
CERN

TE-MPE Annual Meeting

21 January 2025

Welcome and General Information

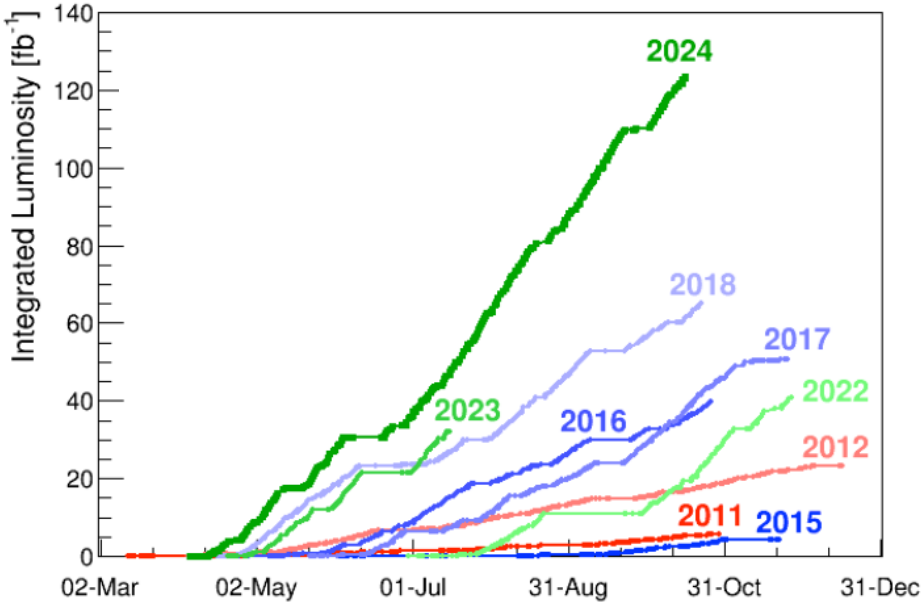
Jan Uythoven

Many thanks to the Section Leaders and group members for their input
Special thanks to Daniel Wollmann, Daniel Calcoen and Claudia Dupraz

15 min

Excellent performance of the accelerator complex

LHC Integrated Lumi



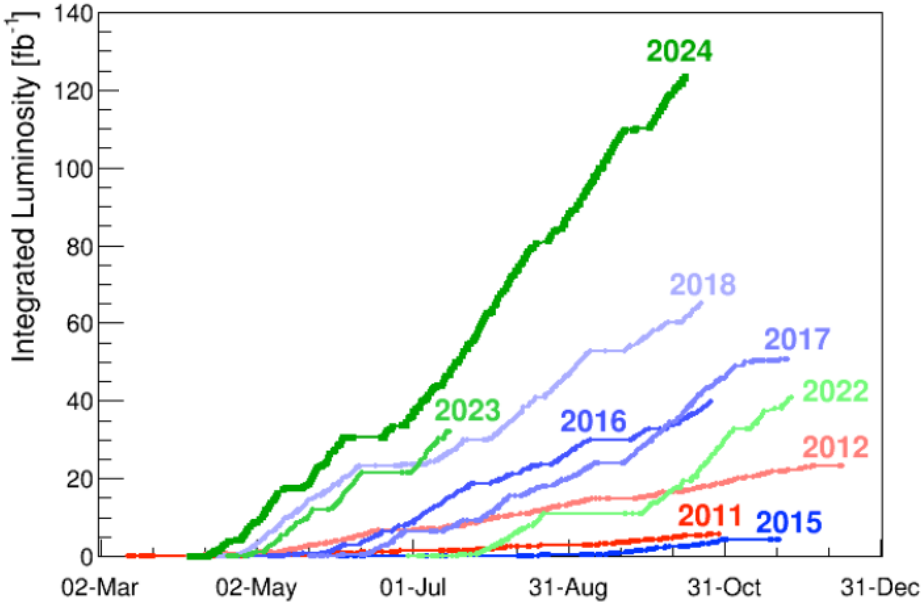
~125 fb^{-1} to both ATLAS and CMS

Injector Availability

	Destination	Achieved 2024	
		Overall [%]	Per destination [%]
	PSB	97.3	97.3
	PS	96.0	96.3
	ISOLDE		97.4
	SPS	92.5	93.3
	East Area		94.1
	nTOF		94.1
	AD		94.1
	LHC	85.8	94.3
	North Area		86.7
	AWAKE		96.8
	HiRadMat		98.4

