



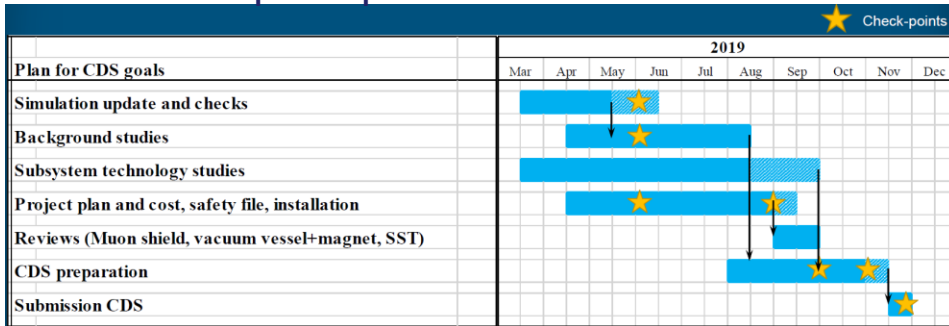
Stato attivita' SHIP e piani per il 2020 SHIP-Bari



Stato attivita' SHIP



SHiP CDS report: plan



2 Published papers + 5 in preparations

4. Sensitivity of the SHiP experiment to Heavy Neutral Leptons

SHiP Collaboration (C. Ahdida (CERN) *et al.*). Nov 2, 2018. 22 pp.
 Published in **JHEP 1904 (2019) 077**
 DOI: [10.1007/JHEP04\(2019\)077](https://doi.org/10.1007/JHEP04(2019)077)
 e-Print: [arXiv:1811.00930 \[hep-ph\]](https://arxiv.org/abs/1811.00930) | [PDF](#)

[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [Harvmac](#) | [EndNote](#)
[CERN Document Server](#); [ADS Abstract Service](#); [Link to Article from SCOAP3](#)

[Detailed record](#) - [Cited by 10 records](#)

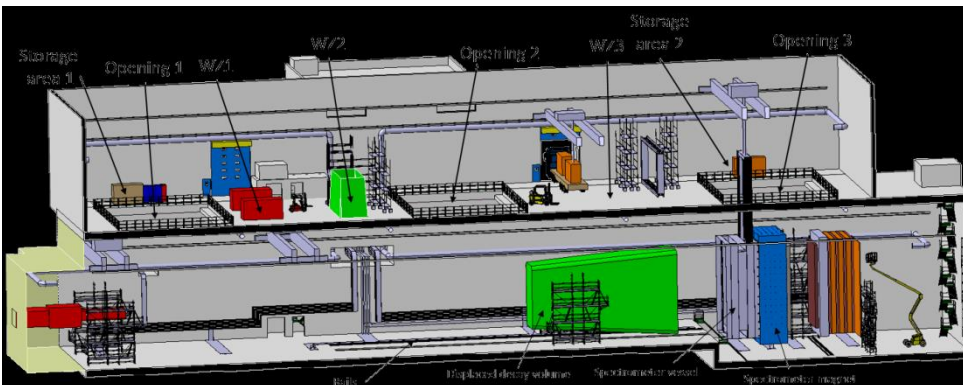
5. The experimental facility for the Search for Hidden Particles at the CERN SPS

SHiP Collaboration (C. Ahdida (CERN) *et al.*). Oct 16, 2018. 21 pp.
 Published in **JINST 14 (2019) no.03, P03025**
 DOI: [10.1088/1748-0221/14/03/P03025](https://doi.org/10.1088/1748-0221/14/03/P03025)
 e-Print: [arXiv:1810.06880 \[physics.ins-det\]](https://arxiv.org/abs/1810.06880) | [PDF](#)

[References](#) | [BibTeX](#) | [LaTeX\(US\)](#) | [LaTeX\(EU\)](#) | [Harvmac](#) | [EndNote](#)
[CERN Document Server](#); [ADS Abstract Service](#); [Link to Fulltext from Publisher](#)

[Detailed record](#) - [Cited by 3 records](#)

