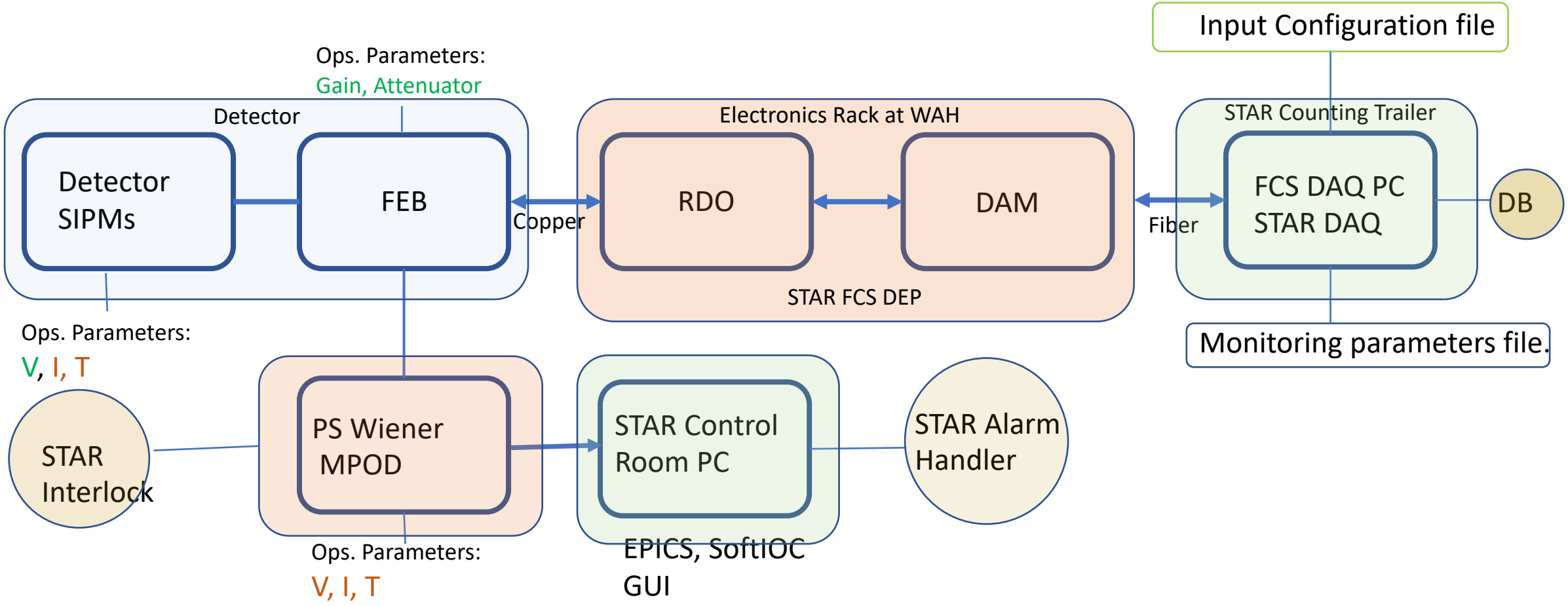
Sketches. Slow Control for forward EMCal.

O. Tsai, TIC Meeting 07/01/24

- Topic of SC was not discussed at any meetings yet for forward EMCal.
- **‘Strategy’ is to follow scheme of STAR FCS SC.**
- These slides prepared with input from Gerard and Tonko.

In context, what is involved in operation of STAR FCS?



Start of each run FEB/DEP configured by DAQ -> 'Sanity' Checks OK -> Dump monitoring parameters -> Acquire Physics Data

Start over ← 'Insanity'

For ePIC: List of parameters and dependencies on DB is TBD.

FCS Run 24, Examples.

