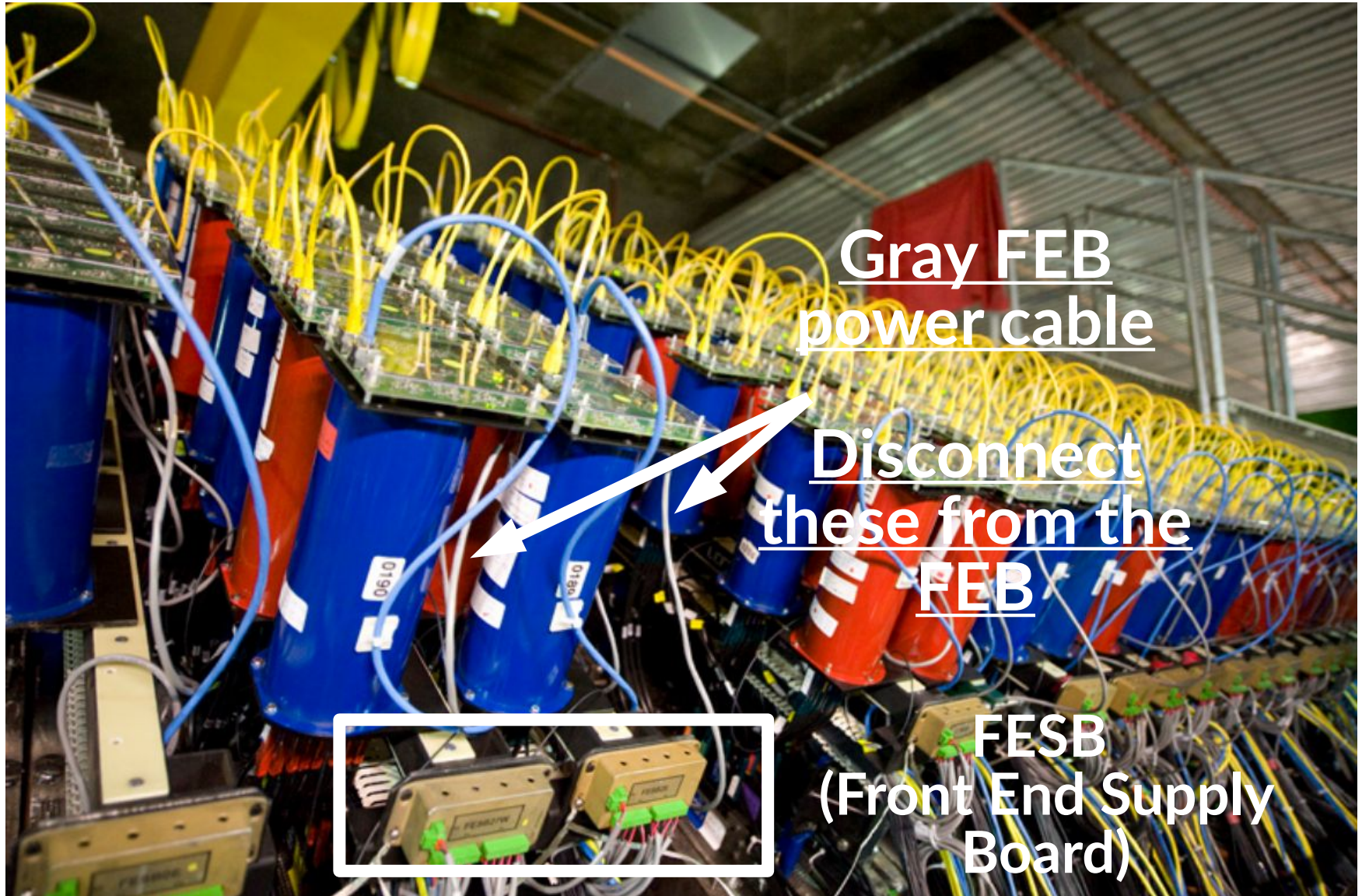






# Step 3

- Unplug the gray FEB power cables from each FEB







# Step 4

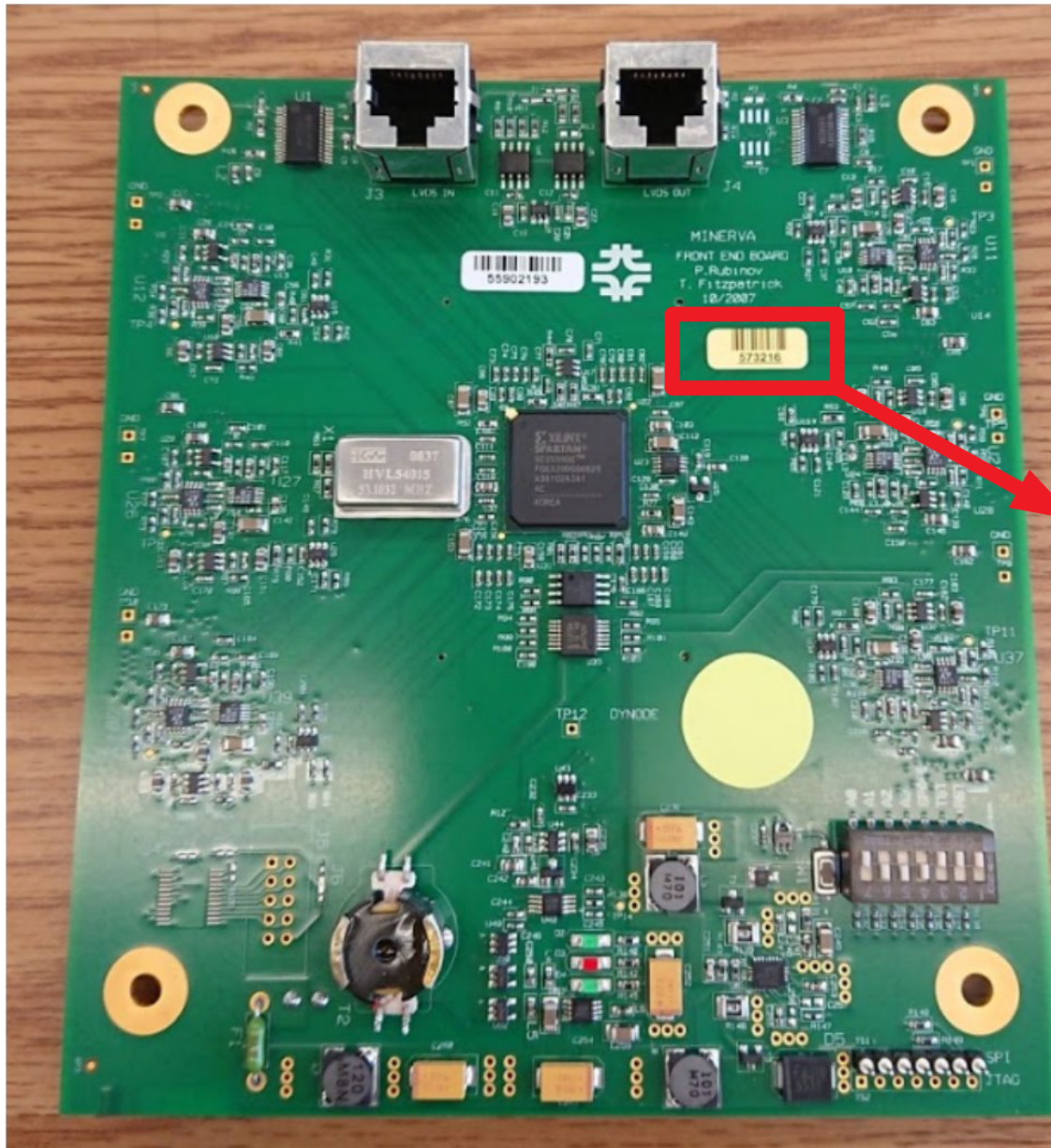
- Remove FEB, check FEB number, check against master list, and store FEB