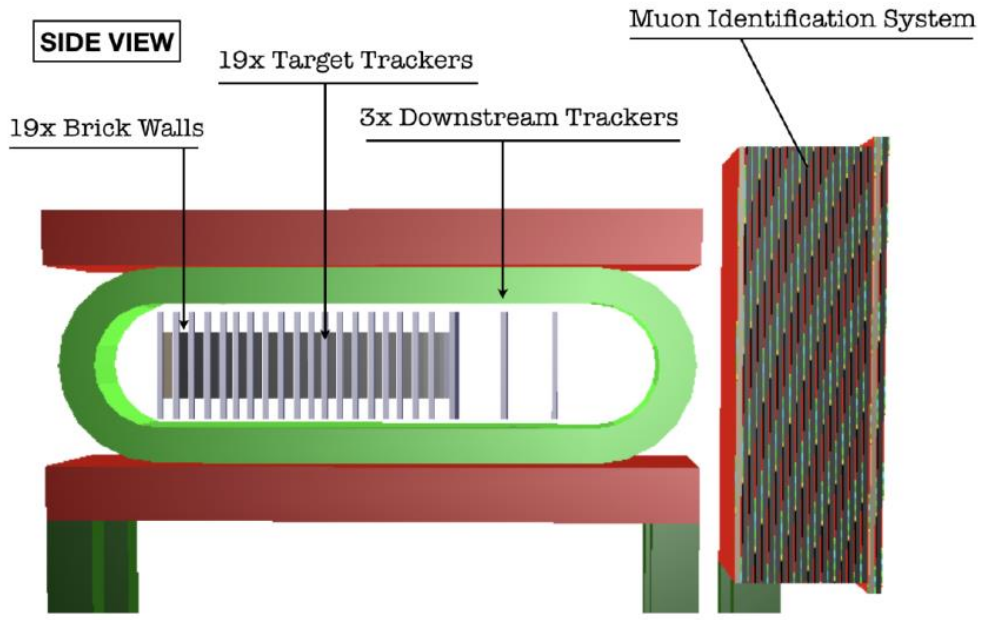
Project plan



Accelerator schedule	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
LHC		Run 2				LS2		Run 3			LS3		Run 4	
SPS											SPS stop	NA stop		
SHiP / BDF	Comprehensive design & 1st prototyping				Design and prototyping			Production / Construction / Installation						
Milestones	TP					CDS	ESPF			TDR	PRR			CwB

