

Riunione preparatoria CNS1



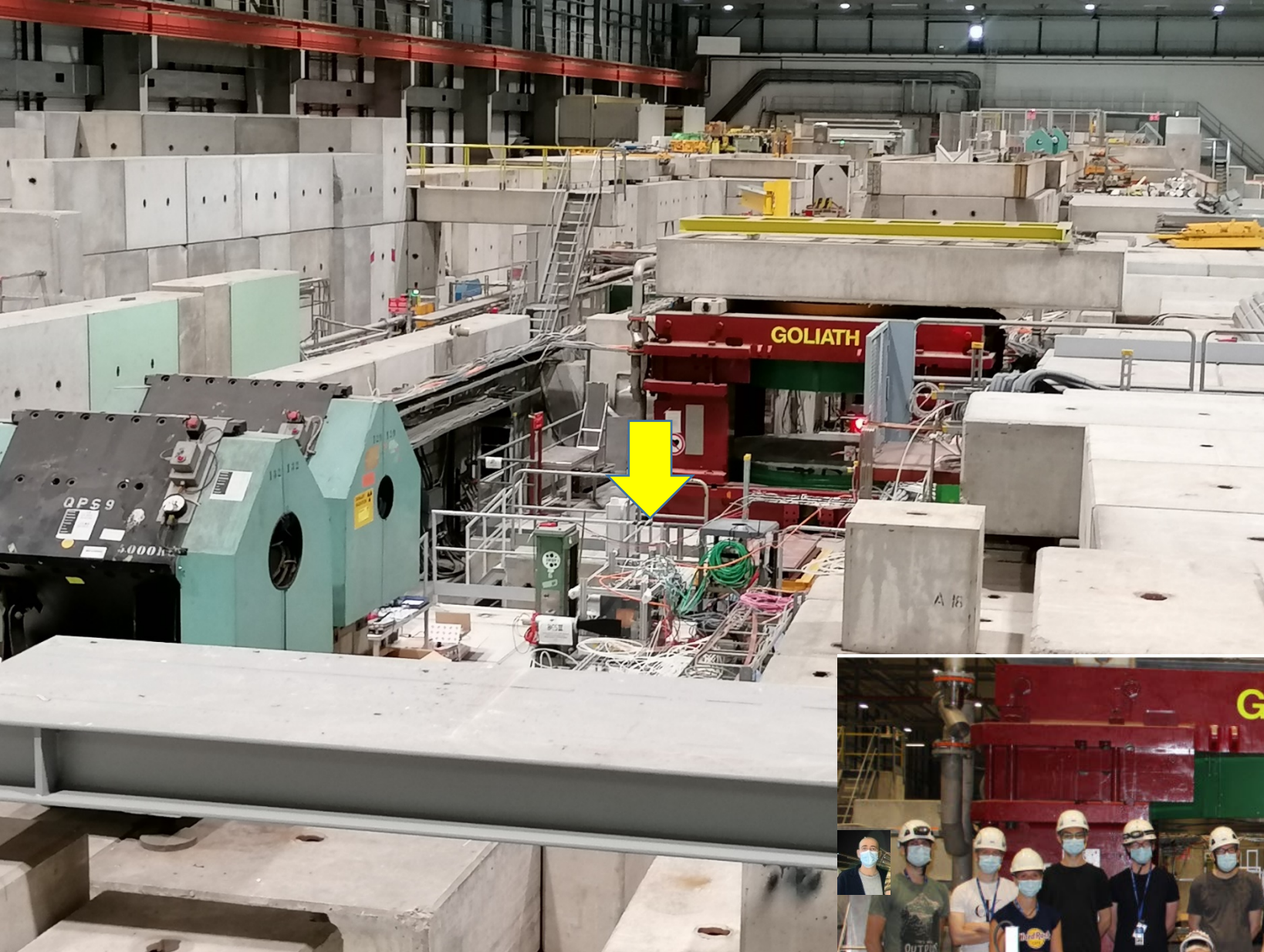
MGreco

14 settembre 2021

- ✓ CGEM: Layer 3
- ✓ Electronics/Integration
- ✓ Software

- Anagrafica-Responsabilità
- Milestone 2021
- Restituzioni 2021
- Richieste 2022 >missioni

Test beam at CERN

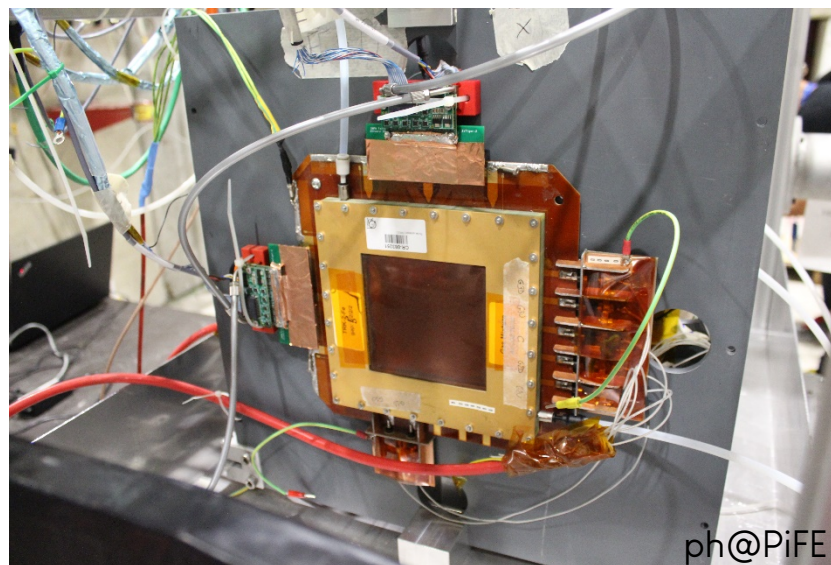
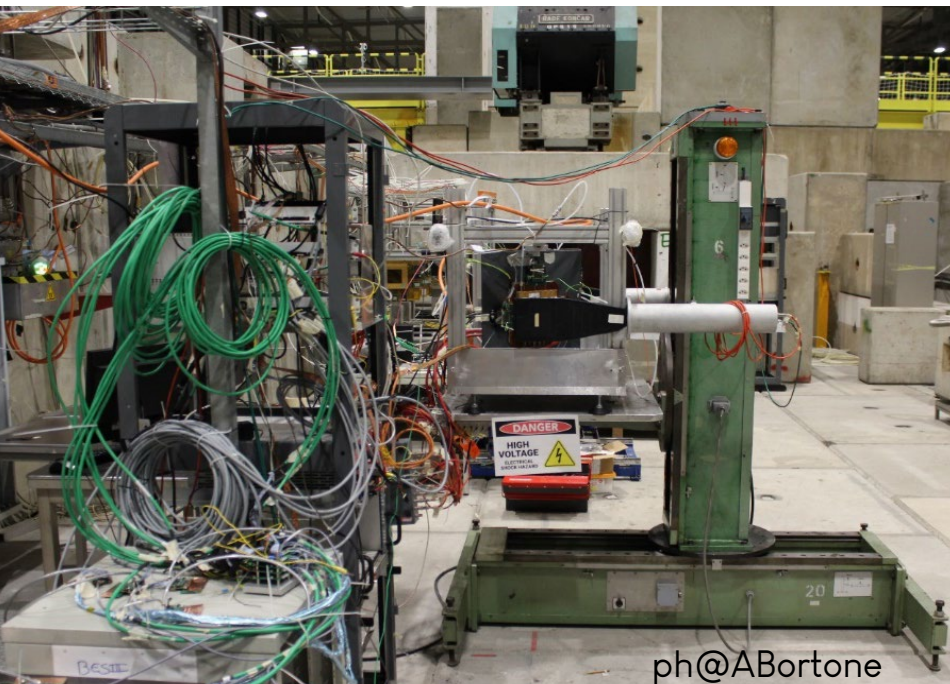