Carefully lift up  
the FEB off the  
PMT plate using  
both hands



# Check FEB number



Check FEB number  
against master list

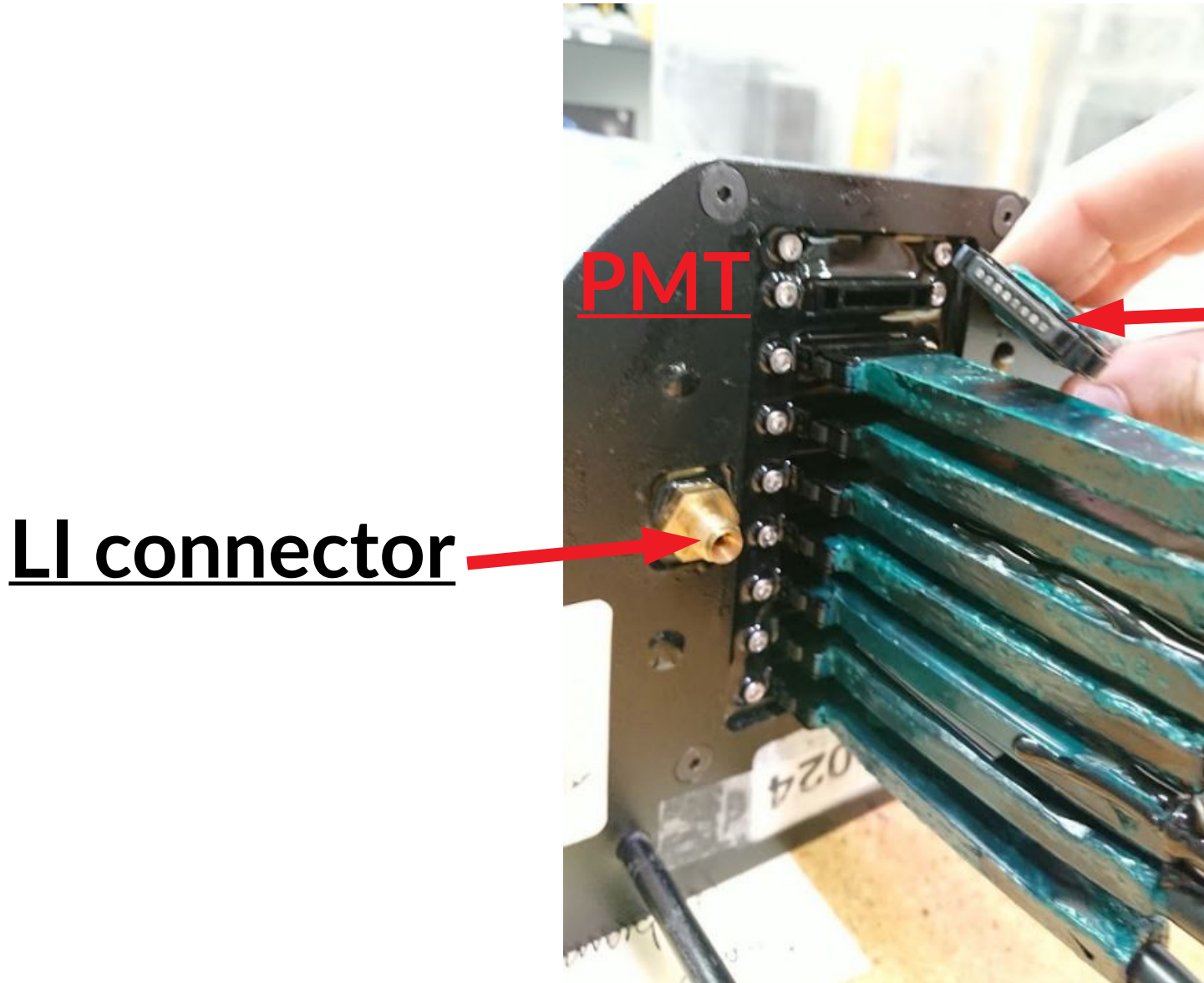






# PMT overview

- Once FEB is removed, PMT connections to detector modules and LI need to be removed