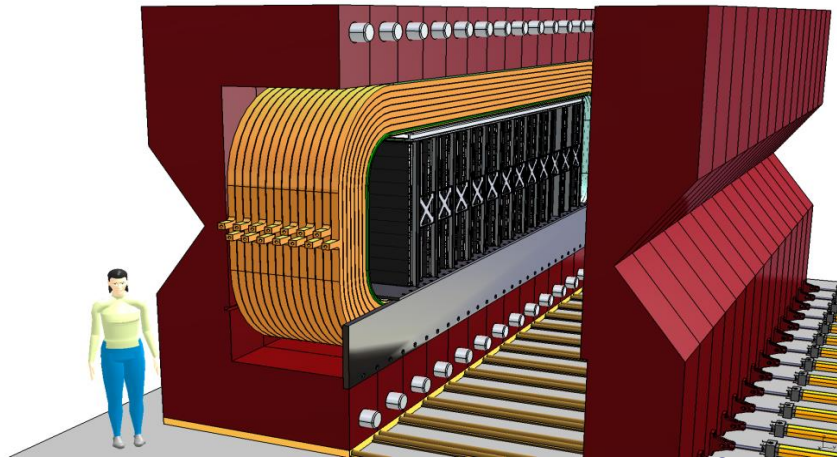


Stato attivita' SHIP – SND Scattering and Neutrino Detector



SHIP Progress Report
CERN-SPSC-2019-010 / SPSC-SR-248

options for ECC passive material under study

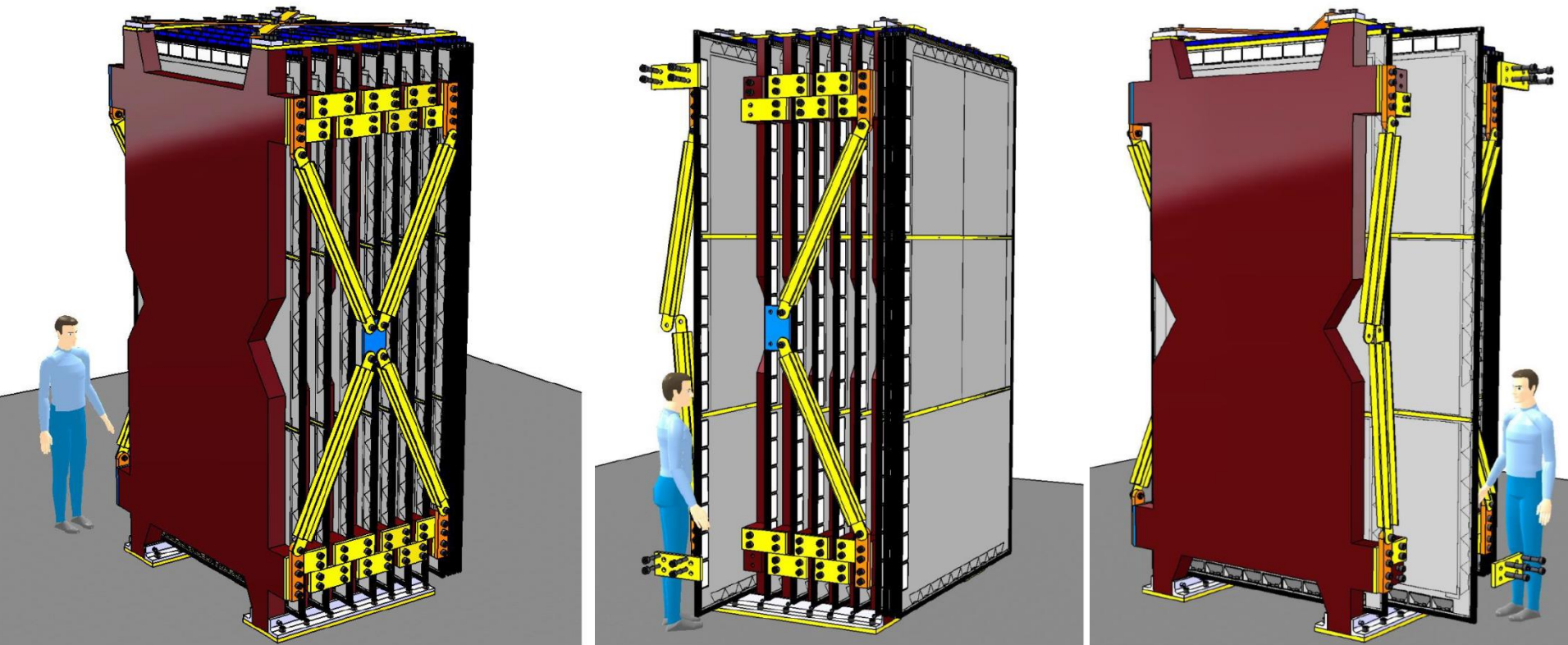


Update on the magnet design



Stato attivita' SHIP – SND

Scattering and Neutrino Detector



New anti-seismic mechanical structure for the Muon Filter

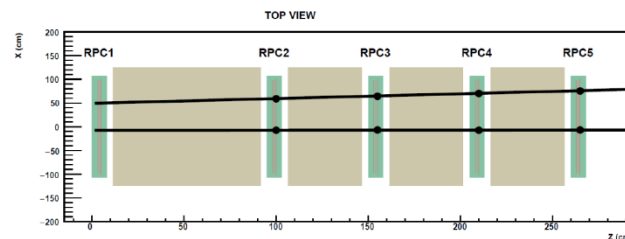
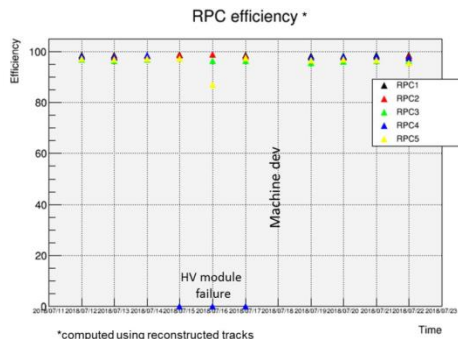
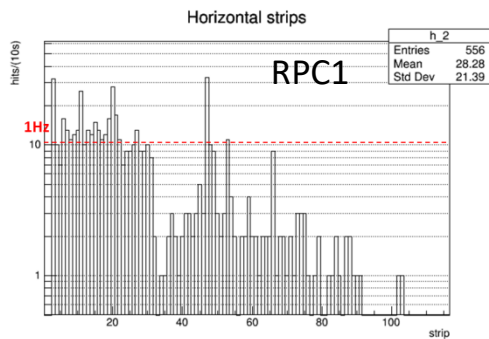