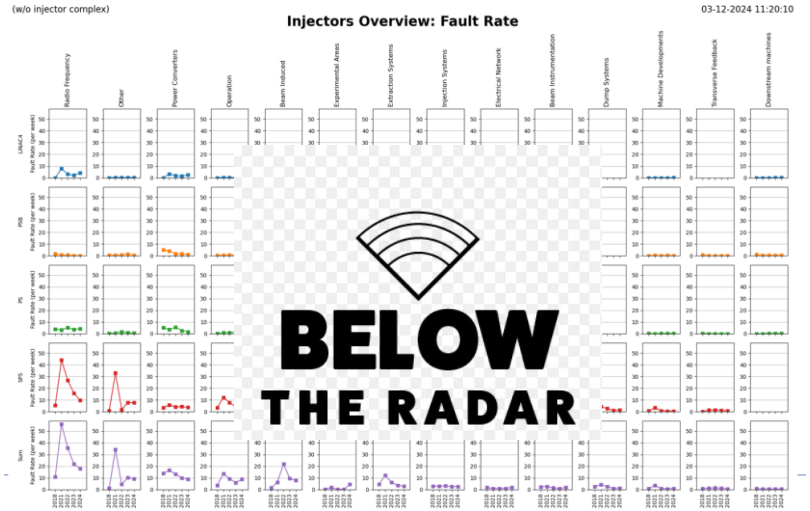
Excellent performance of the accelerator complex

LHC Integrated Lumi



~125 fb^{-1} to both ATLAS and CMS

Injector Availability

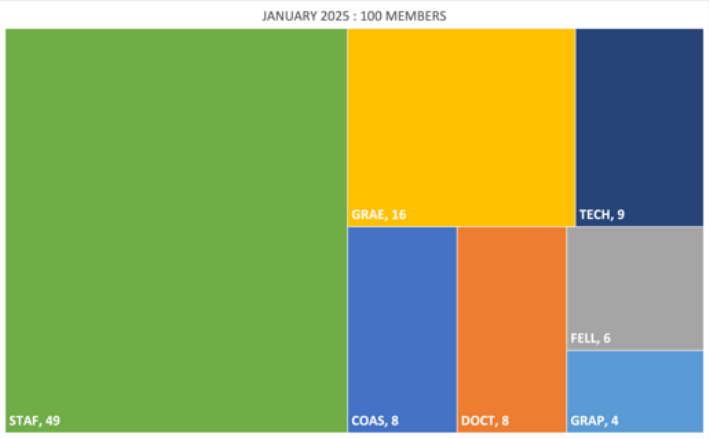



THANK YOU
FOR ALL YOUR HARD WORK AND DEDICATION
THANK YOU
FOR ALL YOUR HARD WORK AND DEDICATION
THANK YOU
FOR ALL YOUR HARD WORK AND DEDICATION

MPE Statistics - 2025

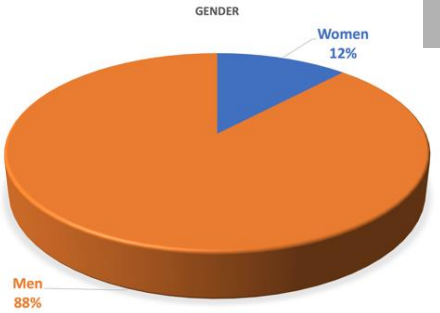
- Diversity is a core value underpinning our Code of Conduct.
- CERN promotes diversity, inclusion and equality at all levels.