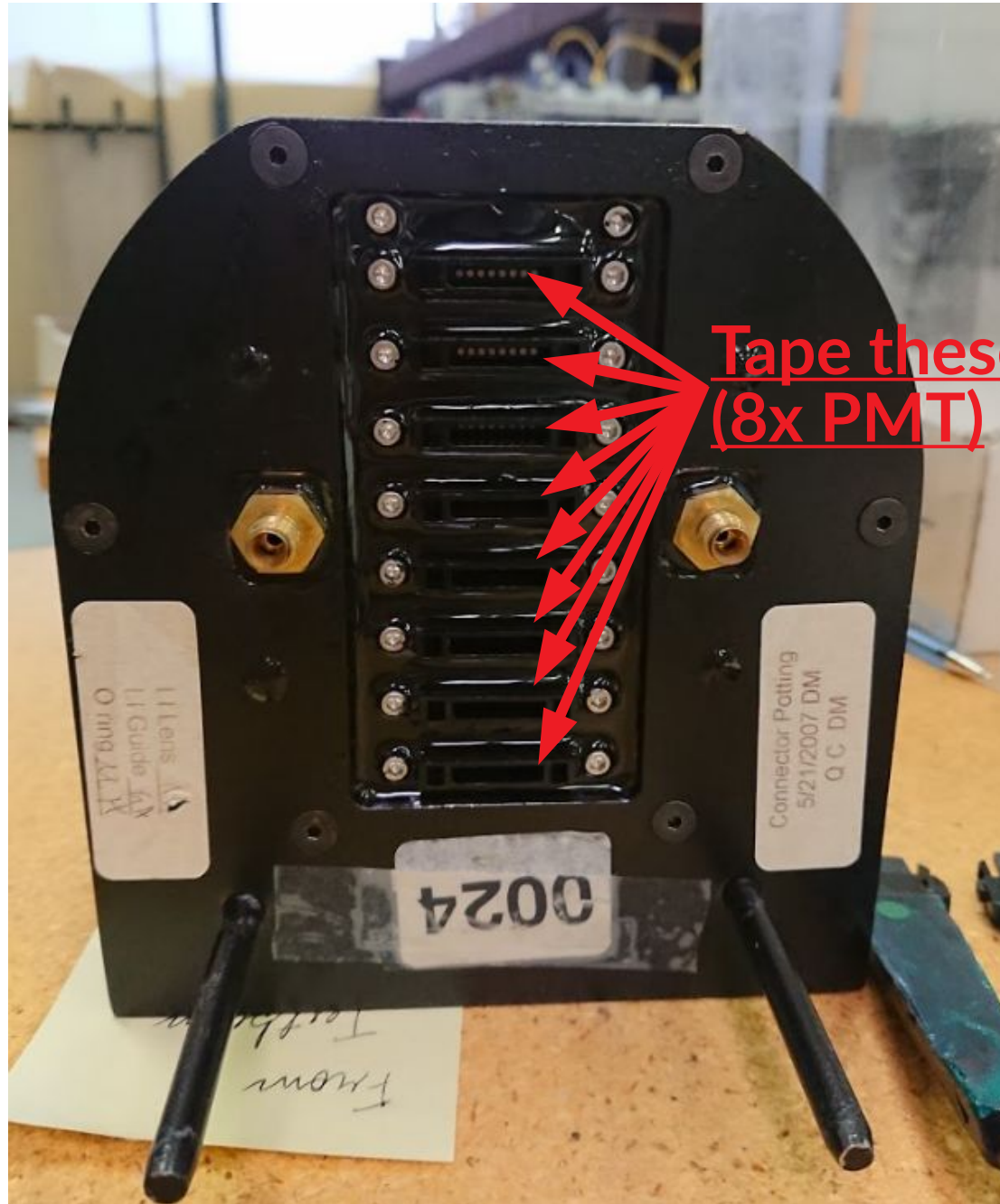
PMT

LI connector

Optical fibers to modules

- The cables and connectors are sensitive
- Avoid scratches
  - Avoid strong lights
  - Tape up and cover

# PMT overview w/o cables



Tape these up  
(8x PMT)