12/21 July 2021
RD51 test beam
@ H4 line CERN North Area,
Prevessin

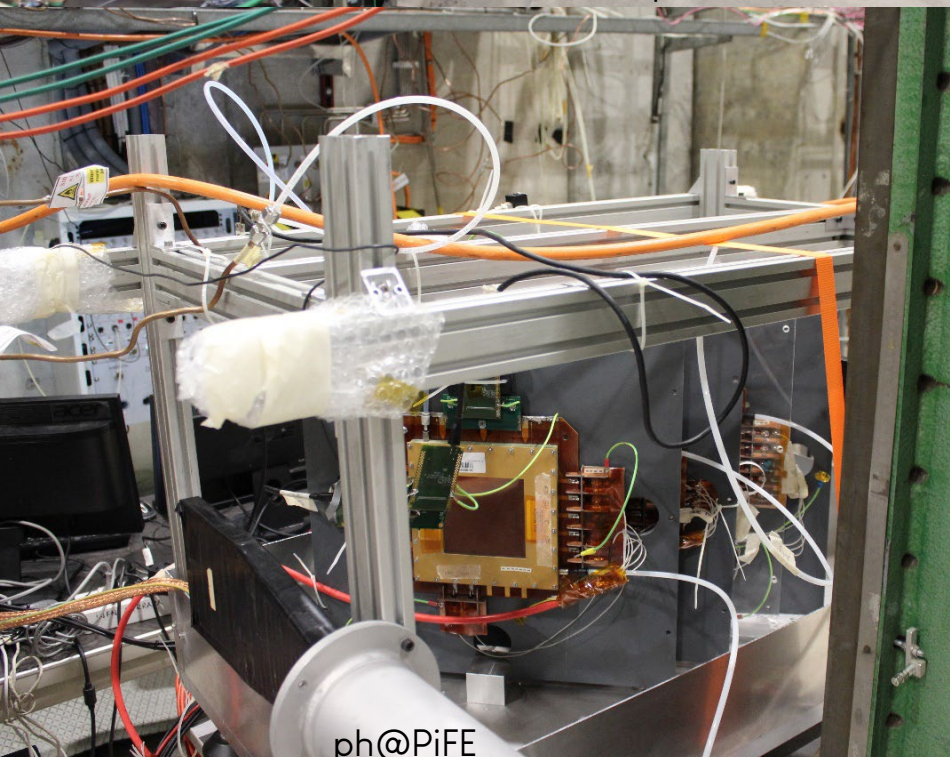
Muons @80 GeV/c
Pions @150 GeV/c



- Validate the setup with APV and SRS
- Test the performance with BESIII final electronics