Status

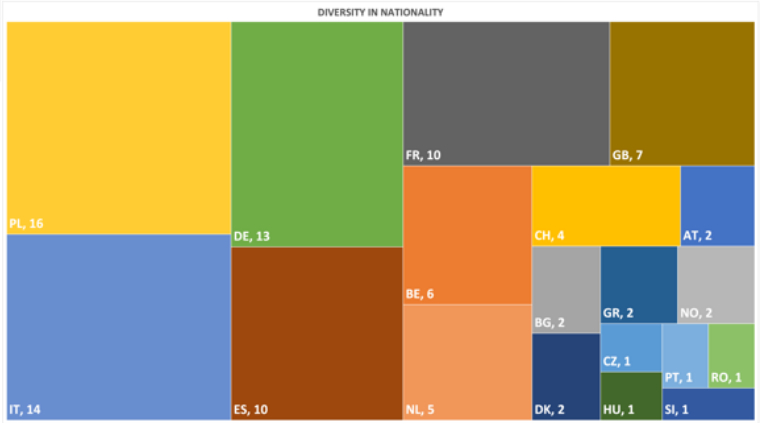


January 2025 : 100 members
December 2023 : 101 members
December 2022 : 92 members
December 2021 : 89 members

Gender



Nationality



19 nationalities

Arrivals in MPE 2024/5

Staff

MORRIS Geoffrey Charles	EP

Fellow, PhD, Quest, Origin

DOMANGE Delphine	CB	HERRERO ALVAREZ Lucia	SF
WESTERMANN David	CB	MURARIU Alexandra	CB
MAYR Daniel	PE	GORNY Karol Stefan	MI
RINALDONI Davide	PE	KOLITSI Foteini	MP
DALLAGLIO Daniele	CB	LOPEZ CORDONCILLO Denisse	MP
SCHNAUBELT Erik Michael	PE	PIRC Vasja	MP

Techs, Students and COAS

BOLTON Samuel Lyndon	MI	PENNOCK Steven Adne	MI
MARCINIAK Karol Tadeusz	PE	GLOCK Alexander	PE
LOEVENDAL Jacob	EP	MEDEIROS PEREIRA Mateus	PE
DOSTMANN Hannah Alida	CB	REYNAUD Valentina	PE
DRYSCH Simone	CB	TEICHROB Leon	PE
HERMUELLER Philipp	CB		

Departures 2024

ATALAY Sina	GORENFLO Max Heinrich	MAGNUS Fredrik	SKOCZEN Andrzej Jozef
BAILEY David Heinrich	GUASCH MARTINEZ Josep	MROCZEK Mariusz Piotr	SPASIC Jelena
BARBA Andreas Verdoner	GUZZETTI Riccardo	MULLER Andreas	TSVARKALEVA Mariya Georgieva
CHARIFOULLINE Zinour	HJELLE Ingrid Midtbust	OBERMAIR Christoph	VITRANO Andrea
CHEDAS CASTRO Pablo	HOLLOS Adam Erik	PRIDII Tetiana	WOJAS Damian Lukasz
DE NICOLAS LUMBRERAS Enrique	JANIK Grzegorz Michal	SANTIAGO FERRER Alvaro	ZACHOU Georgia
DIMITROV MENA Ivan	KARAS Krzysztof	SEGERIE Reynalde	ZILINSKAS Antanas

2024 declared accidents

- Another good year with no absences related to work-accidents
- A total of 7 (minor) incidents
  - 3 related to bikes on the road
  - 1 to bike in the tunnel (GET OFF YOUR BIKE when passing by other people working !)
  - 1 to animals
  - 2 to electrical installations
- Keep on taking care of your and other people's safety
- Drive a bit more slowly on your bike
  - Keep on riding and be visible!

Description
A été percuté à l'arrière de son vélo par un véhicule alors qu'il évoluait dans un rond-point
Personne piquée par une tique
Electrisation au niveau d'une main après avoir touché des broches sous tension en débranchant un câble
Contusion à l'œil et au genou suite refus de priorité par une voiture
Prises arrachées du bandeau constatées lors de l'inspection de sécurité électrique
Légères plaies multiples après voir chuté en vélo en perdant l'équilibre lors d'un changement de dénivellation sur la route
Signalement d'un cycliste à 200 km/h dans le tunnel LHC au moment de croiser du personnel en activité et chutant ensuite après avoir heurté une remorque stationnée

Safety is a top priority and key responsibility of everyone working in TE-MPE

Delphine Letant-Delrieux
TE DSO

Daniel Calcoen
MPE Safety Link Person

(022 76) 7 44 44

Primary care – infirmary

In the event of an emergency or injury or if you need immediate assistance, call the Fire and Rescue Service directly on +41 22 767 4444 (74444 from a CERN phone).