attivita' SHIP – SND @ Bari



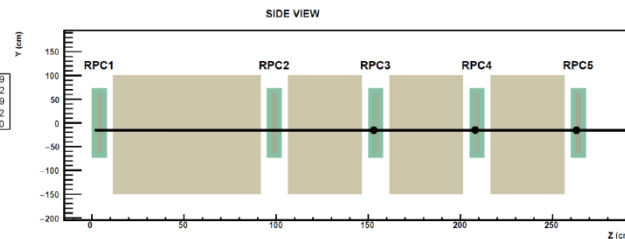
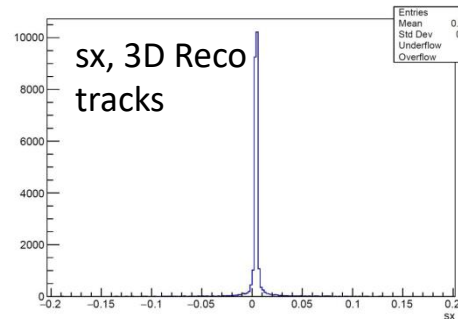
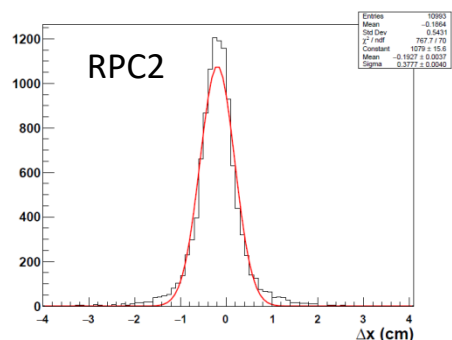
- Internal note CERN-SHIP-NOTE-2019-001:
Alignment of the muon flux spectrometer in FairShip using the survey measurements

- Analysis of July 2018 RPCs' data for the muon flux and charm measurements@CERN H4 beam



Run 2793
Spill1f22ae29
Trigger 21

X1 58.97 cm
Y1 -15.40 cm
sx 0.1005
sy 0.0005



Run 2793
Spill1f22ae29
Trigger 21

X1 -7.44 cm
Y1 -15.40 cm
sx 0.0019
sy 0.0005

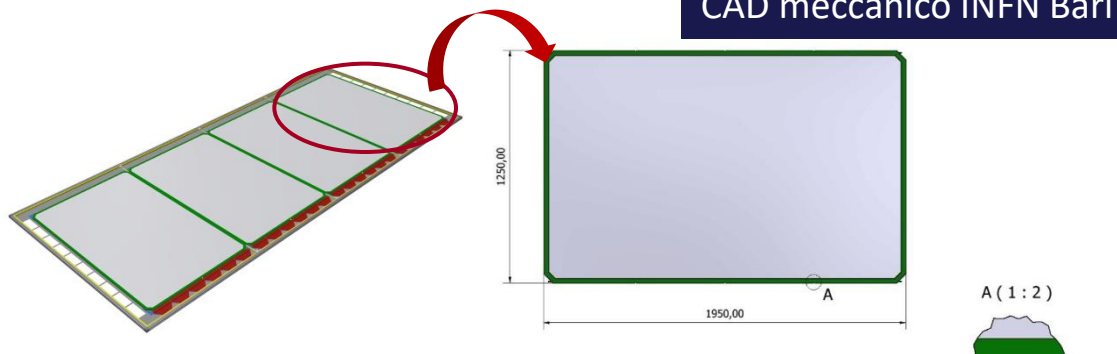
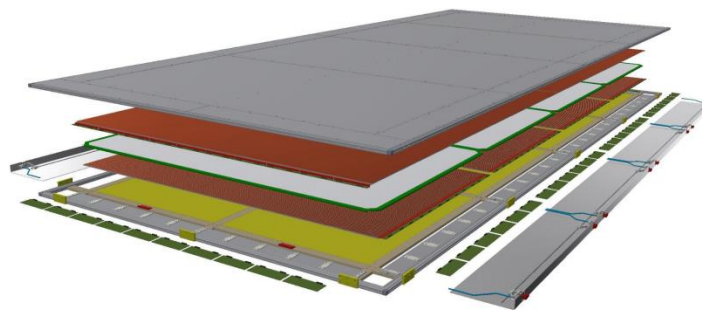