11 Lens AY  
11 Guide AY  
01mg ALM

Connector Potting  
5/21/2007 DM  
QC DM

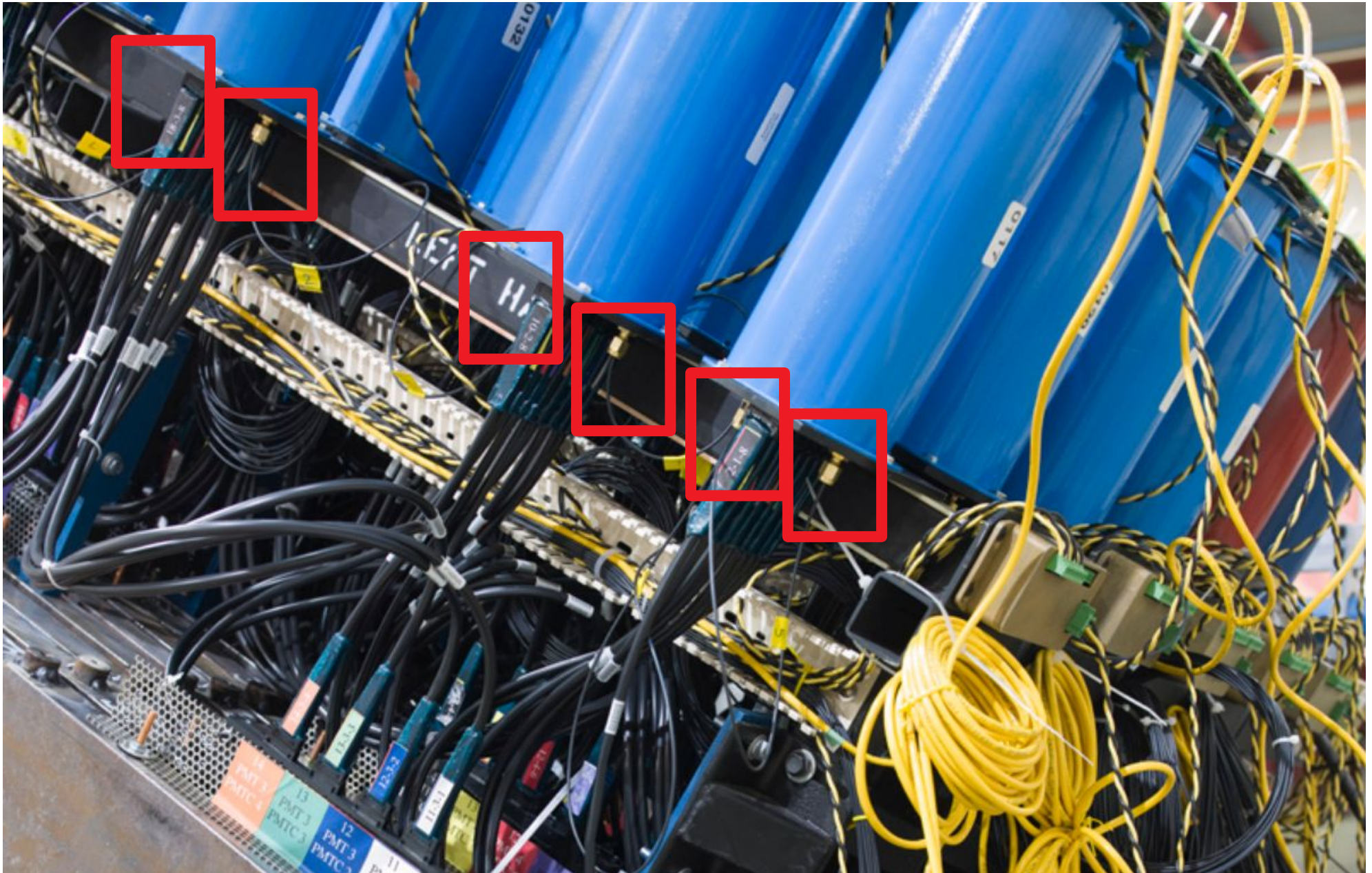
0024

From Testbed



# Step 5

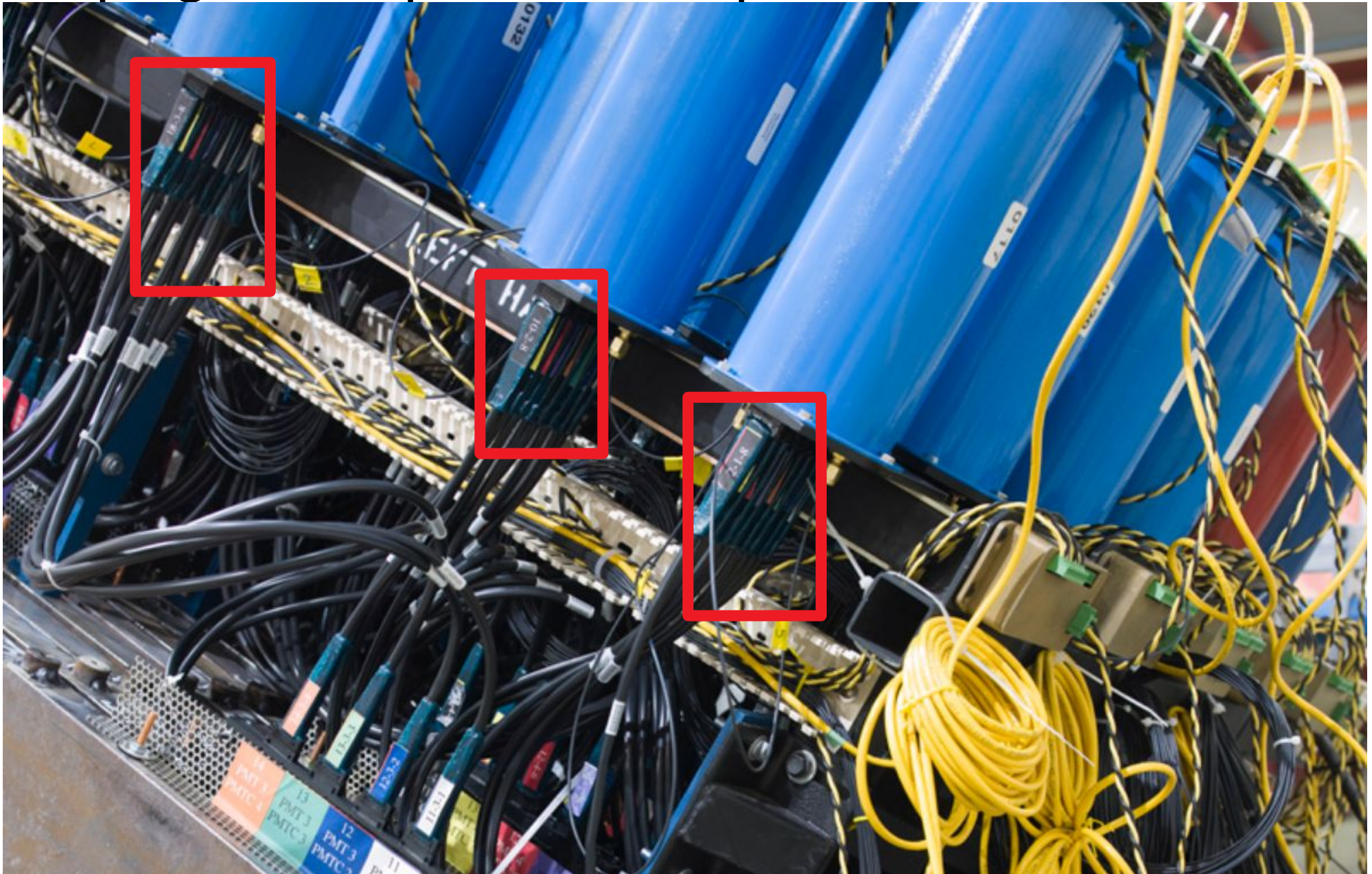
- Unscrew the 2 black LI fibers on each PMT





# Step 6

- Unplug the 8 optical cables per PMT





# Step 7

- Inspect the fibers (LI and modules) for damage and tape up: **keep track of order and label!**
- Clean before reinstallation