Occupational Health & Mental Health

Mandatory medical appointments

- Entry medical visit
- Periodic medical visit
- Follow-up visit (after a sick leave)
- Departure medical visit

Other appointments

- Consultations on request (patient, employer, occupational health doctor or health specialist
- Medical visit related to the work station
- Duty travel abroad
- Special skills

The mental health continuum

	Healthy	Reacting	At risk	Critical
SIGNS	Calm and steady	Occasional anxiety or sadness	Persistent anxiety or sadness	Excessive anxiety, depression, or suicidal thoughts
	Sense of humour	Irritability or pessimism	Angry or cynical	Angry outbursts or aggression
	Mentally alert	Forgetfulness or intrusive thoughts	Indecision, poor concentration	Unable to concentrate
	Sleeping well	Difficulty sleeping	Sleep disturbances, nightmares	Significant sleep disturbances or oversleeping
	Performing consistently	Feeling overworked or procrastinating	Feeling overwhelmed, poor performance	Unable to complete work tasks
	Confident in self and others	Self-doubt	Distrusts others	Excessive distrust
	Feeling good	Tension or headaches	Persistent physical symptoms	More serious physical symptoms
	Good energy levels	Low energy	Fatigue	Exhaustion
	Physically active	Reduced physical activity	Physically inactive	Lethargic
	Socially active	Reduced social contacts	Avoiding social contacts	No contact with loved ones
	Substance use is occasional and social	Substance use is regular but controlled	Substance use is difficult to control	Substance abuse or dependence
STRATEGIES	Maintain current activities	Recover: slow down and rest	Acknowledge the need for action	Consult a professional immediately
	Practice mindfulness	Build mental health toolkit	Recover: eliminate non-essential tasks	Reach out to peers or someone you trust
	Cultivate social relationships	Identify problems	Reach out to peers	Consider a leave of absence from work
		Act on things that can be changed	Maintain contact with loved ones	Rekindle close relationships

Talk to your supervisor, or you can make an appointment with a CERN psychologist via e-mail at psychologist.medical.service@cern.ch.

One quick slide per Section

Not covering the work done by the section or claiming to be complete in any sense

The aim is to give newcomers a taste of *what else* we are doing in the group

More complete information at the MPE Technical Meetings

TE-MPE-SF
String Facility

BAJKO Marta

- High Luminosity LHC
  Inner Triplet String Facility
- Installation, Hardware Commissioning
- Operation of String

D1 installation and sc link

HL-LHC IT String: From Design Concept to Construction Reality – Facing Challenges and Building on Opportunities
Speaker: Nicolas Heredia Garcia (CERN)

TE-MPE-PE
Performance & Electrical QA

VERWEIJ Arjan

- Superconducting Magnets Hardware Commissioning
- Operation sc magnets, MP3, SigMon, cold diodes, …
- Electrical Quality Assurance
- STEAM framework:
  Simulation of Transient Effects in Accelerator Magnets
- Simulation and protection of sc magnets for future applications

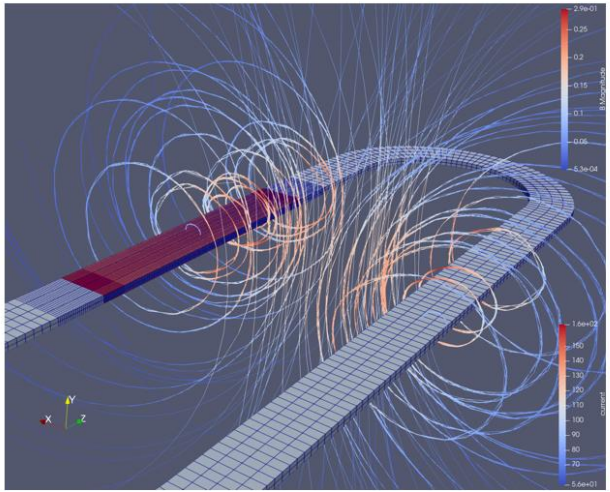
Time Domain Reflectometry: Practical Insights for ELQA