attivita' SHIP – SND @ Bari

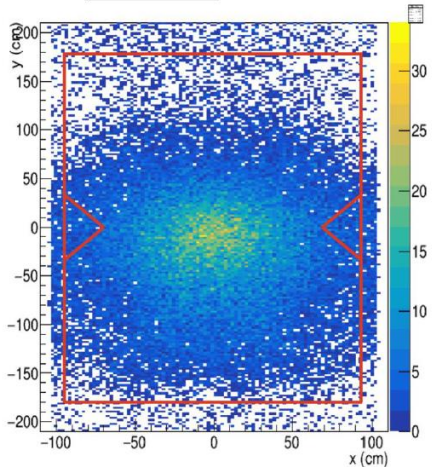
*Tasks for the Muon system:
RPC Mechanical Structure , Electronics , DAQ*



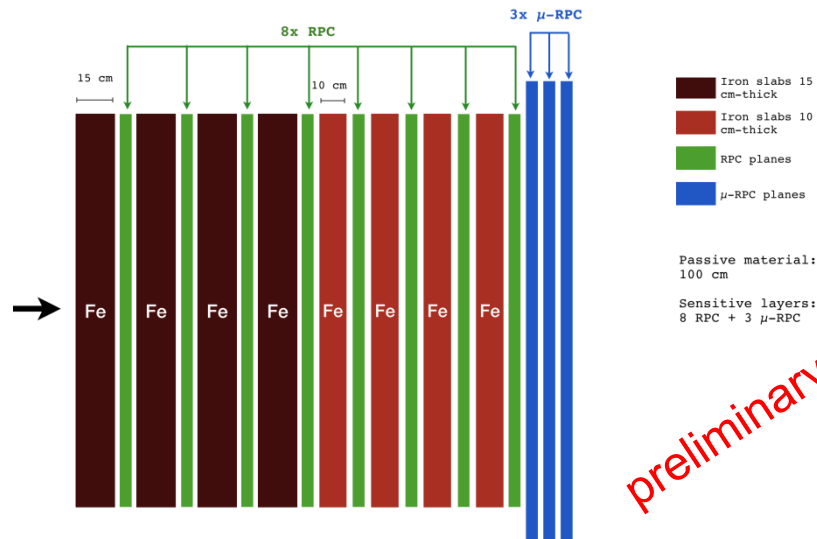
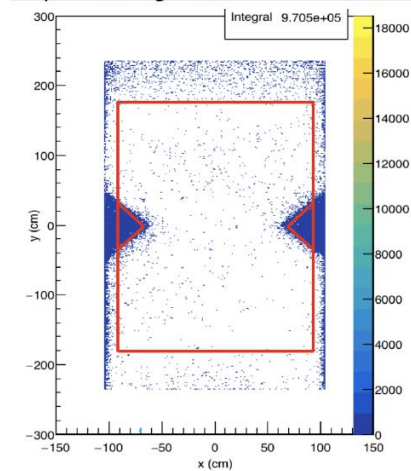
- Optimisation of the Muon ID system:



Map of primary muons entering Muon Filter



Map of background muons in RPC1



preliminary

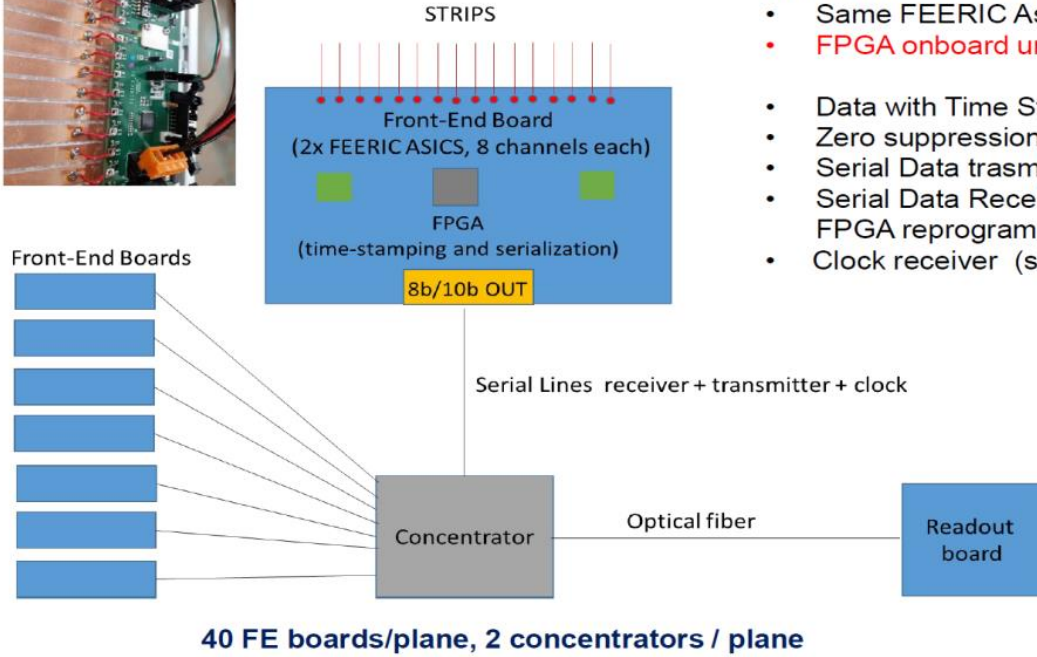
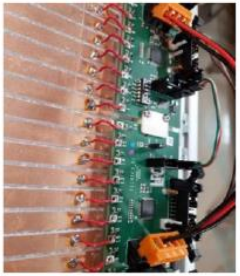


attivita' SHIP – SND @ Bari

*Tasks for the Muon system:
RPC Mechanical Structure , Electronics , DAQ*



- Electronics for the Muon Filter:



- NEW Front end board**
- Same FEERIC Asics
 - **FPGA onboard under development**
 - Data with Time Stamp @160MHz
 - Zero suppression
 - Serial Data trasmission (8b/10b)
 - Serial Data Receiver: self trigger, FPGA reprogramming, slow control
 - Clock receiver (synchronization)

CAD elettronico INFN Bari

- GREEN/GRANT 73 (Gas mixtures for RPC's Eco friEndly operationNs) :
RPC2 @ BA

potenziamentolinee di gas, con centralina dedicata al flussaggio di eco-gas (HFO 1234-ze)



attività' 2020 SHIP – SND @ Bari

Anagrafica 2020:

M. De Serio (30%), R.A. Fini (30%), G. Iaselli (10%), A. Marrone (10%), A. Pastore (30%), S. Simone (30%), G. De Robertis (10%)



- Attività di R&D sul Muon Filter per SHiP sul fronte della meccanica, elettronica e DAQ
- Realizzazione di prototipi per l'elettronica
- Disegno e realizzazione del prototipo di un piano di RPC ($\approx 2 \times 5 \text{ m}^2$)
- Richieste Servizi:
 - 2 m.p. CAD elettronico
 - 3 m.p. Officina Meccanica (1.5 CAD, 1.5 officina)

Coinvolgimento del personale tecnico nei seguenti ambiti:

- attività di test su/con emulsioni nucleari ed RPC
- sistema di scanning e gestione della strumentazione DAQ

