# LAD Meeting

09/05/2023
Florian

# Agenda

- **New meeting time - Tuesdays 9:15am  —> next Meeting Sept 19!**

- Status

  - More manpower available soon: Carlos (Larrys new postdoc) and Lucas (Or's student)

  - GEMs — Holly

  - Laser system (also check with Julian on the Dubna box)

    - Eli got approval for the laser itself

    - Splitter —> like it was done for Dubna

    - Variable Attenuator (Emails from Or)

    - Raspberry PI (Holly/Florian - JLab)

    - Mode Scrambler (Email from Or)

  - LAD — Florian

# LAD Bars

- Setup of testing stand in progress in ESB
- Test plan for each bar
  - Check signals on scope
  - Check for light leaks with ammeter
- Next steps:
  - Develop best way to add fiber (existing fibers on bars were not glued!!!)
  - Setup DAQ and take cosmic data

- Note: Bars are mounted on foam sandwiched in Al-sheets (these cannot be removed!)
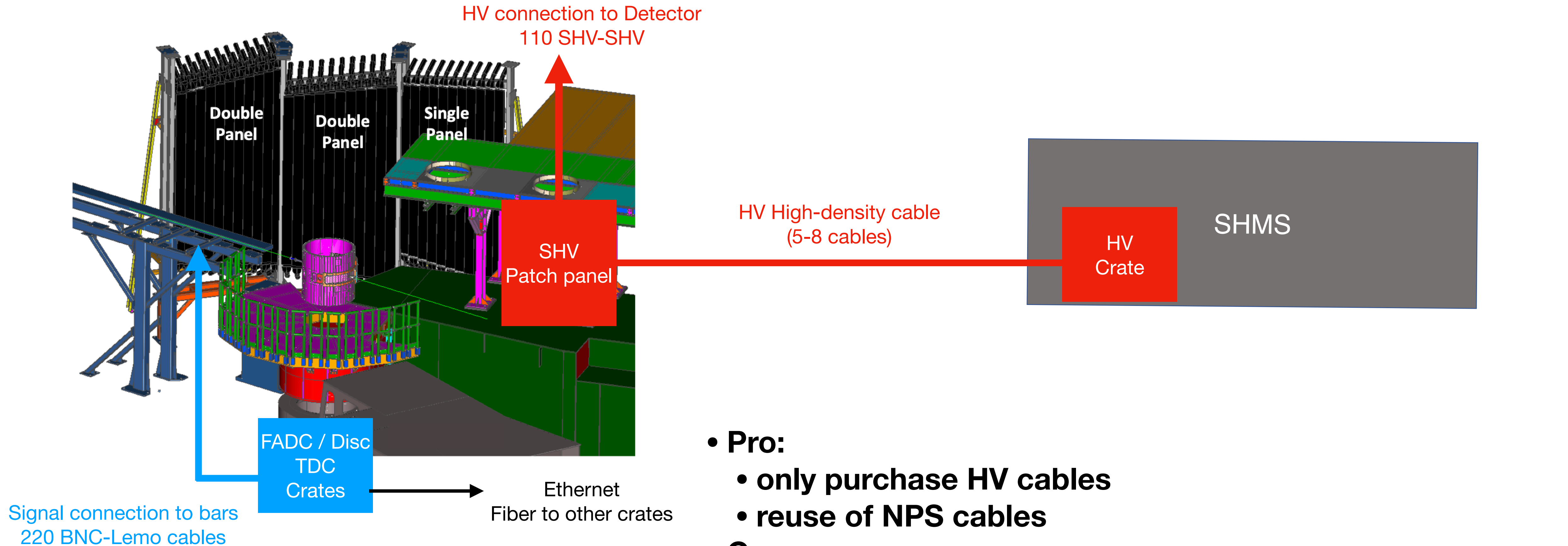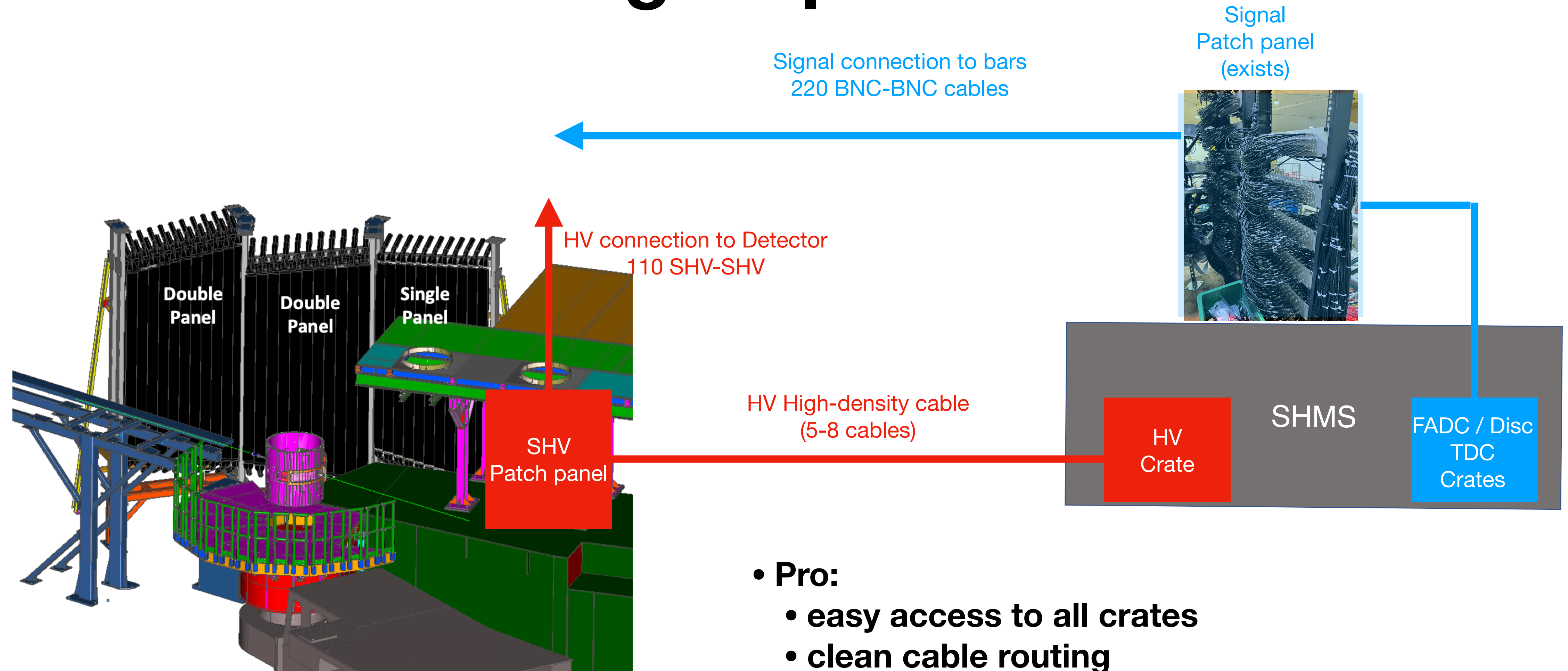