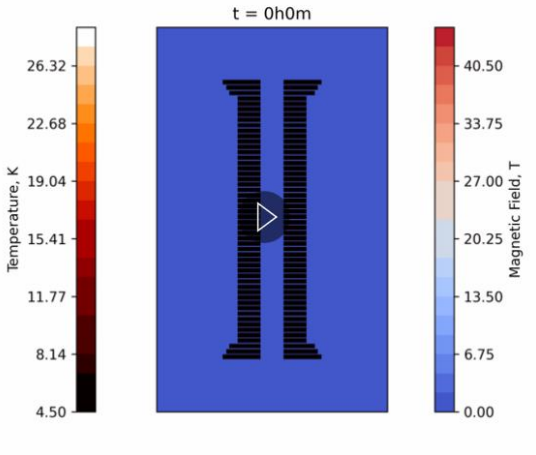
Speaker: Gregory Hugh West

Modelling of (Non-) Insulated HTS coils: 2D ⇒ 3D

STEAM-NICQS

MPE-PE





TE-MPE-MP
Magnet Protection Systems

POJER Mirko

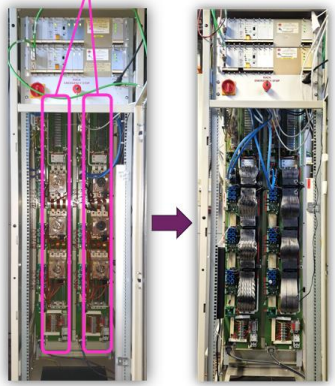
- Quench Protection Energy Extraction Systems
- Circuit breakers / switches / DC contactors
- CLIQ
- Quench Heater Power Supplies
- Universal Control Electronics for EE systems

600 A energy extraction systems CONS

ACC-PM-RM-0015 - EDMS#2269598

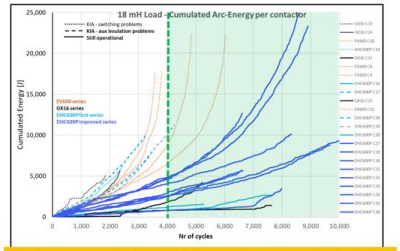
2 systems in one rack

~200 EE systems are installed in LHC.
Maintenance done by TE-MPE-MP; was relying on Russian collaborators in the past.

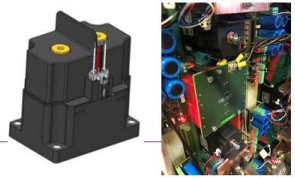


CONS foresees the 1-to-1 replacement of EM circuit breakers with DC contactors (~"big relays") - **Improved dependability and absence of preventive maintenance**.

1050 contactors were delivered in 2024.
The electronics is under finalization and the integration is already well advanced.



DC contactor and associated electronics.



Extensive validation of contactor in 2019-2024: more than 600'000 power cycles performed!

From Imagination to Reality, TE department plenary meeting by Jo

UCE3

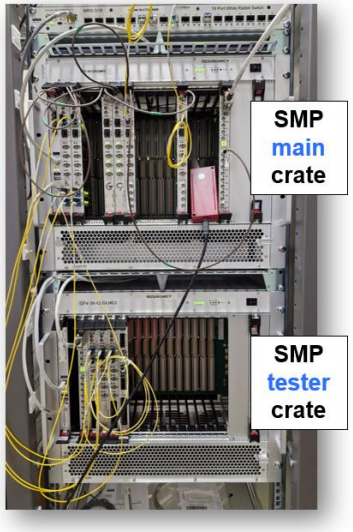
Speaker: Martin Grigorov (CERN)

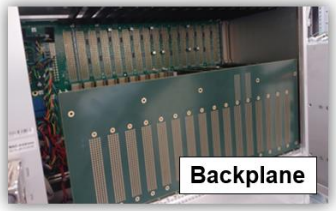
TE-MPE-MI
Machine Interlocks

ROMERA RAMIREZ Ivan

- Beam Interlock System BIS
- Safe Machine Parameters SMP
- Warm magnet Interlock Controller WIC
- Power Interlock Controller PIC
- Fast Magnet Current change Monitor FMCM

Consolidation of the Safe Machine Parameters (SMP)





- Full **SPS/LHC** crates tested
- Tests with **BLM** team
- Software developments in progress
- Production will start in 2025
- **On track for deployment in the SPS and LHC during LS3 !**