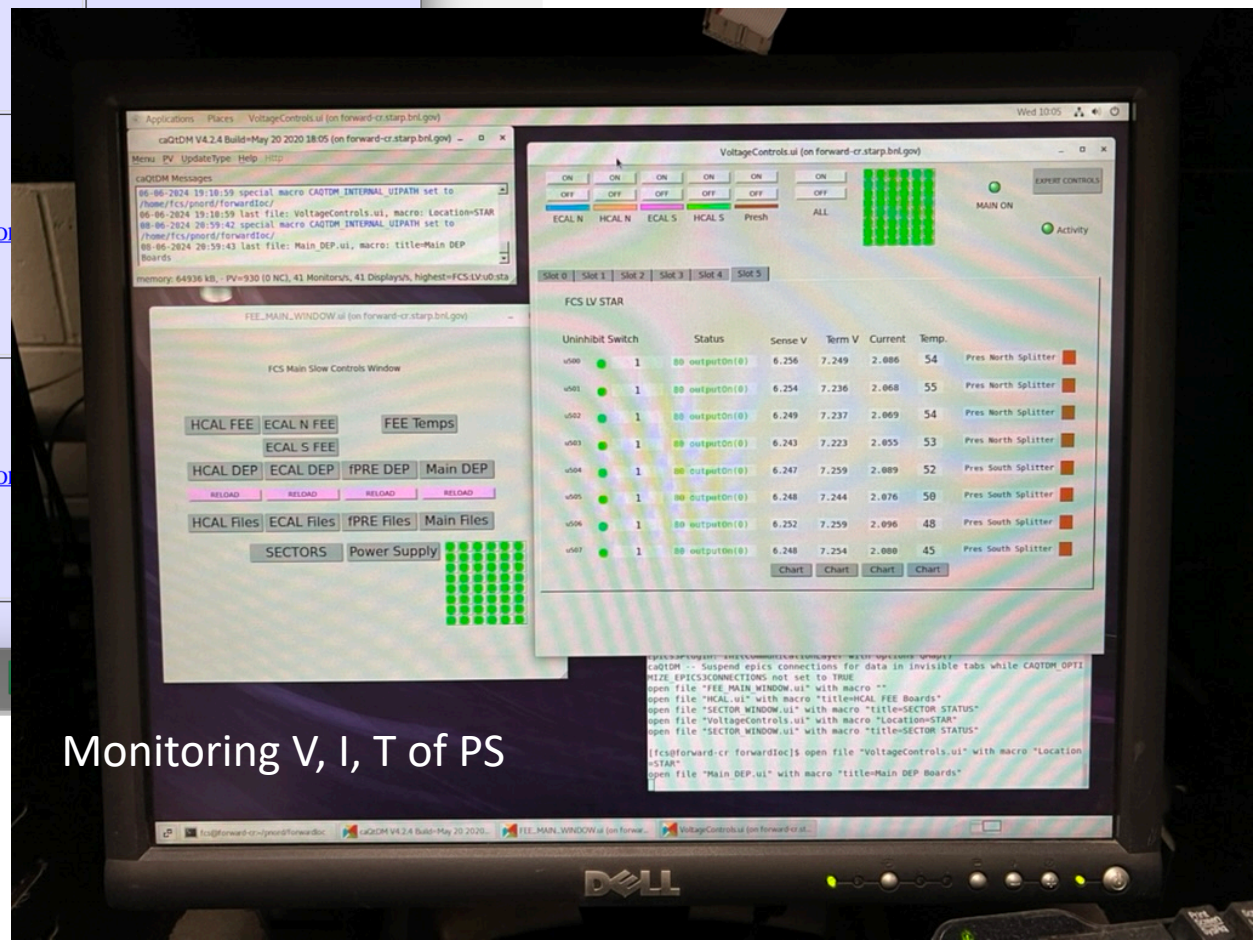
online.star.bnl.gov/fcs/radmon/

STAR > Online > **FCS mon 2019** : Ped | Led | Phy | David's || **2021** : Led | Trg | RadMon | Phy || **2022** : Led | Trg | RadMon | Rate || **2023** : Led | RadMon || **2024** : Led | Trg | RadMon | Rate