Backside

# Short Term Todo

- HV cable purchases
  - 110 SHV-SHV cables
  - Patchpanel
  - High-density cable from HV boards to patch panel
- Like: new BNC-BNC cables (220) - could reuse NPS cables and move DAQ under the target (see cabling option 2)
- Aquire laser system components
  - fibers (60-70 each 6m long) —> Holly/Florian
  - fiber patchpanel
  - laser -> Eli
  - variable attenuator —> Or
  - splitter —> Axel
  - other components (photodiode/attenuator/mode scrambler)
- Prepare testing area in ESB

# LAD Cable Routing - Option 1



HV connection to Detector
110 SHV-SHV

Double Panel

Double Panel

Single Panel

SHMS

HV High-density cable
(5-8 cables)

SHV Patch panel

HV Crate

FADC / Disc TDC Crates

Ethernet Fiber to other crates

Signal connection to bars
220 BNC-Lemo cables

- **Pro:**
  - **only purchase HV cables**
  - **reuse of NPS cables**
- **Con:**
  - **Possibly more radiation under pivot than in SHMS hut**
  - **access to crates difficult**
  - **messy area under pivot / difficult to rotate spectrometer**

# LAD Cable Routing - Option 2

Signal connection to bars
220 BNC-BNC cables

Signal
Patch panel
(exists)

HV connection to Detector
110 SHV-SHV

Double
Panel

Double
Panel

Single
Panel

SHMS

SHV
Patch panel

HV High-density cable
(5-8 cables)

HV
Crate

FADC / Disc
TDC
Crates

- **Pro:**
  - **easy access to all crates**
  - **clean cable routing**
- **Con:**
  - **purchase of additional BNC-BNC cables**

# Short Term Todo

- HV cable purchases
  - 110 SHV-SHV cables
  - Patchpanel
  - High-density cable from HV boards to patch panel
- Like: new BNC-BNC cables (220) - could reuse NPS cables and move DAQ under the target (see cabling option 2)
- Aquire laser system components
  - fibers (60-70 each 6m long)
  - fiber patchpanel
  - laser
  - splitter
  - other components (attenuator/splitter/photodiode)
- Prepare testing area in ESB

# Long term todo

- Hardware:
  - GEM testing
  - Fiber installation for bars
  - Setup of laser system
- Software:
  - Implementation of LAD bar readout into HallC software "podd"
  - Implementation of GEM readout in software (Holly/Carlos)
  - Implementation of LAD bars, material and GEMs in GEANT4 simulations (Lucas)
  - Prepare scripts to run combined simulations of SIMC for electrons in spectrometers and LAD/GEM in GEANT4 (Tyler)
  - Event display for hits in GEMs and LAD (Lucas)
  - Reconstruction software (based on the above simulations) for protons