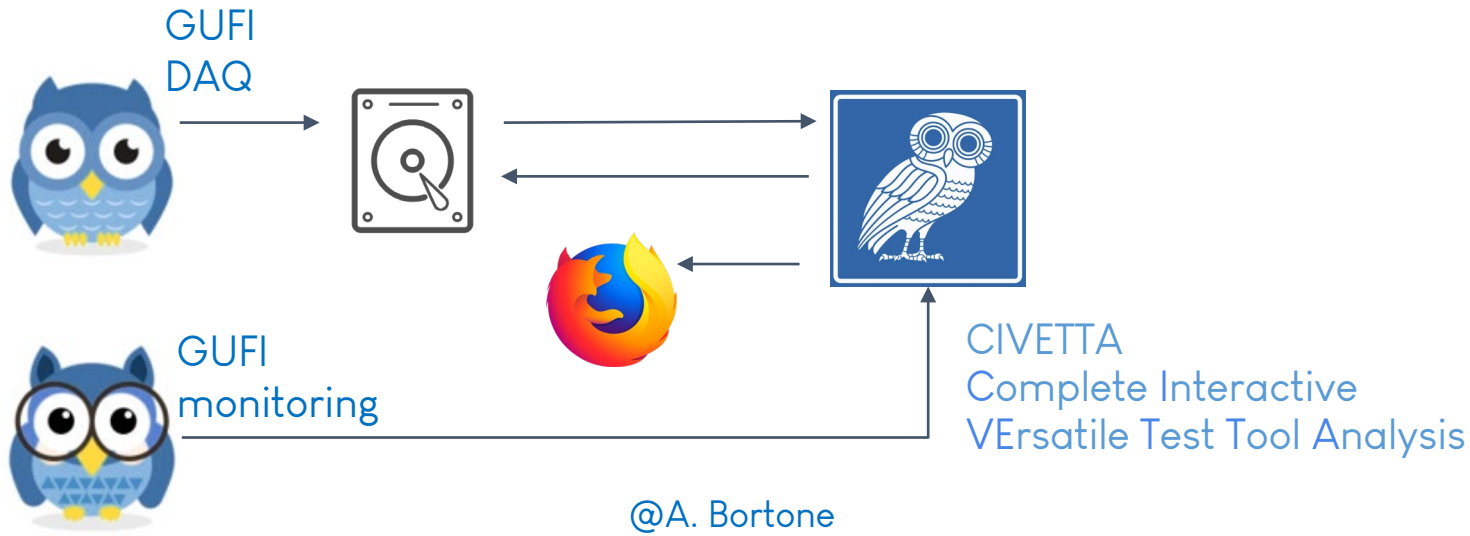


@A. Cotta Ramusino

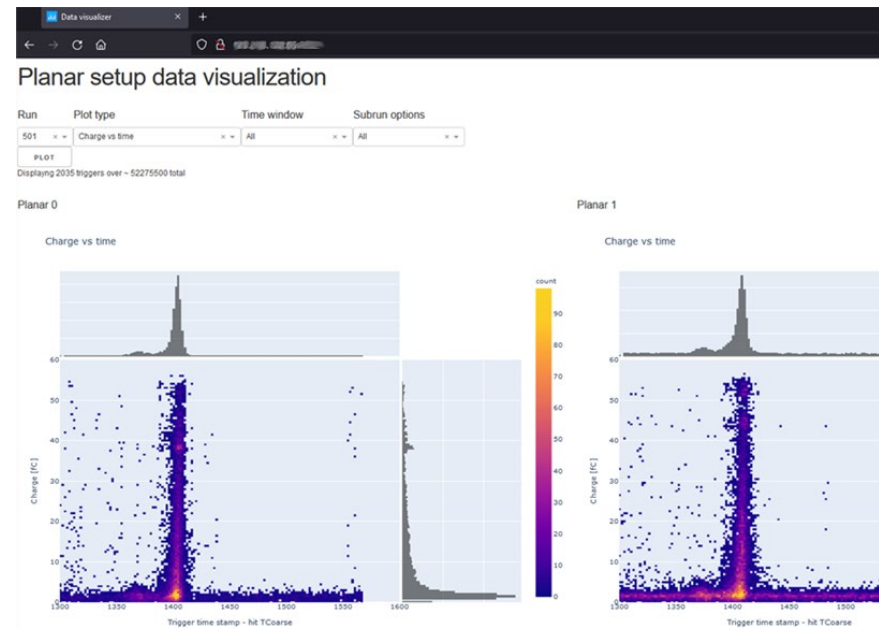
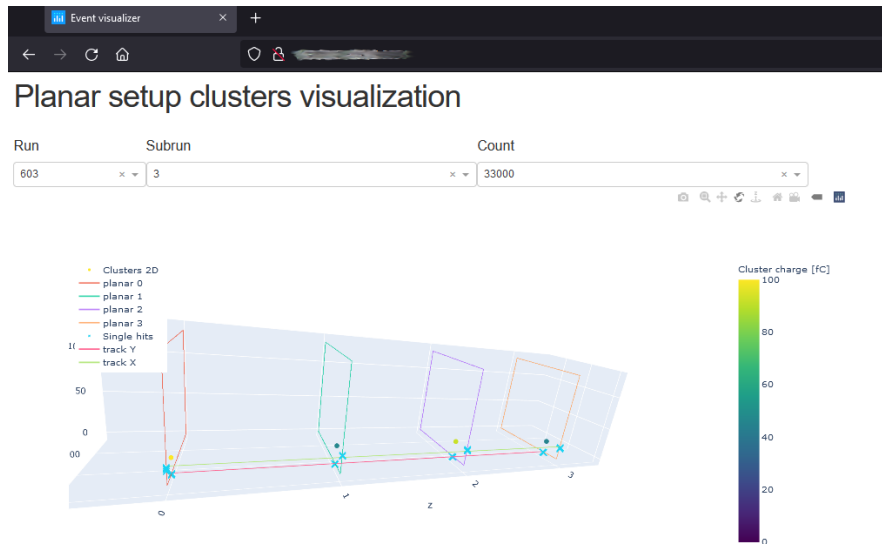


INFN-Ferrara
Fast Control system Fanout (FCF)
Fast Control system Local Fanout

TIGER-GEMROC DAQ at TB



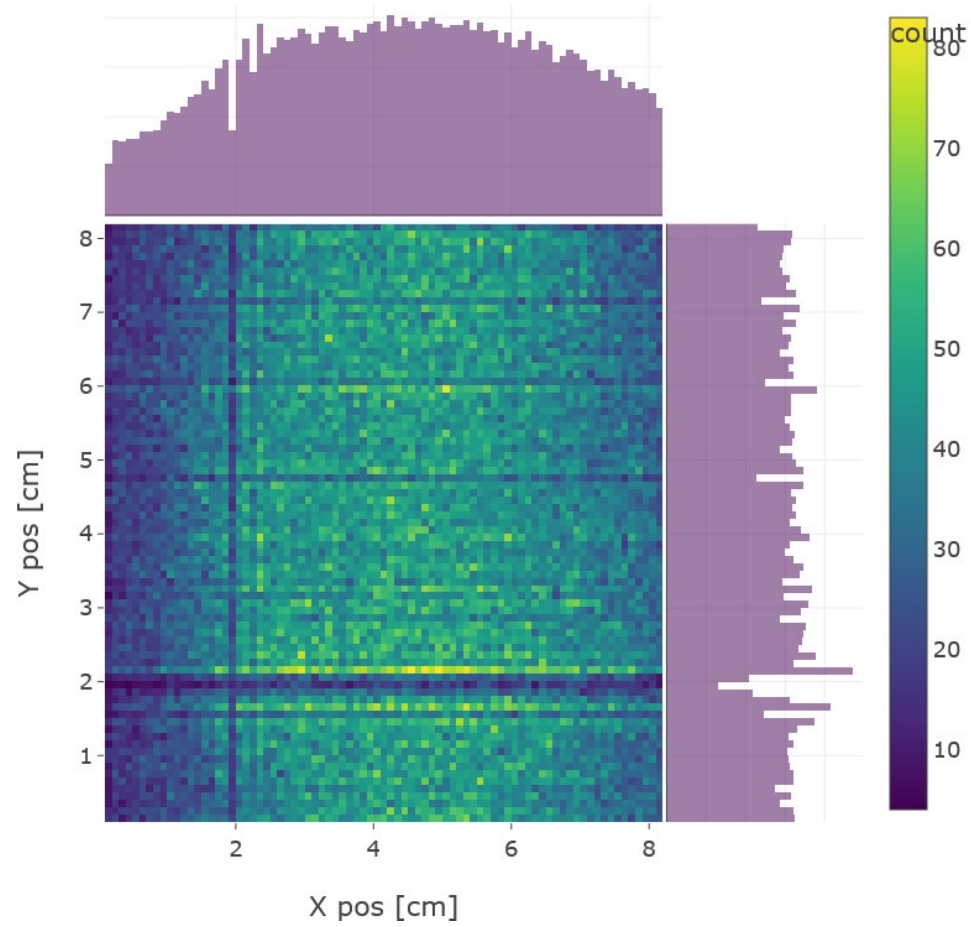
DAQ sw at TB:
STRESS -TEST!