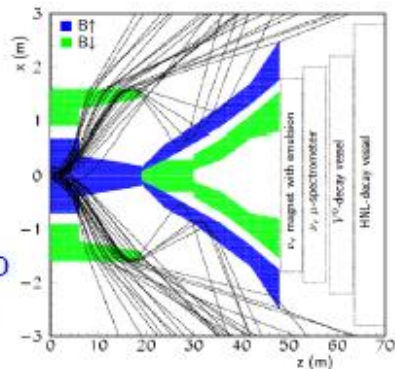
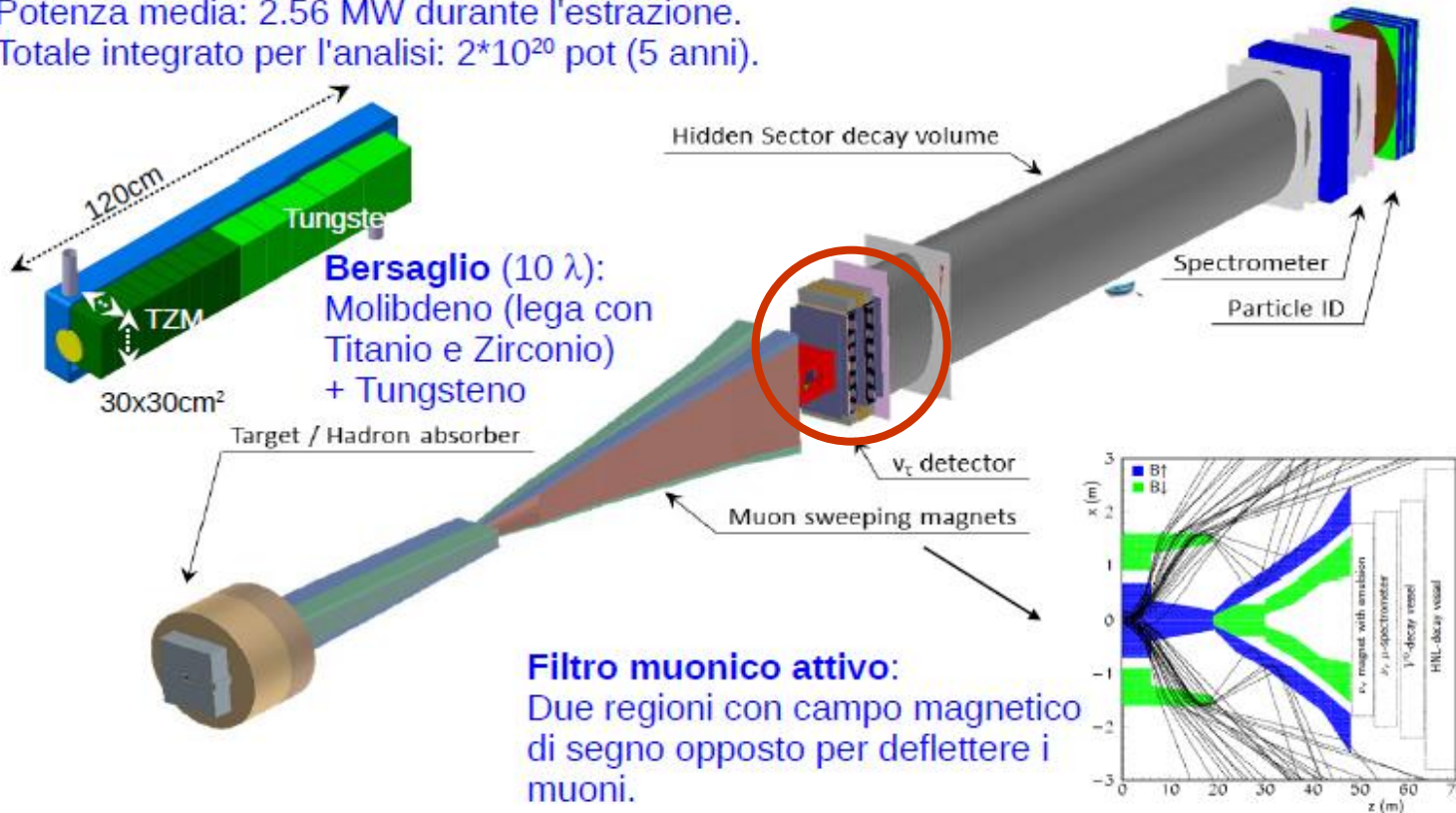
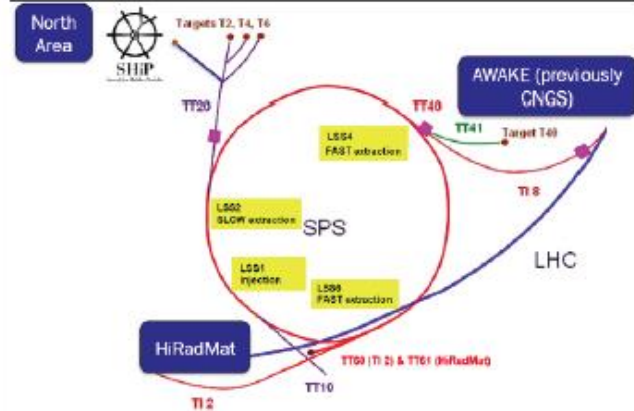