FCS Run24 Radiation Monitors

Type	History North	History South	Latest Run	Older Runs
PED Ecal	imon_Ped_EcalNorth, Total # of runs = 181, Runs per bin = 9	imon_Ped_EcalSouth, Total # of runs = 181, Runs per bin = 9	Leakage Current for ECal PedRun_25164037	Older Runs
PED Hcal	imon_Ped_HcalNorth, Total # of runs = 181, Runs per bin = 9	imon_Ped_HcalSouth, Total # of runs = 181, Runs per bin = 9	Leakage Current for HCal PedRun_25164037	
LED Ecal	imon_Led_EcalNorth, Total # of runs = 054, Runs per bin = 2	imon_Led_EcalSouth, Total # of runs = 054, Runs per bin = 2	Leakage Current for ECal LedRun_25164039	
	imon_Led_HcalNorth, Total # of runs = 054, Runs per bin = 2	imon_Led_HcalSouth, Total # of runs = 054, Runs per bin = 2	Leakage Current for HCal LedRun_25164039	

Monitoring SiPM Leakage Currents.

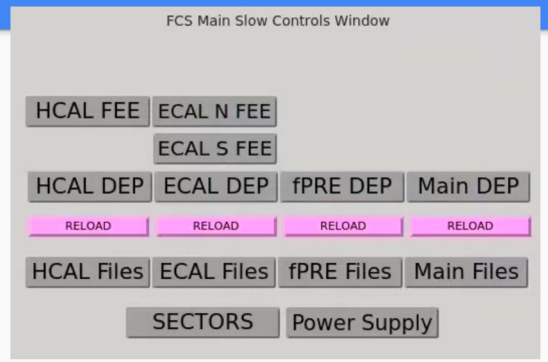


Monitoring V, I, T of PS

FCS Slow Control, by Paul Nord (Valparaiso University)

FCS Main Window

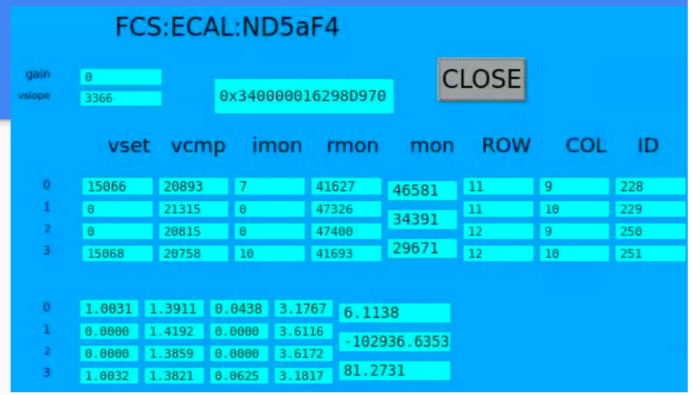
- FEE Boards
  - HCAL
  - ECAL North
  - ECAL South
- DEP Boards
  - HCAL
  - ECAL
  - fPRE
  - Main
- Configuration Files
- Sectors
- Power Supply



FEE Board Info

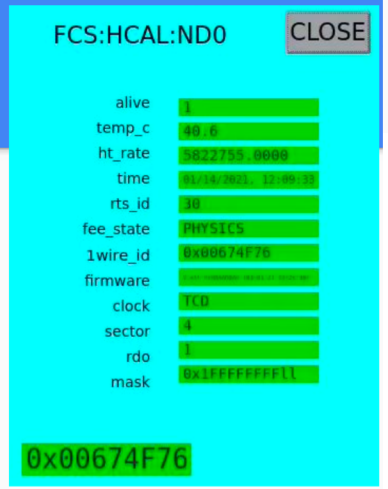
- Board Name
- Gain, Slope, Serial Number
- Channel Status (4 channels)
  Raw values, and converted
  - Vset
  - Vcmp
  - Imon
  - Rmon
  - Mon

  Row, Column, ID (physical map)



DEP Board Info

- Board Name
- Alive
- Temperature
- Update Time
- Rts
- Fee_state
- Serial Number, Firmware
- Clock
- Sector
- RDO
- Mask



Voltage Control (Wiener Crate, 40 channels, 6.5 V)

- Control
  - ON
  - OFF
  - Reset Trips
  - (Set Voltage) DISABLED
- Slots (5), Voltage Outputs (8)
  - On/Off Indicator
  - Status Text
  - Voltages
  - Current
  - Temperature
  - Chart buttons open stripcharts

Status updates every 5 seconds.
Activity light blinks when status updates.

