

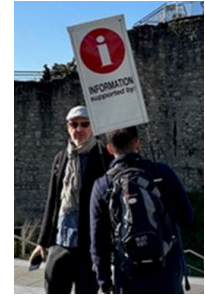
# Welcome to the injector MD days 2025!

February 3<sup>rd</sup> 2025

Foteini Asvesta and Benoit Salvant for the injector MD team

# Injector MD team

- OP MD linkpersons:
  - CPS : Fabrice Chapuis, Oliver Hans, Gil Imesch
  - SPS: Johan Dalla-Costa, Chris Wetton
- ASM support:
  - Emanuele Matli



# Main objectives for these MD days

- Discuss and converge on the provisional dedicated MD planning for 2025
- Identify:
  - issues experienced during 2024 MDs
  - special wishes for 2025 MDs
  - bottlenecks for planning in 2025/2026
- Check that the major topics from JAPW'24 and Cham'25 are covered

# A look back to 2024 objectives

## Main topics to address in 2024 (JAPW'23+ Cham'24)

### LHC beams

- **Tail generation** → Study and improve transition crossing in PS → short parallel MDs in PS (Miltos) → Done
- Beams for **Van der Meer scans** → combined commissioning and studies with LHC (Eleanor) → Done and operational
- **Longitudinal beam quality** through the chain → Lots of improvements, to be continued
- Need to optimize **both BCMS and standard beams** for LHC → Done for BCMS, and almost to target

### FT beams

- Restart high intensity MDs in PS following repair and replacement of RF bypasses (Heiko) → Done
- Reduction of losses
  - in particular crystal shadowing (Francesco) → Studies done, operational implementation planned for 2025

### Need to improve LHC ion beam quality

- sounds more like commissioning in the short time allocated, under discussion with OP → Done

→ Excellent improvements throughout the year  
→ Congratulations to all MD users

# Main topics to address in 2025 (JAPW'24+ Cham'25)

## LHC beams

- Complete the push to LIU nominal performance for standard filling scheme
- Brightness & tail characterisation and optimisation
- Reliability and reproducibility (proposal of LIU reliability run in 2026)
- Operational margin?

## FT beams

- SHiP cycle, beam, extraction and target tests
- Loss reduction and extraction optimization

## HL-LHC project:

- Crab cavity beam tests (new RFD cryomodule now installed in SPS)
- Prepare all beam variants for HL-LHC MDs

