

MVTX Status

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sPHENIX L2 Meeting
05/13/2021

Stave Production Completed at CERN

- next step: shipping!

- 114 HICs assembled
- 84 staves completed
- Yield for sPHENIX staves from assembled HICs = 73.7%

- 79 **GOLD** staves, 94%:

- 44 **GOLD/OK**
- 35 **GOLD/CAN**

- 5 **SILVER** staves, 6%:

- 3 **SILVER/OK**
- 2 **SILVER/CAN**

Shipping status:

- 3 gold and 1 silver staves @LBNL
 - Stave testing and QA in progress
- 4 Silver-staves shipping in preparation:
 - Double check issues observed in previous shippings (abnormal pressure drops recorded by the logger)

We have 2 transport cases, capable of shipping 20 staves per trip

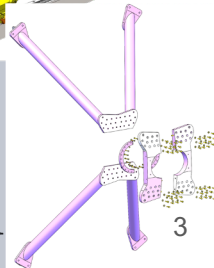
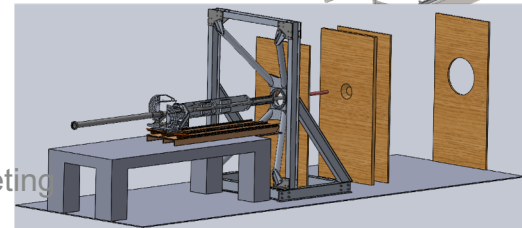
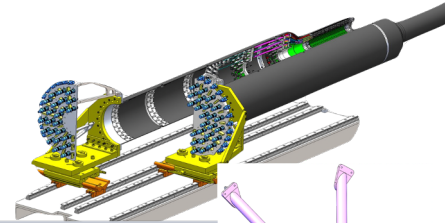
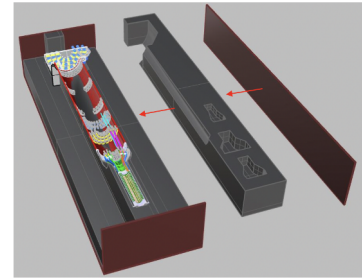
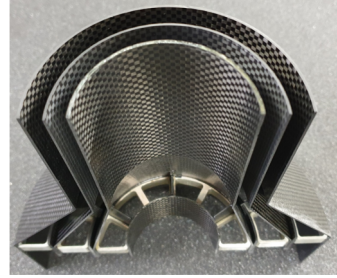
Mechanical Design and Production

- **Carbon fiber+Al pieces (Workshape/France)**

- 1st half of detector:
 - all looks good so far for the layers & SB
 - CYSS (the conical shell that houses all layers): going through 2nd iteration to deal with some spring-back
 - Shipment: end of May
 - Designing France->LBL shipment box to be used also as:
 - Main assembly fixture in LBL
 - LBL->BNL shipping box (w/ half fully assembled detector)
- 2nd half: expected in LBL after ~3-4 weeks (some parts already made)

- **Insertion mock-up**

- Essential work this year: define insertion sequence, define procedure to safely transfer from rails to X-wing, survey strategy, etc
- Support (**X-wing**) + insertion **mechanism**: ready to be ordered
- Ordering connectors, cooling lines, etc

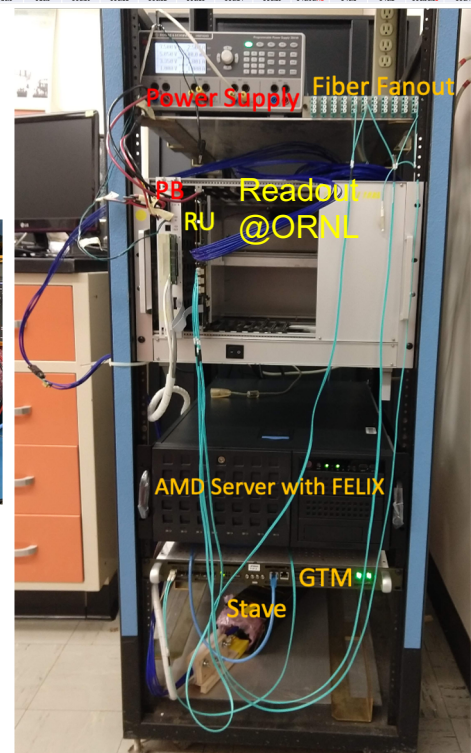
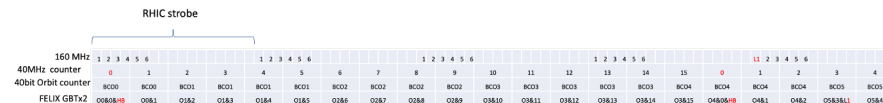


Readout Integration Progress

- New data format and readout modes
 - Triggered readout
 - Continuous readout
- mGTM integration in progress @LANL
 - Powered up, testing underway
- CAEN power system in progress
 - Working w/ vendor on control SW
- Slow control and monitoring
 - 2 CANbus controllers ordered and received
- Readout system setup @ORNL
 - First event readout with internal trigger sequencer

Proposal

- 17.02 160MHz clocks = 1 RHIC stroke
- Use 32bit Orbit counter plus 8 bits of the BC counter (BC[11:4]) to transmit BCO (40bit)
- Internal 40MHz counter is used to generate HB triggers (e.g. every 16 counts shown here)
 - 12us = 480 40MHz counts -> 9bit counter?
- 4 lowest bits of this counter transmitted as lower 4 bits of BC[11:0]



Schedule and Risks

MVTX detector construction plan:

- CFC production
 - 1st half-detector available end of May @LBNL
 - 2nd half ~end of June
- Assembly test fit @LBNL
 - June - July, testing
 - Review ~end of July/early Aug. (?)
- Half-detector assembly @LBNL
 - per present P6:
 - Aug. - Dec., 2021
 - Ship to BNL in Jan, 2022
- BNL commissioning (~Jan 2022)
 - Setup clean tent @1008 (PHENIX Laser room?)
 - Money in P6 to buy one for MVTX (BNL)
- Installation @IR ~9/2022
 - *is IR gonna be ready for MVTX or we know/expect already X month delays? (question for Ed)*

Other activities:

- Insertion mockup @Bates (over summer)
- Cooling system (over summer/fall)
 - detector (Bates), electronics (LANL)
 - In the end: ship and final test @BNL
- Detector safety system integration
 - Under discussion with BNL
- Stave test & QA @LBNL
 - MOSAIC system for single stave readout from the half-detector
 - Special readout cables @PP3

ITS IB Installation 5/12/2021.... and MVTX Insertion System

