

MVTX Status

Camelia, Grazyna, Ming

03/18/2021

sPHENIX L2 Project Meeting

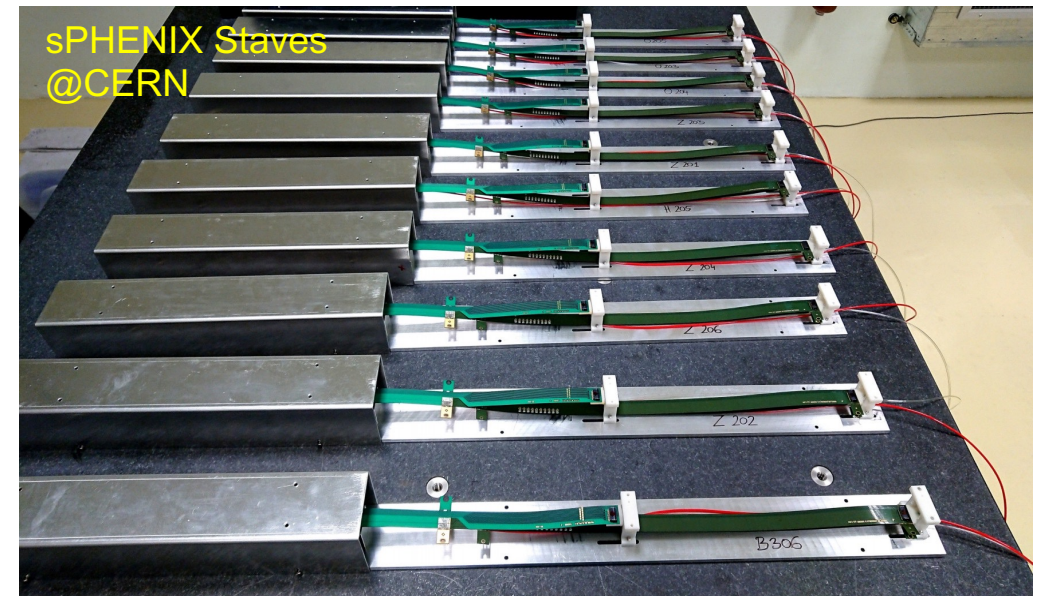
Stave Production Near Completion

Goal: 84 Gold/Silver Staves

- 76 staves produced → 90% of goal
 - 71 Gold → Full MVTX with Gold Staves (48)
 - 5 Silver
 - 6 more to complete the production
- Next:
 - Shipping and QA at LBNL

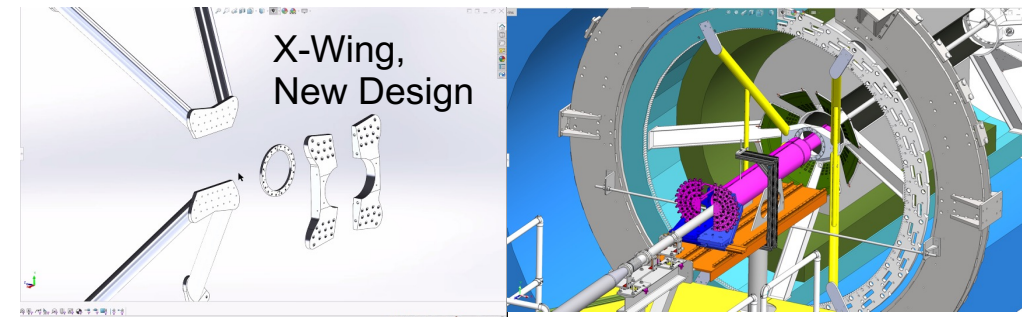
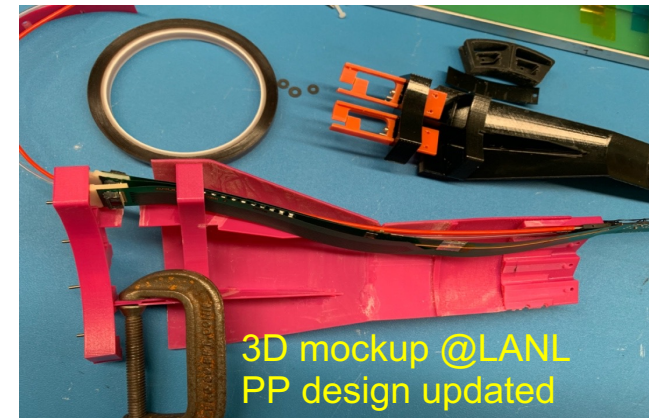
Stave production meeting with CERN
@March 11, 2021

no	quality	quantity
1	Gold / OK	40
2	Gold / CAN	31
4	Silver / OK	1
4	Silver / CAN	4
5	TOTAL	76