## Automation:

- Hysteresis studies to avoid degaussing cycles

Long parallel MDs

Dedicated MDs

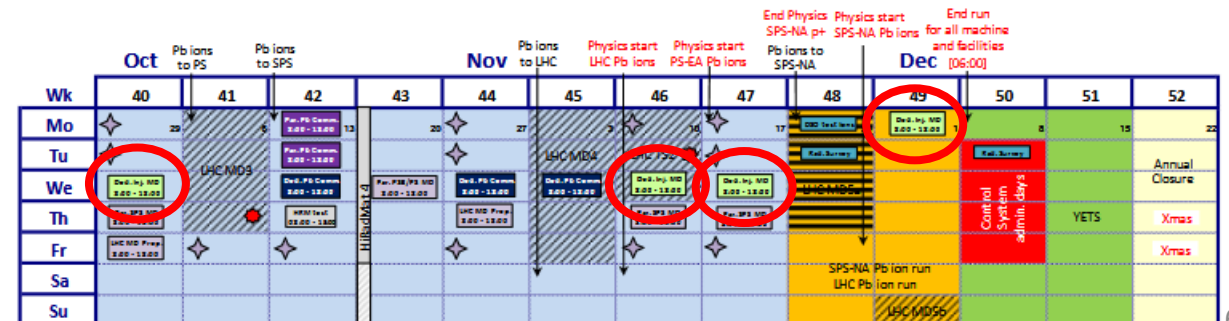
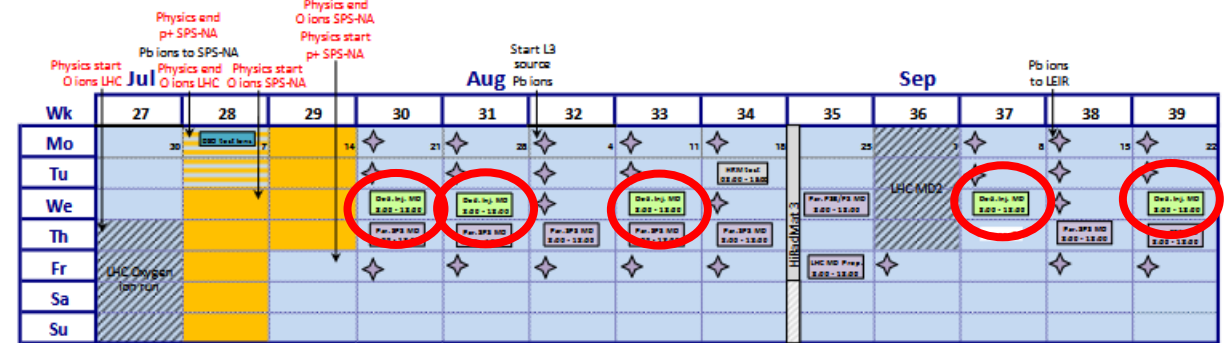
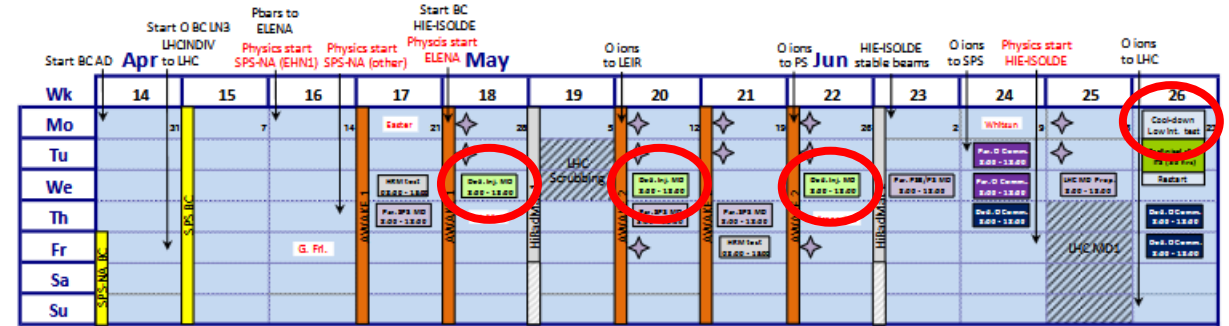
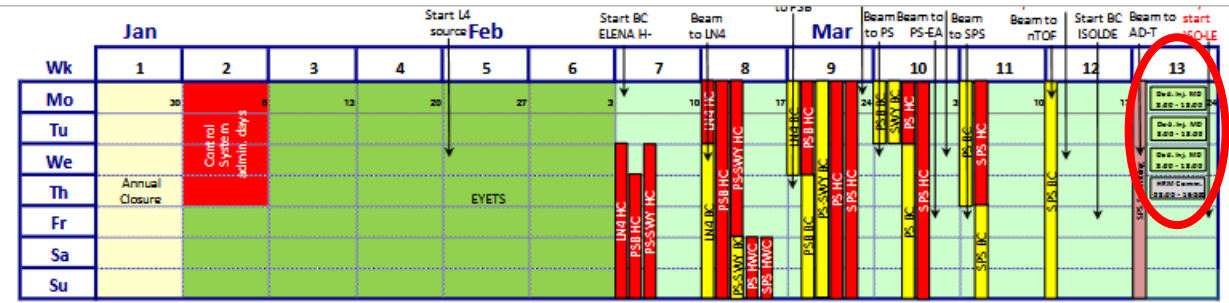
# MD planning 2025

- 15 dedicated slots (10h)

- 3 slots (too) early during SPS scrubbing (!)
- 3 slots in May
- 3 slots during Summer
- 3 slots in September
- 2 slots mid-November
- 1 slot during the ion run

- 24 h cooldown before TS

- Dedicated low intensity tests (with LHC in TS)
- RP constraints to be clarified