A Safety Orchestra
Speaker: Aymeric Dutruel (CERN)

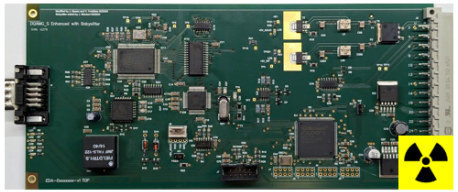
TE-MPE-EP
Electronics for protection

DENZ Reiner

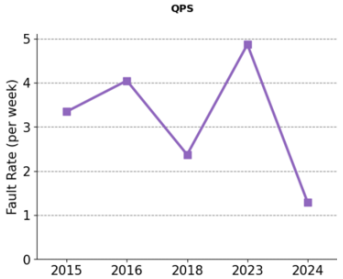
- Quench Detection System (QDS)
- UQDS, PDSU, EDAQ
- DAQs for test benches (SM18, IT String)
- Research and Development

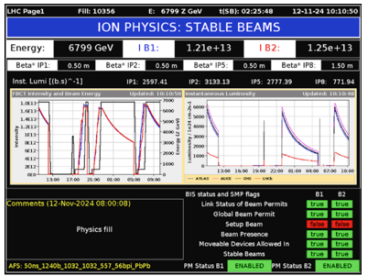
TE-MPE-EP QDS - LHC ION OPERATION

Excellent system performance through timely deployment of R2E upgrades,
a rather challenging and resource intensive task.



Single event latch-up protected radiation tolerant field-bus communication board with auto-recovery functionality.





Large reduction of QPS fault rate during the ion run in 2024, compared to 2023

- 132 x bus-bar splice protection systems (new development)
- 32 x MQ quench detection systems (modified circuit boards)
- 40 x nQPS communication controllers (new development)

A switchboard for valuable signals, the UQDS and PDSU patch panels.

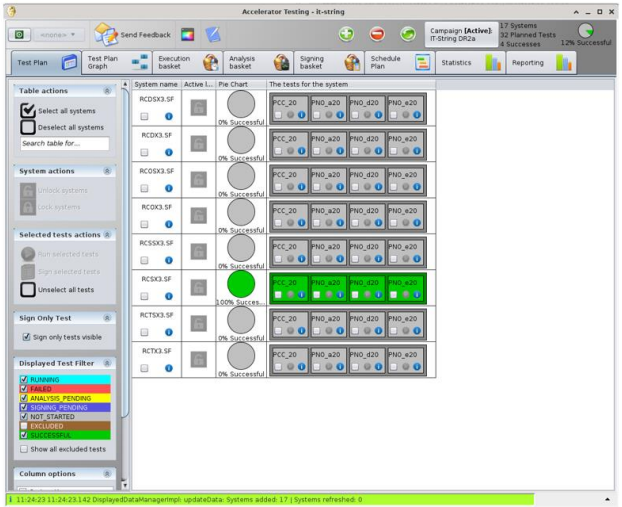
Speaker: Vito Vizziello (CERN)

TE-MPE-CB
Controls & Beam Studies For Protection

WOLLMANN Daniel

- Controls and software systems
- Post Mortem, SigMon, AccTesting
- Dependability studies for protection systems and accelerators
- Failure case and beam induced damage studies
- UFOs
- Machine Protection Panel