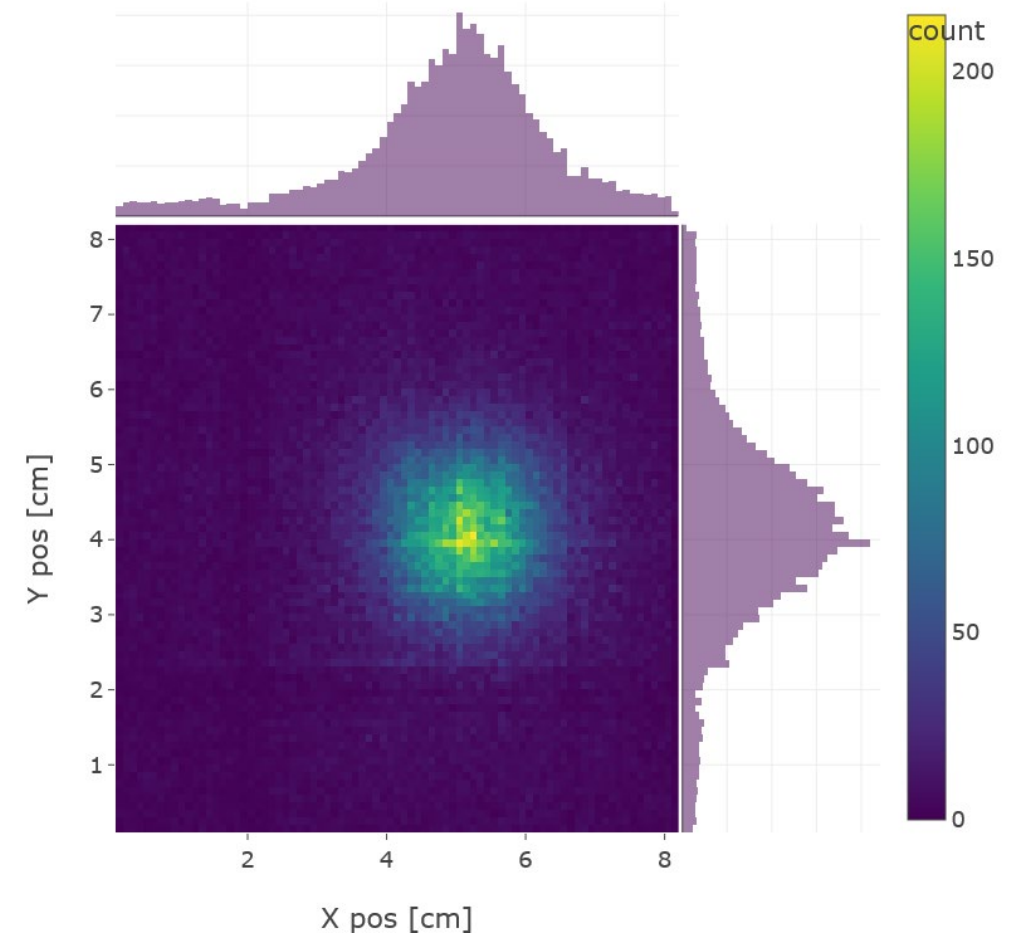
July 15-20, 2021:
#runs:~540
500k-1M triggers per run
(duration: 5 minutes)
250 million triggers

- ✓ HV scan (gain scan)
- ✓ Angle scan
- ✓ Drift field scan
- ✓ Threshold scan
- ✓ Integration time

Muons



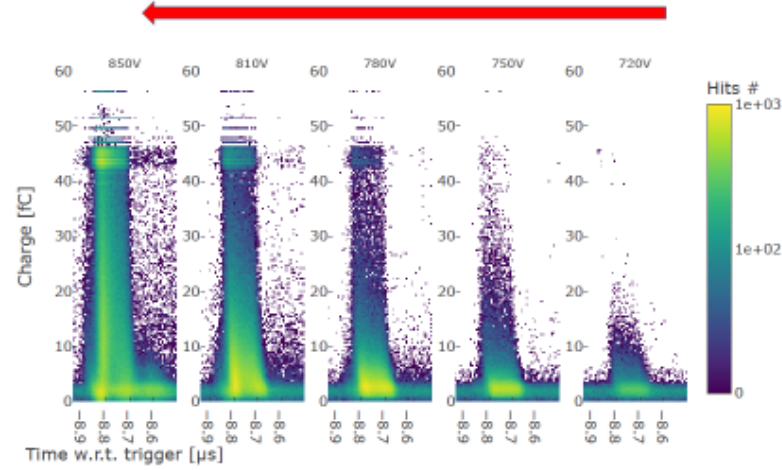
Pions



Hit: charge versus time
wrt gain

Gain>
G1+G2+G3

X view
Drift field: 1500 V/cm
beam angle: 30°

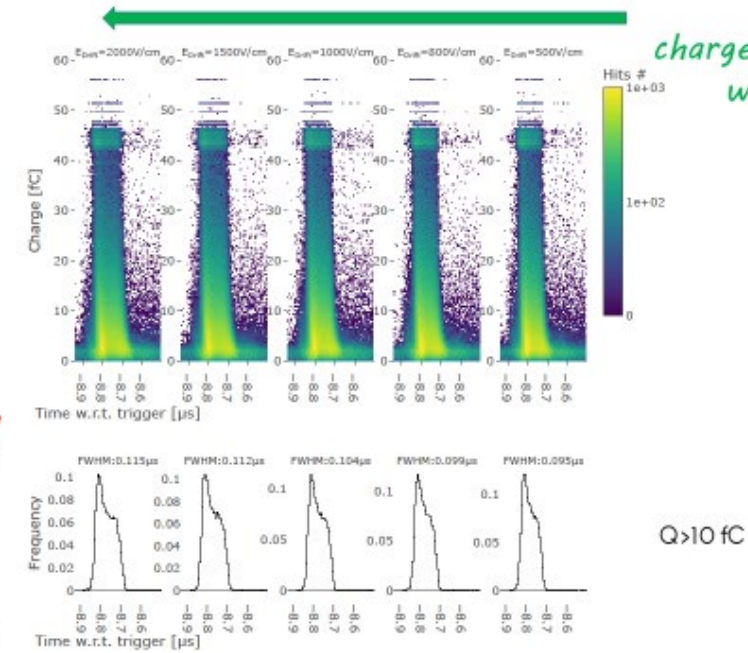


Hit:

charge versus time
wrt drift field

X view

G1+G2+G3=825 V
beam angle: 45°

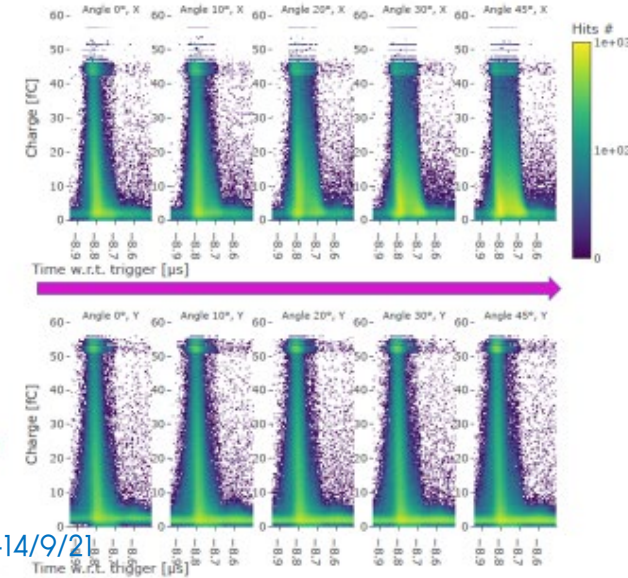


$Q > 10$ fC

Hit: charge versus time
wrt angle

X view
Y view

Drift field: 1500 V/cm
G1+G2+G3=825 V

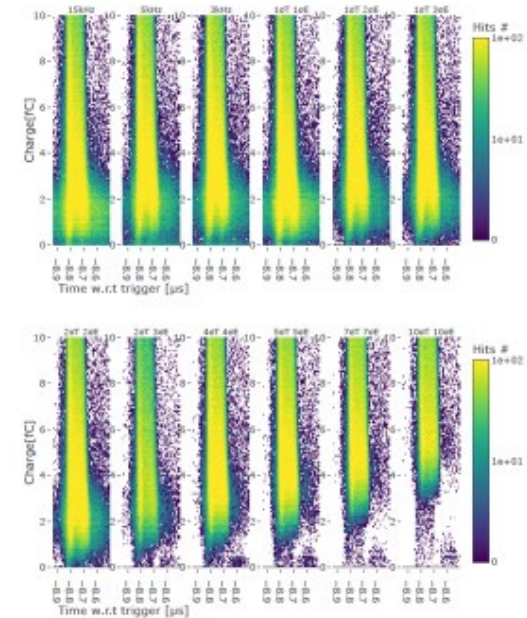


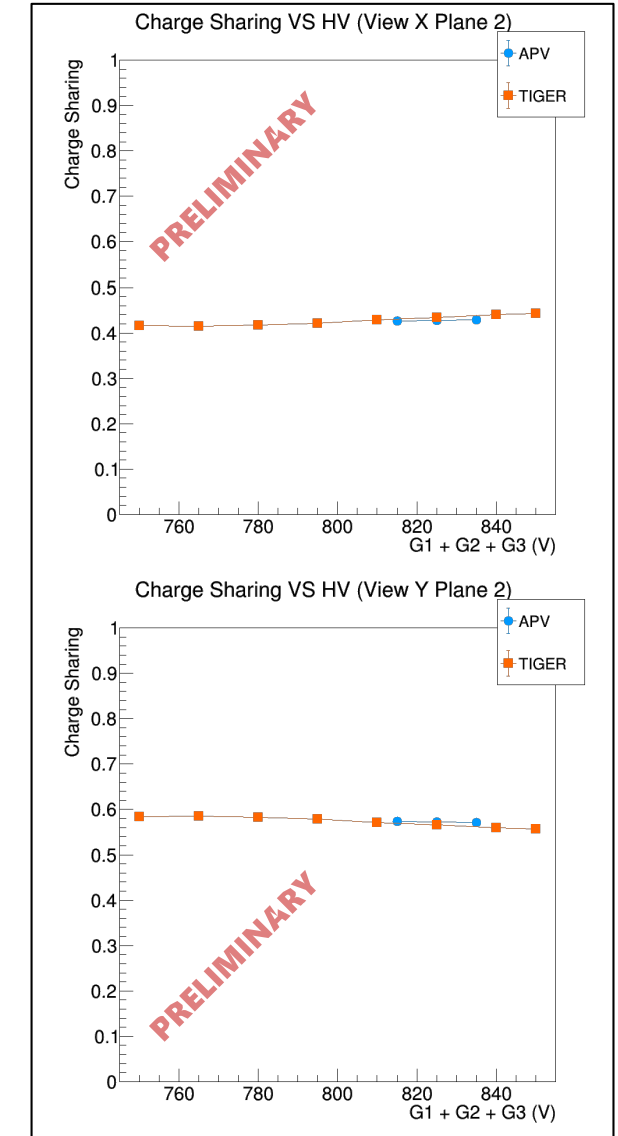
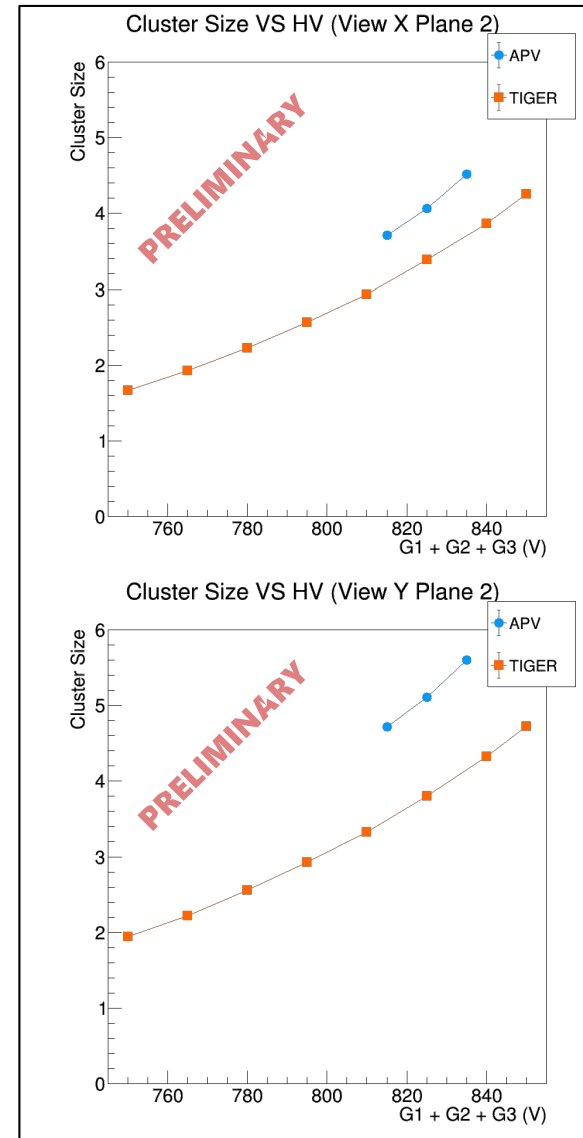
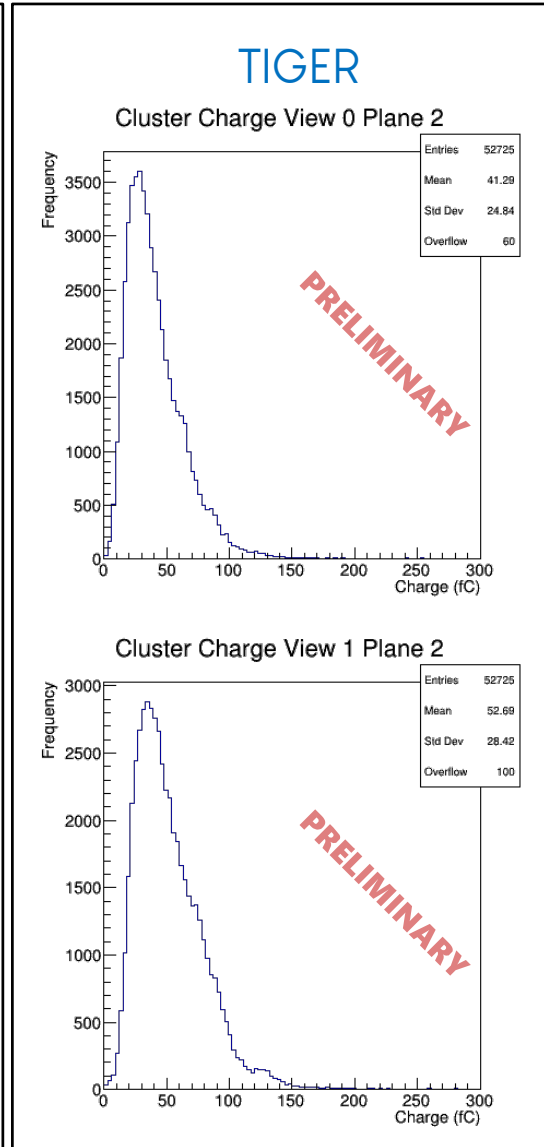
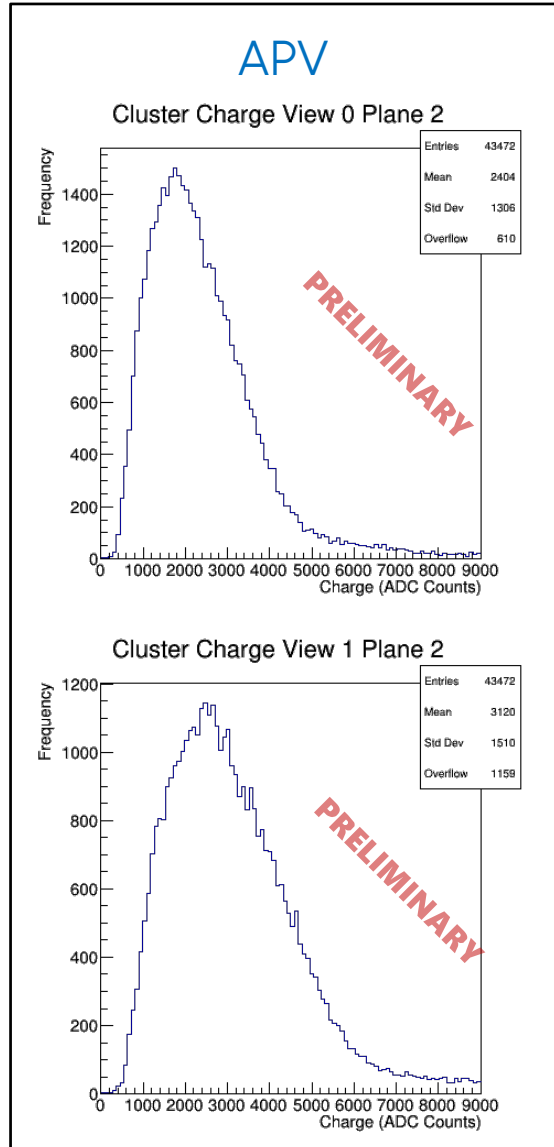
Hit:

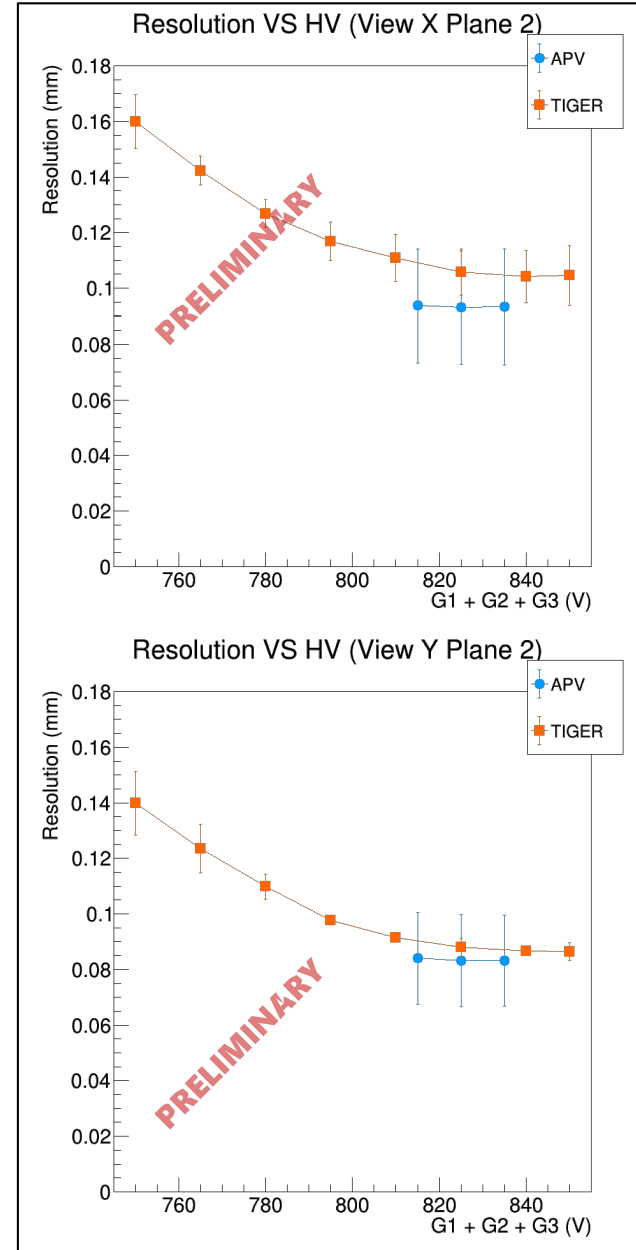
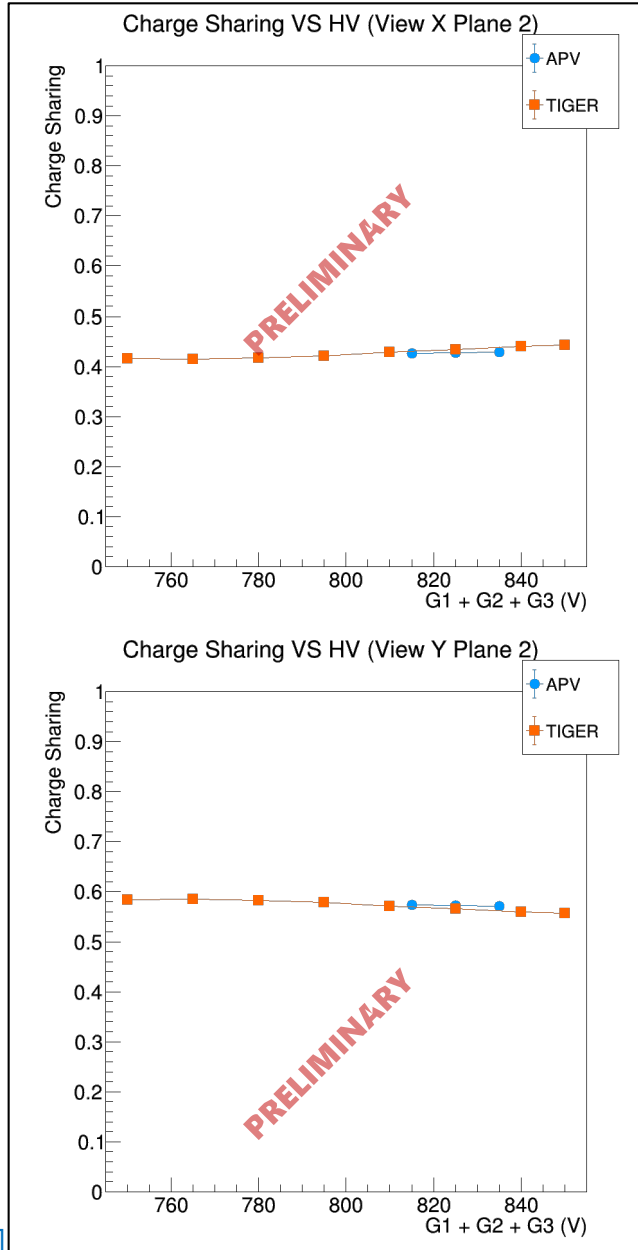
charge versus time
wrt
threshold rate

