MVTX Status and Plan

Camelia, Grazyna and Ming 09/24/2020 sPHENIX L2 Project Meeting

Project Status & Plan (I)

- Mechanical design and vendor selection
 - WorkShape (France) won the competition to fabricate the carbon structures
 - 3 vendors responded, including LBNL and one commercial company in CA
 - Experience, cost and schedule within MVTX projected budget
 - First test article (one layer of EndWheels) by the end of November this year
 - Setup FAB account at MIT, ready to make the first payment
 - 30% of the first test article, ~EU\$15K

CF Production Readiness Review planned

- Early December, 2020
- Full CF production complete ~April 2021 (15~17 weeks)

Cooling system designed, v2

- Piping & Instrumentation Diagram sent to BNL this week for OK/discussion before purchases
- Cooling plant tests at BNL to decide on the needed customization

Insertion system design and mockup in progress



First test article schedule & milestones: 10 wks, already started 9/21/2020



MVTX insertion & support system



Project Status & Plan (II)

Readout and control electronics production

- All 30 power boards assembled and tested at LBNL
- 60 RUs and cooling plates produced and arrived at ORNL for testing
 - Testbench setup in progress
 - All testing done by the end of November
- RU and FELIX firmware/software updated
- Full readout chain system test in progress
 - LANL restart lab work, paperwork submitted for COVID-19 approval
 - ORNL will receive one FELIX card soon from BNL
- SamTec readout cable designed and tested 11.4m, final length TBD, pending final sPHENIX cable route layout plan

Stave production and transportation

- Good progress at CERN, 25+ golden staves produced
 - >50% of MVTX (48 staves), finish all ~Jan/Feb 2021
- Transportation case produced, stave QA test bench under preparation at LBNL