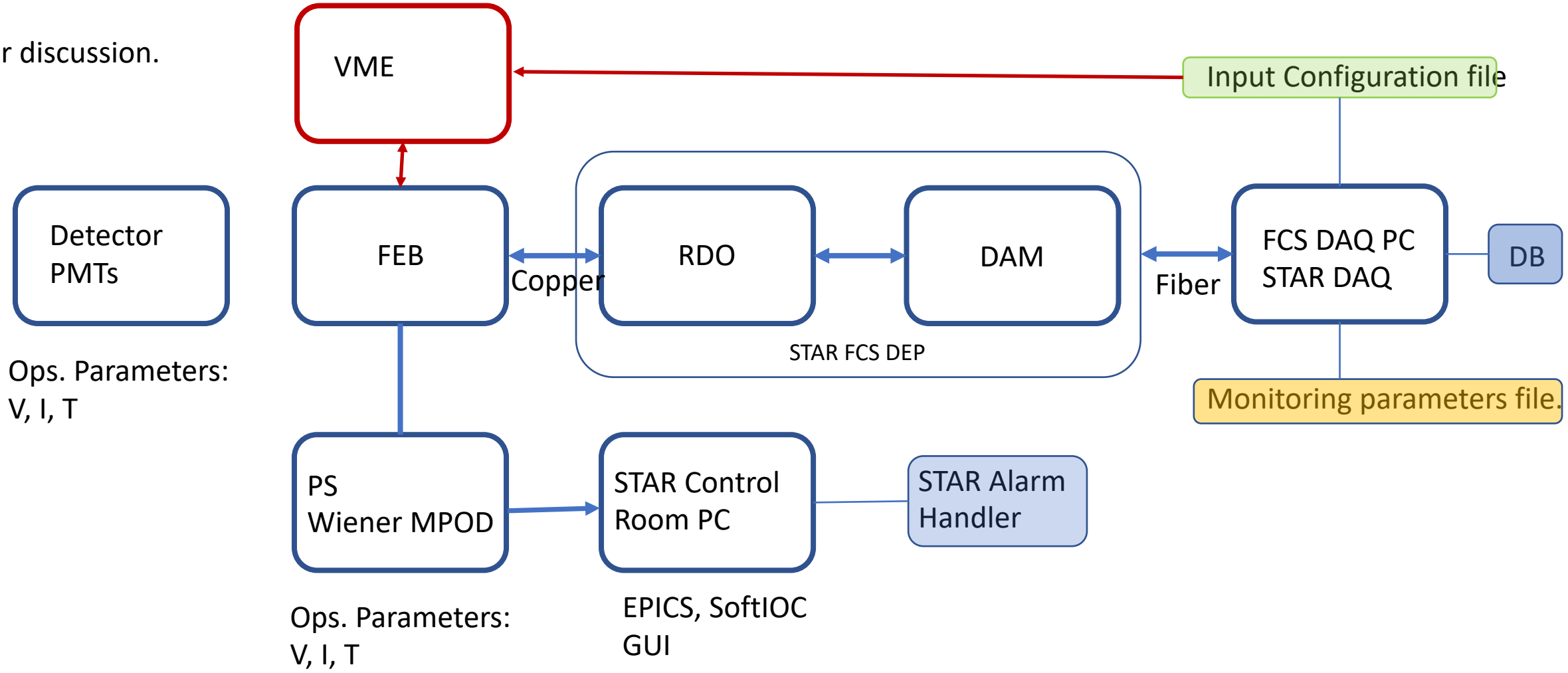
Slides for FCS Slow Control Overview:

https://docs.google.com/presentation/d/12g83EZHIai4q92So5VBbGoffwVaqNvcDSw-hMSqlgDM/edit?pli=1#slide=id.gb63251b620_0_82

Summary:

- Our base model for ePIC forward EMCal slow control is STAR FCS SC.
- Exact list of parameters, dependencies on DB and frequency of monitoring are TBD.

For discussion.



Independent form STAR DAQ way to configure and take data via slow control (VME based hardware, TCL script) (pedestals, noise, pulser, LED runs) was very useful to maintain and operate BEMC. Parallel method of controlling FEEs independently from any other sub-systems at STAR.