X view

G1+G2+G3=825 V
beam angle: 45°







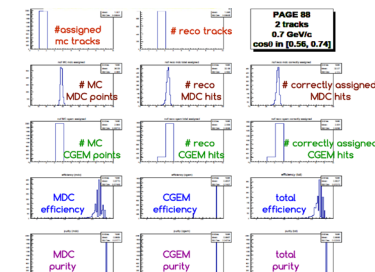
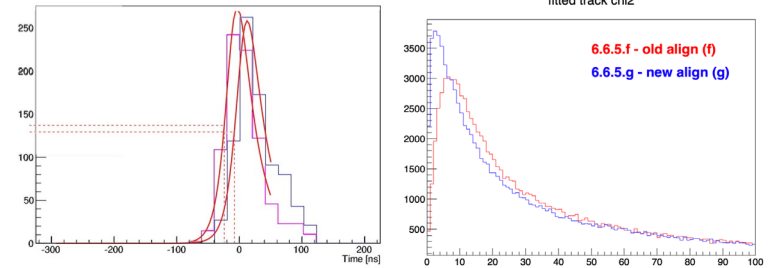
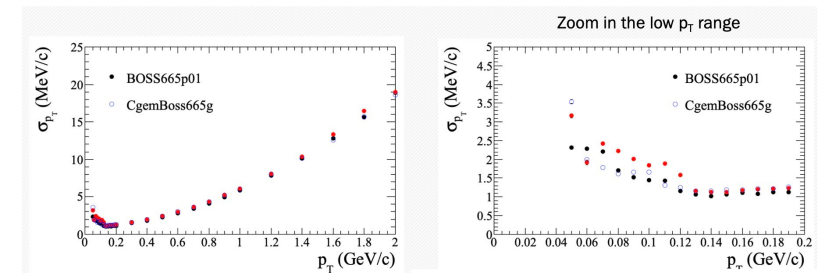
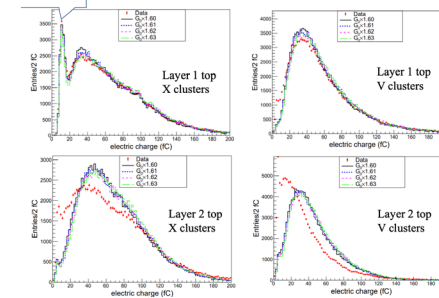
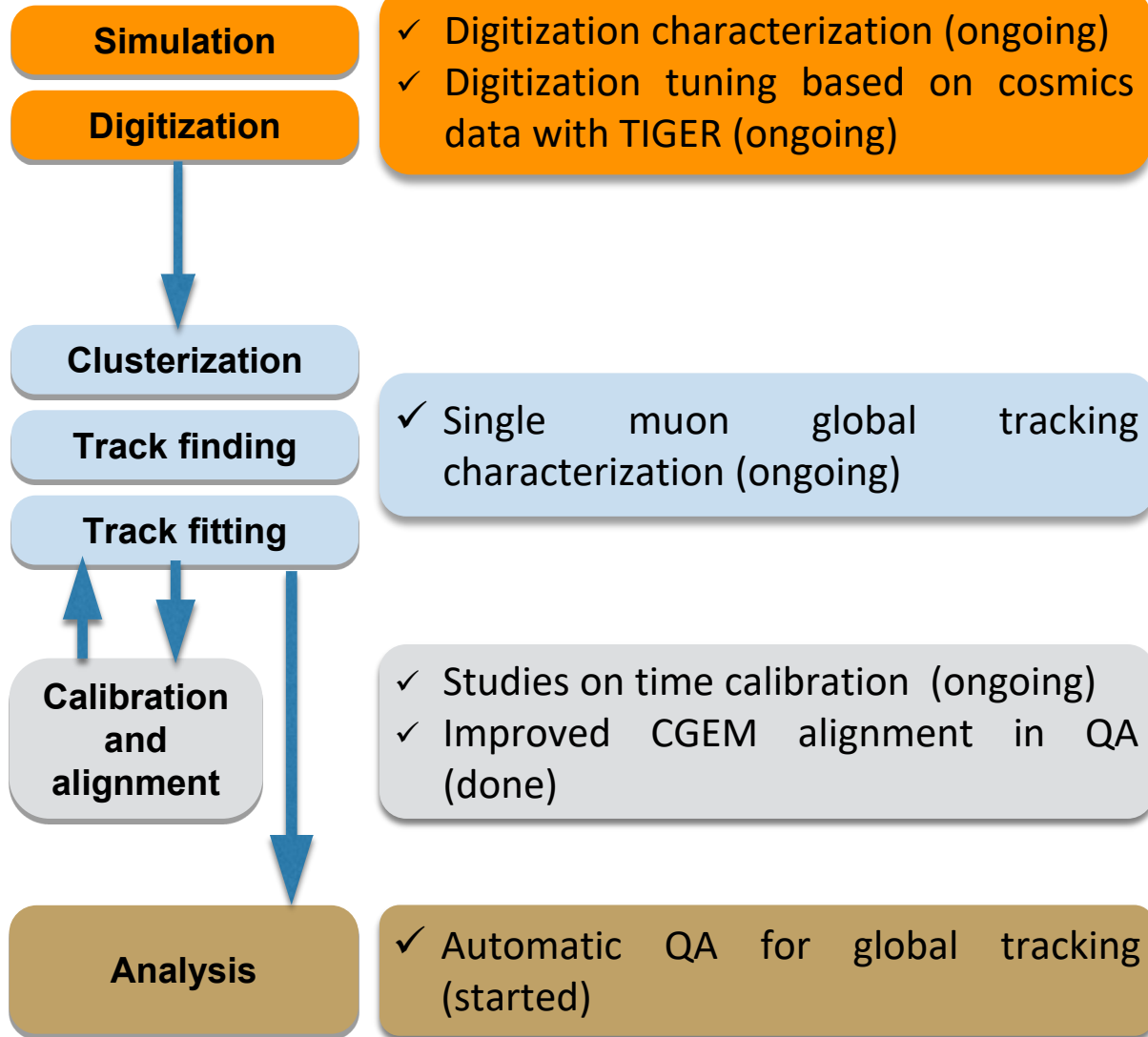
Preliminary results:

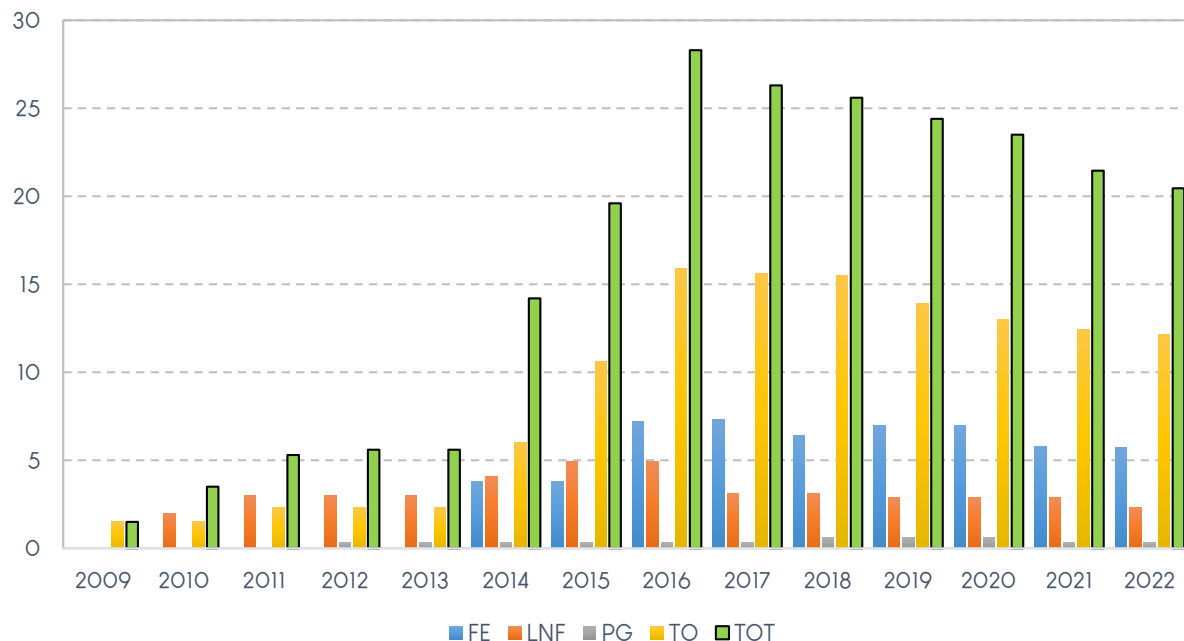
agreement of
charge sharing /resolution
(but room to enhance)

more studies about
cluster charge/cluster size

Software activities

Cgem BESIII Offline Software System (**NEW RELEASE CgemBoss665g**)





~20 FTE
 ~30 authors (~6% of the total)
 ~0.6 authors/FTE
 37 physicists + technologists
 ~ 50 members

	<i>FTE/f</i>	<i>FTE/t</i>
FE	5.40	0.30
LNF	1.95	0.30
PG	0.35	-
TO	8.95	3.10

<i>FTE</i>	<i>2021</i>	<i>2022</i>
FE	5.9	5.7
LNF	2.9	2.25
PG	0.35	0.35
TO	12.45	12.05

BESIII Responsibility roles

- Chair Nominating committee, M. Maggiora
- Executive Board, M. Maggiora
- Technical Board, G. Cibinetto
- Deputy Chair of BESIII Speakers Bureau, F. Bianchi
- Convener Light Hadron WG, I. Garzia
- CGEM-IT System Manager, G. Cibinetto
- Data Quality Group Coordinator, L. Lavezzi
- Institution Board (M. Bertani, G. Cibinetto, M. Maggiora,)

Descrizione	Data completamento	
PHYSICS: Completamento della misura inclusiva dei parametri dell'hc dai decadimenti della psi(2S)	31-07-2021	✓ 85%
CGEM DETECTOR: Validazione con alta tensione a valori nominali del Layer 3 all'IHEP.	30-04-2021	–
CGEM ELETTRONICA: Produzione e test delle schede ancillarie di fanout di sistema e locale (GEMROC BES-III FC SYSTEM FANOUT e GEMROC BES-III FC system Local Fanout) per integrazione con il fast control system di BESIII .	31-12-2021	✓ 85%
CGEM INTEGRAZIONE: Integrazione del sistema di raffreddamento CGEM nel sistema slow control di BESIII	31-12-2021	✗
CGEM SOFTWARE: Finalizzazione routine di Quality Assurance per run di cosmici in CGEMBOSS	31-07-2021	✓ 100%
COMPUTING: Creazione di un'infrastruttura ONE, interfacciata con il BESIII Distributed Computing, per gestione nazionale del cloud bursting BESIII	31-12-2021	✗ 50%

<i>Restituzioni missioni 2021</i>	<i>Assegnazioni (k€)</i>	<i>sj (assorbiti)</i>
Ferrara	44	41
LNF	25	12
Perugia	5.5	-
Torino	119	78.5
<i>Totale</i>	193.5	131.5

*Quota joint INFN IHEP fellow:
Sblocco sj 60 keuro*

*Restituzione trasporti
3.5 keuro*

Richieste BESIII 2022

Rifacimento Layer 3: costi vivi	56.5 k€	sj aggiornamento design
Trasporti tool per rifacimento ad IHEP (mandrini, clessidra, etc..)	28 k€ (5+23)	sj aggiornamento design
Maintenance	~5 k€	
Computing	1 k€	
Licenze sw	2.5 k€	
Totale	~95 k€	

Richieste FEST 2022

FPGA +breakout board	3.5 k€	Applicazioni medicali ad IHEP
FEB per photon counter a pixel	6 k€	
Totale	9.5 k€	

Missioni					
Sede	FTE	2022	sj	2021	sj
FE	5.7	109.5	85	110	88
LNf	2.25	58.5	32.5	55.5	26
PG	0.35	7	-	7	-
TO	12.05	207	165.5	243.5	161

Missioni ITALIA	k€
Coordinamento CGEM	17.5
Coordinamento sw/fisica	13.5
Coordinamento Trasporti CGEM	7.5
Sviluppi sw/simulazioni	9
Meeting BESIII Italia	34.5
CNS1	3.5

Missioni ESTERO	k€	sj
Coordinamento FEST	6	
BESIII CM/P&Sw non all'IHEP	79.5	
BESIII CM/P&Sw all'IHEP	51.5	49.5
Turni presa dati	12	21
Simulazione/Analisi IHEP	5	10.5
Sviluppi CLOUD /tool computing IHEP	4	5
FEST: applicazioni medicali	4	8.5
Joint INFN IHEP fellow	27	33
Direzione JOINT Institute	30	5
IReview committee	4.5	1

Missioni CGEM	k€	Sj aggiornamento design	
CGEM maintenance/test	18	37.5	Per sede indicate le persone (fisici + tecnici) coinvolte
CGEM Integration	26	41.5	
CGEM L1 e L2: commissioning cosmici	12	25	
Costruzione CGEM Layer 3	17	45.5	

CGEM maintenance /test:	FEB L2: sostituzione dissipatori termici (montaggio e rimontaggio schede) FEB L3: sostituzione dissipatori termici Verifica del Sistema di cooling (lampade UV, patch panel) Verifica del funzionamento della catena elettronica e sostituzione con spare Verifica catena HV/LV
CGEM integration	Sostituzione e allestimento nuovo stand per cosmici Test di inserimento meccanico Integrazione della catena elettronica con i moduli ancillary di fanout Test del cooling system finale (booster pump) e circuito Montaggio e test interlock hw
CGEM L1 e L2	Integrazione BESIII Slow control Integrazione BESIII DAQ Commissioning
Costruzione L3	>presentazione GG >>allestimento della camera pulita a Pechino