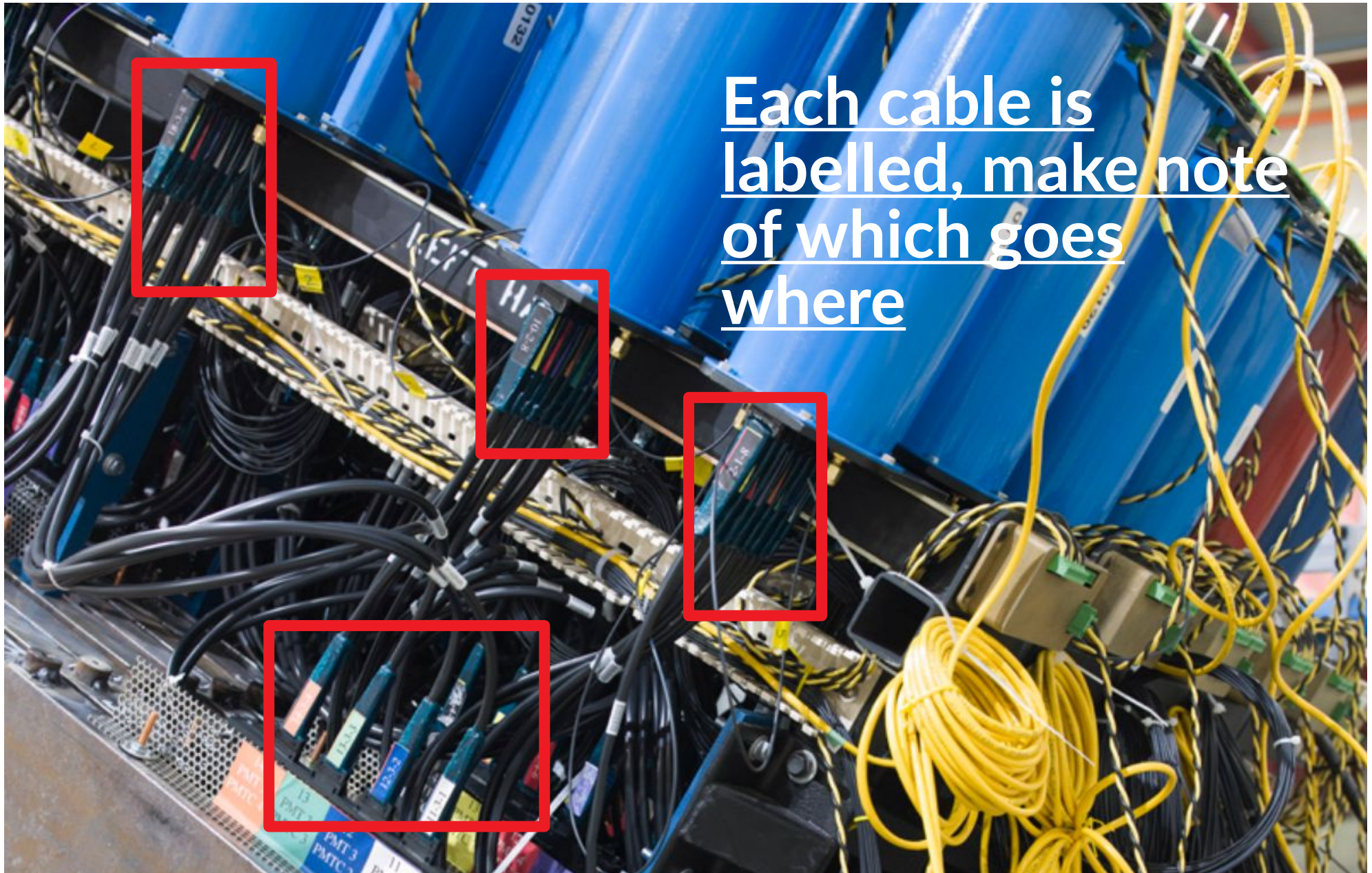


In assembly cleaning was done with ethanol and q-tip





# Step 7 details



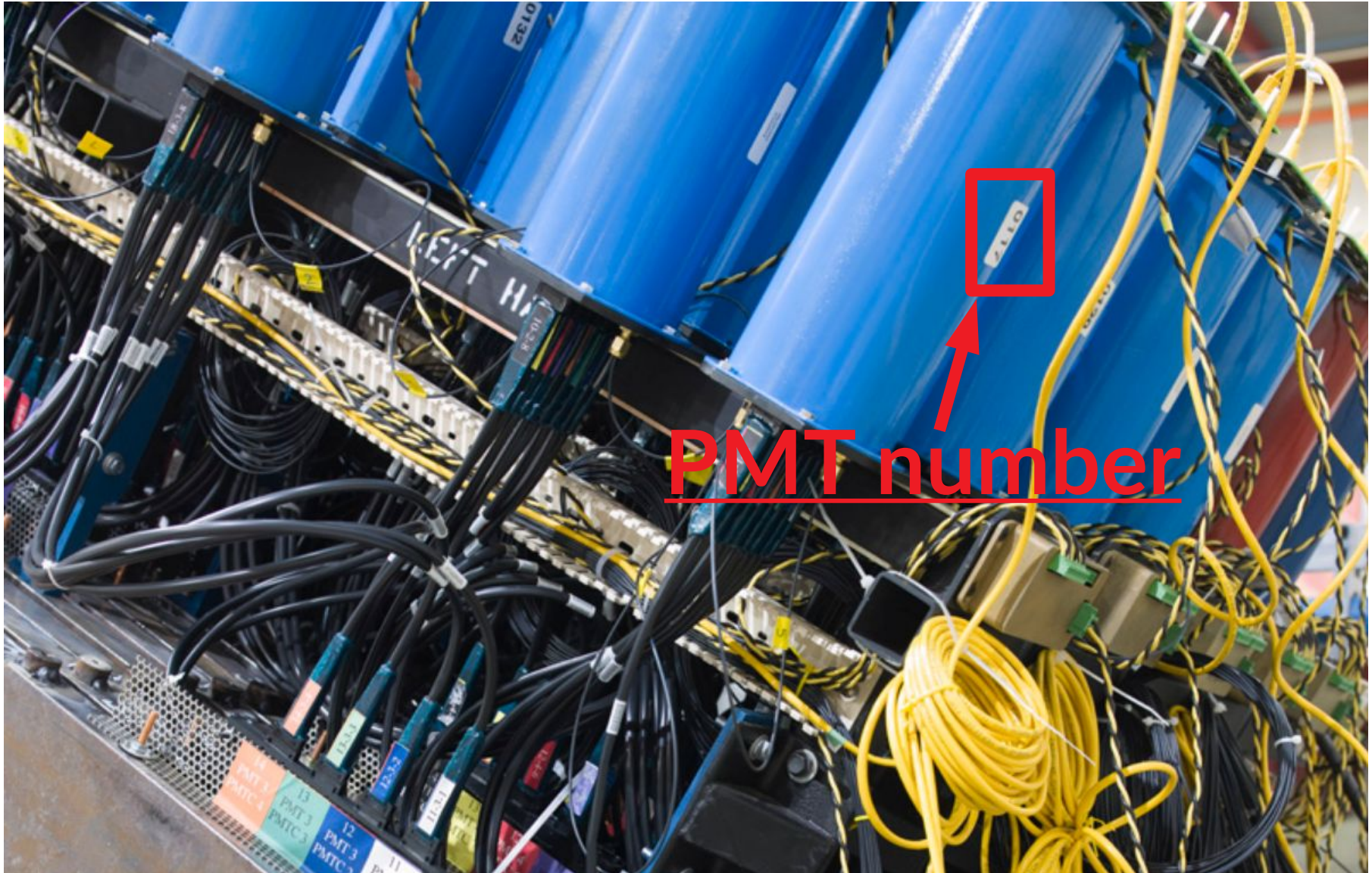
Each cable is  
labelled, make note  
of which goes  
where





# Step 9

- Remove the PMT, check the PMT number with master list, and store it





# Step 10

- Pull back to power cables to the FESB on east and west sides, remove power cables and label