Backup



SHiP al CERN

Fascio: $2 \cdot 10^{13}$ pot/ciclo (7.2 sec) da SPS ($E=400$ GeV).
 Estrazione lenta: 1 sec per ridurre fondo combinatorio.
 Potenza media: 2.56 MW durante l'estrazione.
 Totale integrato per l'analisi: $2 \cdot 10^{20}$ pot (5 anni).

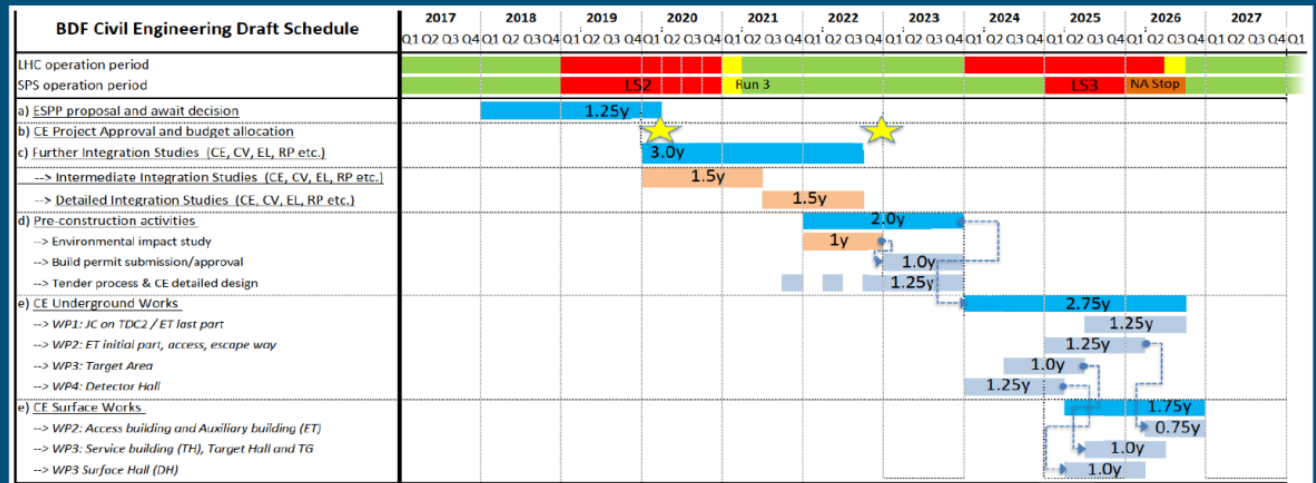




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- Planning obsolete for several reasons
 - CERN budget overstrained with HL-LHC spending peak
 - Expect change of running schedule
 - Need to shift/stretch BDF construction time
 - SHiP prototyping/beam test, production/construction and installation likely to need more time

➔ Re-evaluate realistic time to TDR, production/construction, and installation schedule per subsystem