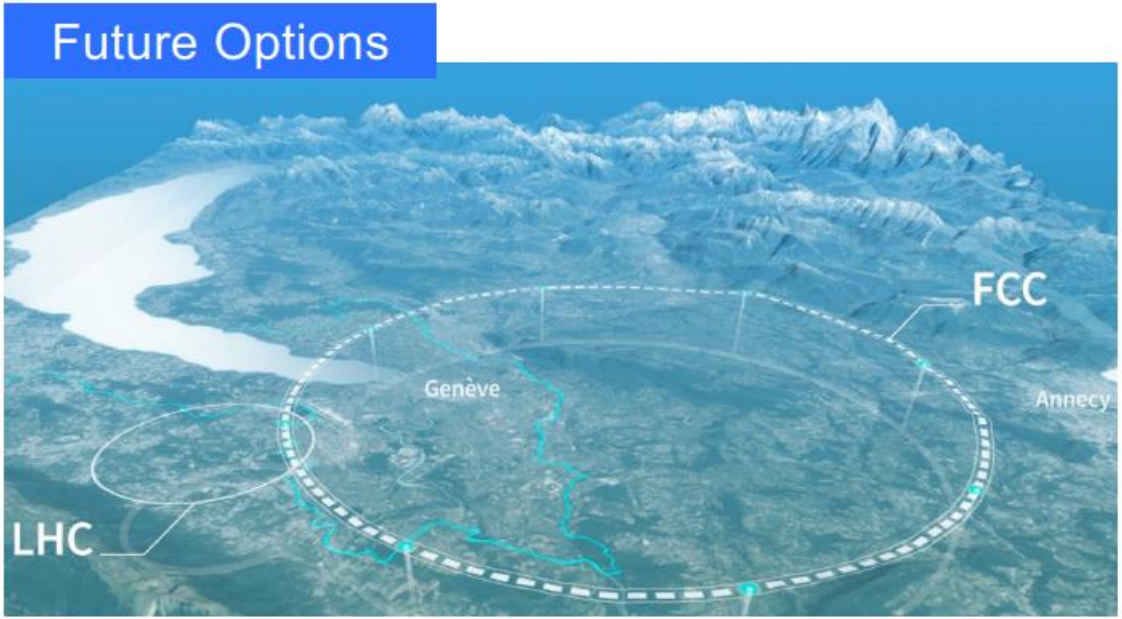
First IT String Commissioning Tests in AccTesting



Beam Damage Experiments on Superconducting Coils

Speaker: David Gancarcik (KIT - Karlsruhe Institute of Technology (DE))

MPE is also working on the (far) future !



This is no. 3

Fabiola, one week ago:

Top **5** objectives for 2025

Comply with the new schedule for HL-LHC
- Prepare for LS3 (immense amount of) work
- HL-LHC: commission IT string cold; finalise key magnet delivery/assembly; advance crab cavity production/validation
- ATLAS: complete ITk sensor/FE chip fabrication; produce strip barrel staves/endcap petals and pixel modules at nominal speed
- CMS: start production of tracker modules and ladders and HGCAL modules and cassettes
- LHCb Upgrade II and ALICE3: converge on the scope of the upgrades with the experiments and the funding agencies

Successful and safe operation of the accelerator complex, experiments and computing

Preliminary luminosity targets: 120 fb^{-1} pp to ATLAS and CMS; 12 fb^{-1} pp to LHCb; 2.2 nb^{-1} Pb-Pb to ALICE, ATLAS, CMS
(to be finalised at Chamonix 2025)

FCC Feasibility Study

Deliver the final report and related documents and prepare for the next steps

European Strategy for Particle Physics (our future)

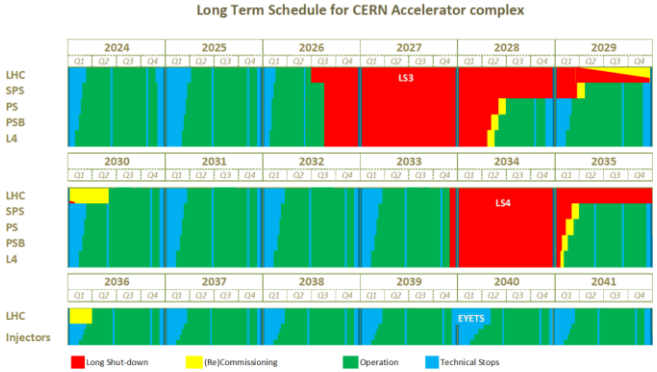
A major effort of the whole community! Strong participation needed, in particular through input submission and participation in Open Symposium

Finalise the implementation of the 2021-2025 objectives (CERN/3556/Rev.)

In particular: return to Member and Associate Member States; personnel well-being; training; education and outreach; environment and sustainabiltiy; impact on society

… and, of course, ensure a smooth transition to the new Management

83



Next: Speed Talk

7 min

They are ***not***:

- The highlights of the section
- Covering the most important topic of the section

- They are aimed to be:
  - Speed (7 minutes)
  - Interesting

www.cern.ch