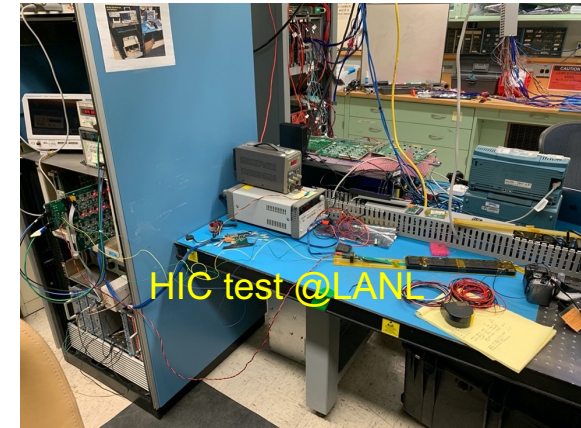
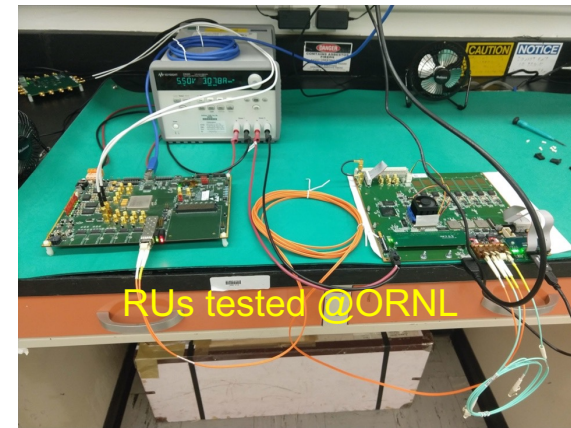
Mechanical System

- CFC production in good progress at WorkShape
 - Spring-back issues being addressed
 - Possible schedule delay 1~2 weeks?
- 3-D mockup to check PP-cable interferences
 - Finalize assembly fixture layout
- X-Wing and insertion system
 - Design updated, ready for production
- Cooling system design and test in progress
 - Initial test @BNL
 - Stave cooling, preliminary design available
 - Electronics RU & PU cooling, later, by MIT/LANL



Electrical System

- 60 production RUs tested
- 30 production power boards tested and calibrated
 - Power board I2C issues resolved, RU FW updated
- CAEN power system
 - Test setup at LBNL
- Detector safety system design in progress
 - Meetings with BNL last week
 - Safety interlocks, slow control
- A new HIC tested at LANL – shipping QC
 - Reproduced CERN results, noise level $\sim 5e$, Gold
 - Confirm the shipping safety
- Readout and control system integration
 - mGTM development @BNL
 - MVTX firmware
 - AMD full readout test
 - w/ new RU FW & Date Format
 - Slow controls, sPHENIX
 - Power system, racks layout etc.



Near Term Plan

- **Stave shipping & QA**

- Prepare for detector assembly
- sPHENIX QA DB

- **Mechanical structures**

- Continue CFC production at WorkShape
 - Produce low-cost “evil-twin” at the end of production
- Finished X-wing design, ready for fabrication
 - Build full mockup, w/ beam pipe @MIT
- Assembly fixture fabrication
 - Pending PP1/PP2 finalization (3D mockup)

- **Readout and control integration**

- AMD full chain readout
- mGTM
- Slow control

- **MVTX detector safety system**

- Integrate into sPHENIX safety system

- **Power & Cooling systems**

- Finalizing the design
- system tests and procurements

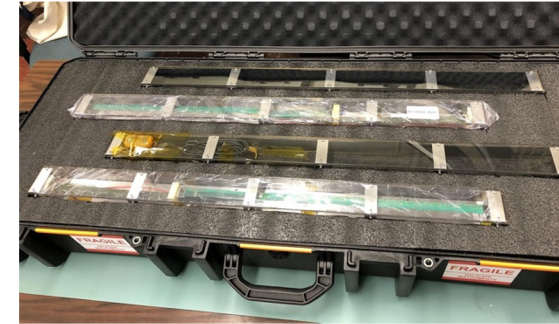
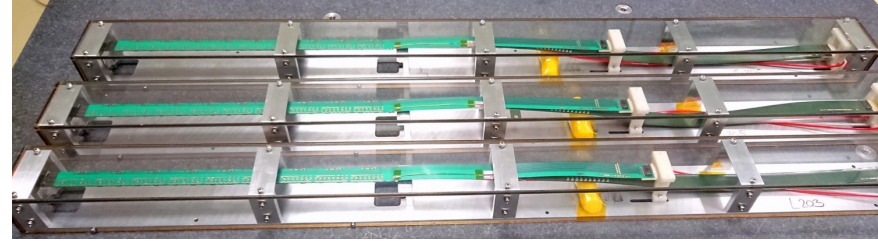
- **Experimental Safety Review**

- power cables etc.