Stave transportation

case produced @LB

9/24/20

		STAVE-production summary table														
IBSTAVE ID	HIC assembly	Ins. after glue	Bonding	Pull test (>=2 lifts + F <7g)	Ins. after bonding	HIC PWR test	Qualification test	Threshold cluster	HIC Matrix	HIC DTU	HIC+SF+C -> Stave	Stave PWR test	Stave test	STAVE metrology	Stave PWR test (long PWR extn.)	STAVE final test (PT100)
TOTAL	53	53	50		50	49	40				32	32	32	25	26	25
A201 (326)	1	1	1	1	1	1	1	1	GOLD	ОК	1	1	1	1	1	1
A202*	1	1	1	0	1	1	0	??	PARTIAL	ОК						
A203 (144)	1	1	1	0	1	1	1	0	GOLD	ОК	1	1	1	1	1	1
A204 (158)	1	1	1	1	1	1	1	0	GOLD	OK	1	1	1	1	1	1
A205 (167) A206 (204)	1	1	1	4	1	1	1	0	GOLD	CAN	1	1	1	1	1	1
B201 (352)	1	1	1	0	1	1	1	0	GOLD	CAN	1	1	1	1	1	1
B202*	1	1	1	0	1	1	0	0	Broken	CAN	±	-	-	1	-	
B203 (114)	1	1	1	1	1	1	1	0	GOLD	CAN	1	1	1	1	1	1
B204 (116)	1	1	1	0	1	1	1	1	SILVER	CAN	1	1	1		1	
B205 (115)	1	1	1	2	1	1	1	0	GOLD	CAN	1	1	1	1	1	1
B206 (295)	1	1	1	2	1	1	1	0	GOLD	CAN	1	1	1	1	1	1
F201*	1	1	1	1	1	1	0	??	PARTIAL	ОК						
F202 (230)	1	1	1	3	1	1	1	0	GOLD	ОК	1	1	1	1	1	1
F204	1	1	1	5	1	1	1	2	GOLD	CAN						
G202 (234)	1	1	1	0	1	1	1	1	GOLD	OK	1	1	1	1	1	1
G203	1	1	1	1	1	1	1	1	GOLD	CAN						
F203*	dummy	1	1	0	1	1	1	0	COLD	01	1	1	1	1		1
H202 (294)	1	1	1	0	1	1	1	0	GOLD	OK	1	1	1	1	1	1
H204 (354)	1	- 1	1	0	1	- 1	1	0	GOLD	ОК	1	1	1	- 1	1	1
H206	1	1	1	0	1	1	1	??	PARTIAL	ОК		_	_	_		
E204 (110)	1	1	1	0	1	1	1	1	GOLD	CAN	1	1	1	1	1	1
E201*	1	1	1	0	1	1	0	3	PARTIAL	CAN						
										CAN (bad						
E202	1	1	1	1	1	1	1	1	GOLD	driver)						
E206 (101)	1	1	1	0	1	1	1	1	GOLD	ОК	1	1	1	1	1	1
H205	1	1	1	0	1	1	1	1	SILVER	OK		-		1		
1202 (175)	1	1	1	0	1	1	1	0	GOLD	OK	1	1	1	1	1	1
1203 (187)	1	1	1	0	1	1	-	0	PARTIAL	OK	⊥	-	-	1	-	-
1204	1	1	1	0	1	1	1	0	GOLD	OK	1	1	1	1	1	1
1201*	- 1	- 1	1	0	1	- 1	0	27 77	PARTIAI	OK	-	-	-	-	-	-
J202 (207)	1	1	1	0	1	1	1	0	GOLD	CAN	1	1	1	1	1	1
J203 (245) 345																
right	1	1	1	0	1	1	1	0	GOLD	CAN	1	1	1	1	1	1
J204 (252)	1	1	1	0	1	1	1	0	GOLD	OK	1	1	1	1	1	1
J206 (260) K202 (122)	1	1	1	0	1	1	1	1	GOLD	OK	1	1	1	1	1	1
K203 (125)	1	1	1	0	1	1	1	0	GOLD	OK	1	1	1	1	1	1
K204 (129)	1	1	1	0	1	1	1	0	GOLD	CAN	1	1	1	_		
K205 (128)	1	1	1	0	1	1	1	1	GOLD	CAN	1	1	1			
к206	1	1	1	0	1	1	1	0	GOLD	CAN						
L202 (130)	1	1	1	0	1	1	1	0	GOLD	CAN	1	1	1			
1203 (139)		1	1	0	1	1	1	0	GOLD	CAN	1	1	1			
L204 (127)	1	1	1	0	1	1	1	0	GOLD	CAN	1	1	1			
L205 (136)	1	1	1	0	1	1	1	0	GOLD	OK.	1	1	1			
1205	- 1	1	1	0	1	- 1	0	??	PARTIAL	CAN	_					
1201	1	1	1	0	1	1	0	0	PARTIAL	CAN						
1206	1	1	0	U U	-	-				C/III						
1201	1	1	1	0	1	1	1	1	GOLD	CAN						
\$201	1	1	1	0	1	1	1	0	GOLD	CAN						
\$202	1	1	1	0	1	1	1	0	GOLD	CAN						
5202	0/0//	1	1	0	1	-					Ctature		IV L D			
5205	_9/24/.	20 1	1	0	1						platus (VSPHEN	IX LZ			
\$204	1	1	1	0	1											
3205	1	1														

Reported at 09/17/2020 Stave production meeting - Next meeting in 3 weeks

 25 golden staves ready for shipping;
2nd batch of 6 staves ready for metrology, and final tests in next week or two

Plan at CERN:

- Continue ~10staves/month, finish 84 staves ~ Jan 2021;
- minimal impact on detector assembly work at LBNL (CF schedule driven)

CERN can hold ~40 staves for ~5 weeks;

We need to get them to US
soon, working with CERN to test
commercial transportation
options

Issues and Concerns

• Schedule delays due to COVID-19

- Carbon structure production and test/QA
 - 3~4 months delay in detector design and prototyping
 - FDR(7/2020) postponed to ~Dec. 2020
- Detector assembly work
 - Lab access at LBNL, schedule etc.
- Stave transportation plan changed
 - Commercial options
 - Minimal impact on assembly schedule
- Tight schedule for the installation, May 2022

• Funding for FY21

- Need to use some contingency reserve for engineering work
 - MIT and LANL
- ORNL to support RU and other electronics test work
 - Previously assigned to UT-A, under Jo's responsibility
 - Draft SOW ready for sPHENIX review