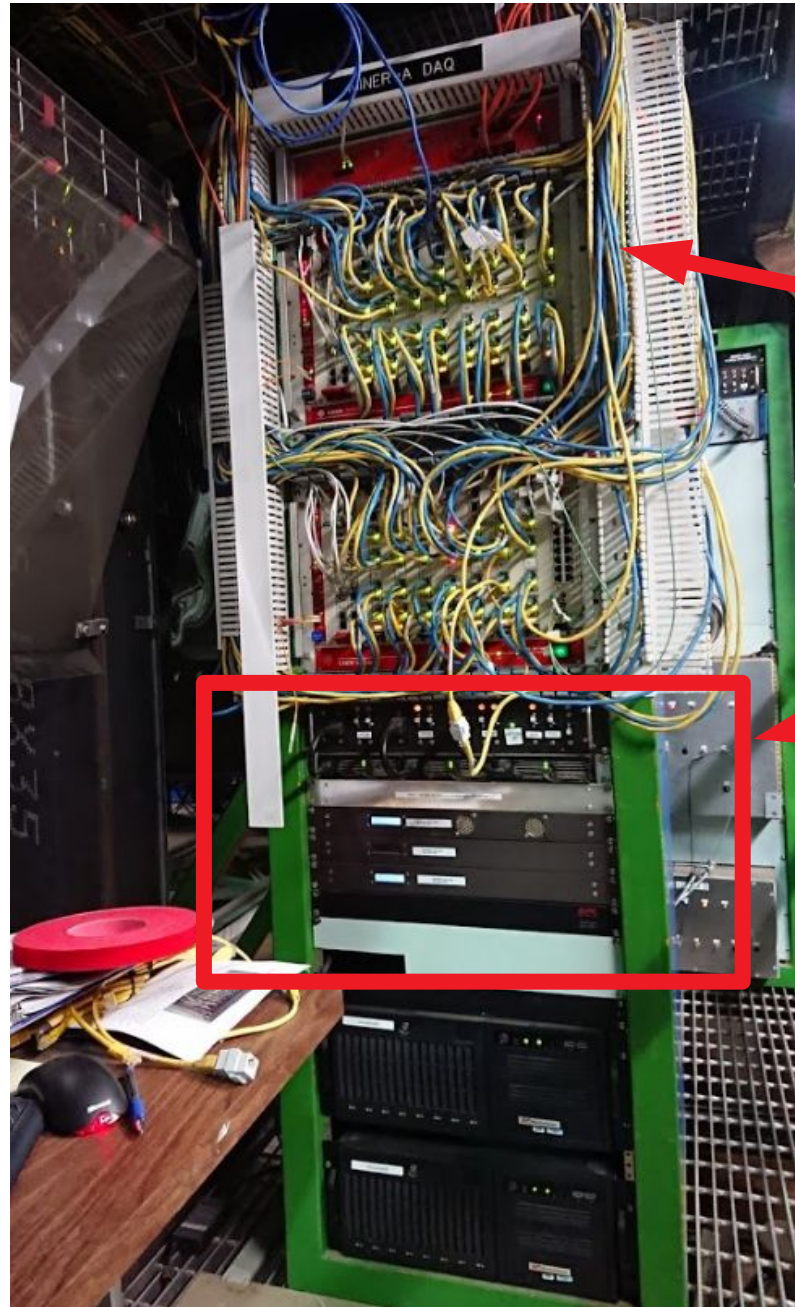






# Step 11

- Remove the FESB supply cable from the fuse box in the DAQ rack



DAQ rack

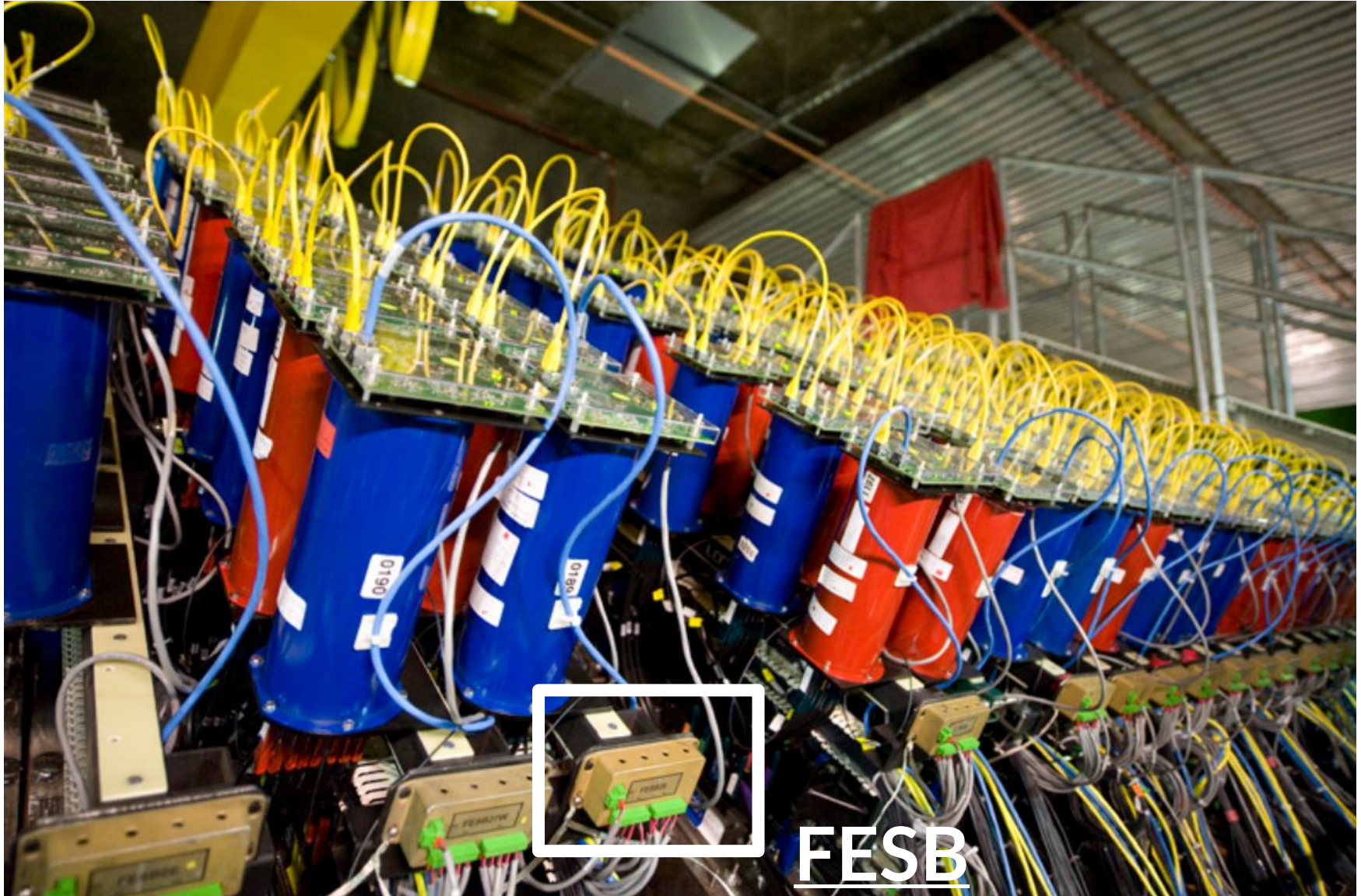
Fuse box





# Step 12

- Remove the FESB and store it



FESB



# Notes

- Avoid re-using water damaged FEB/PMTs
  - If the FEB (under the plastic covering) looks damaged, make a note of it
- The PMTs go back on same way they came off
  - Same PMT for same module with same FEB, etc
- FESB ordering doesn't matter
- Linda Bagby has length of the cables





# Thanks