Budget update -> more engineering support in FY21

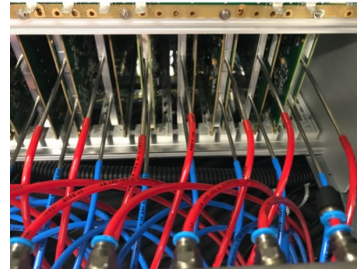
- LBNL, in progress,
 - extra ~\$6K for clean tent safety system
- MIT, in progress ->
 - finish X-wing +insertion system, assembly fixtures,
 - **cooling system -> MIT + LANL**
 - extra evil MVTX (for insertion dry testing in BNL)

Staves @CERN

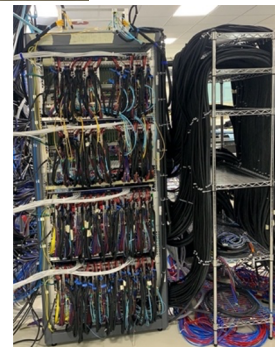


Test fit CFC/staves @LBNL: ~April, 2021

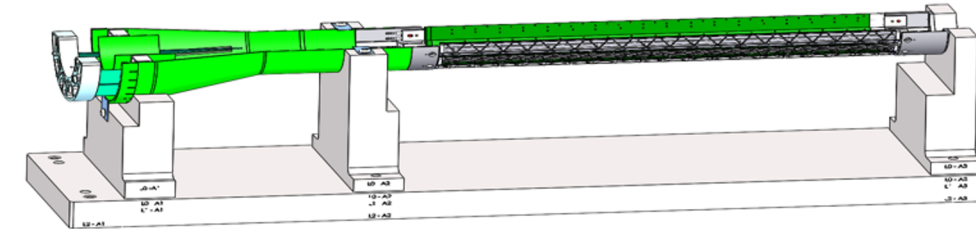
Detector assembly Review: ~May 2021



Racks + Cooling
(Shown ITS system)

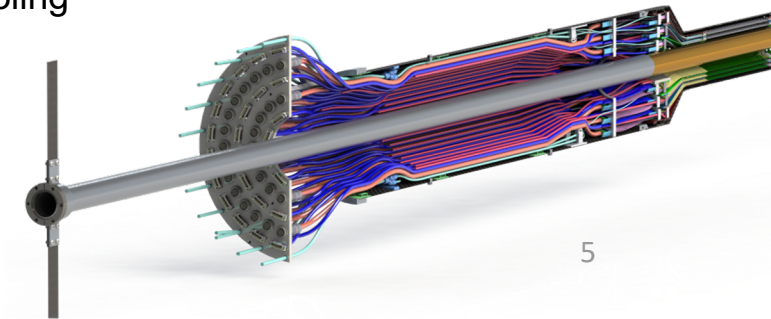


MVTX Status @sPHENIX L2



Full test @LBNL ~end of 2021

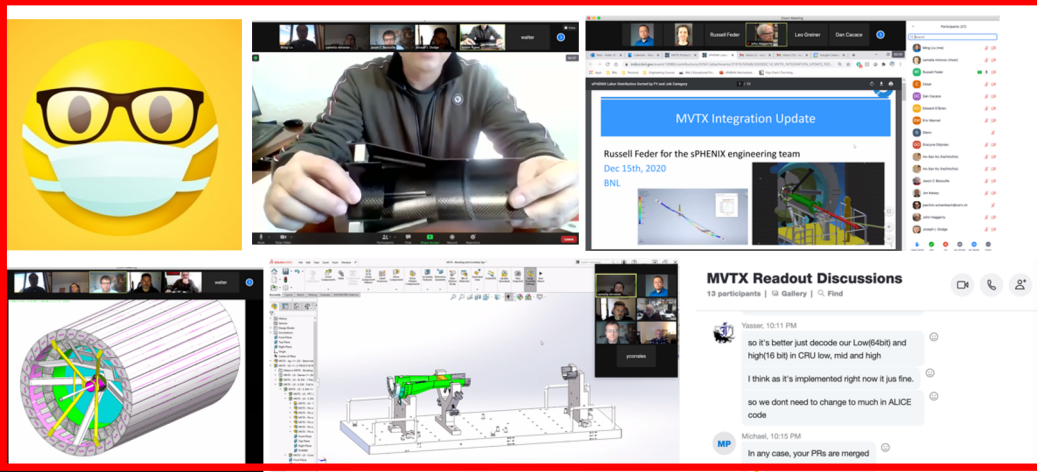
- Stave readout
- Cooling



backup

Status & Plan

Pre-COVID19 Schedule



Some delay in CFC production, but still on track for completing the assembly work in 2021

Readout, Control and Electrical System Integration

- 3 RUs sent to factory@UK for repair
- FW/SW synced to latest ALICE/ATLAS code
- Low-level slow control under testing
- mGTM progress at BNL (40MHz/LHC)
- Readout and service cables and power system