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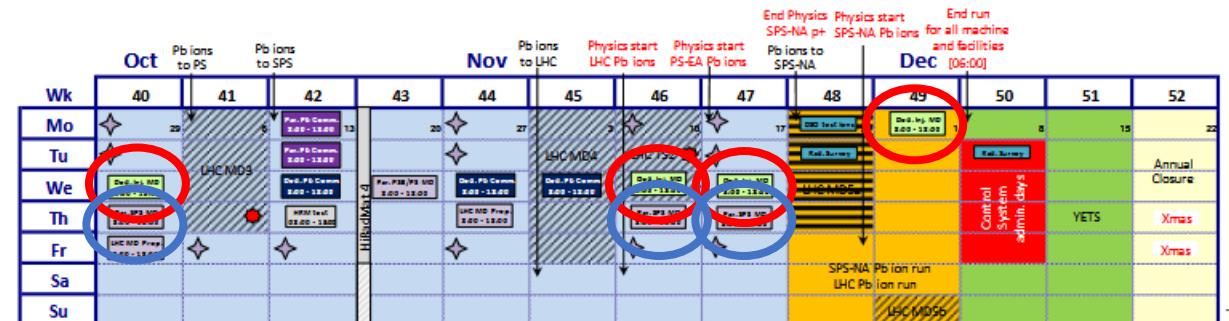
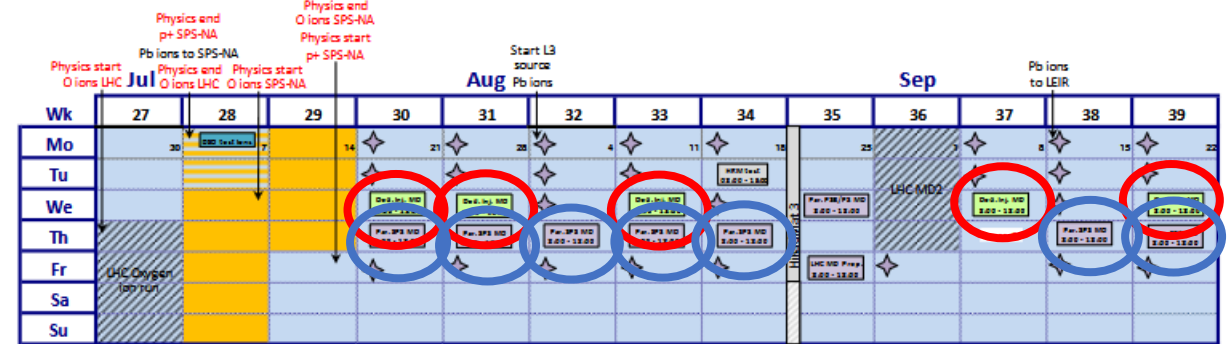
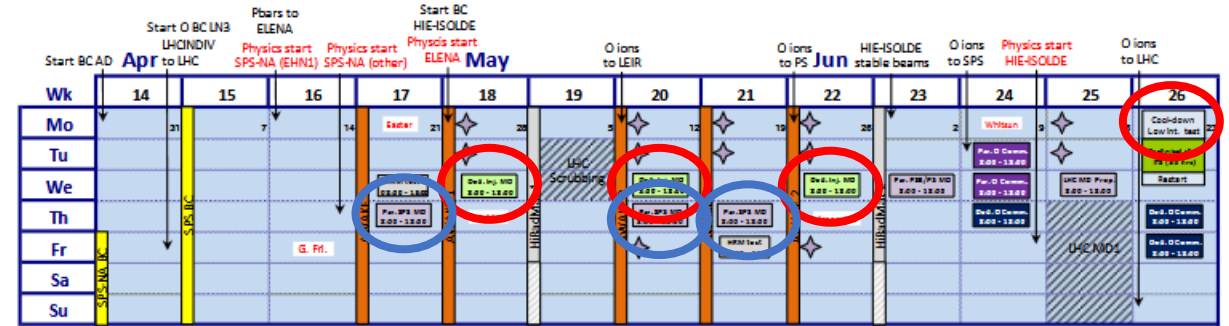
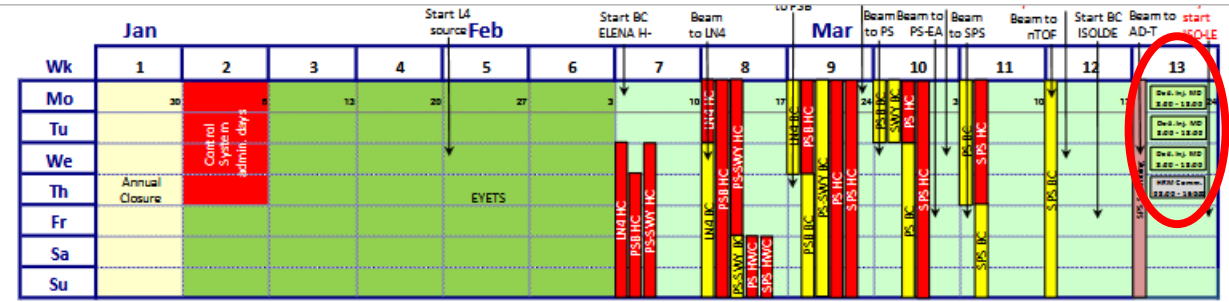
- 24 h cooldown before TS

- Dedicated low intensity tests (with LHC in TS)
- RP constraints to be clarified

- 13 long parallel slots

- Short parallel MDs:

- Only few slots in October/November



# Rules for the MD days

- Talks of 8' (sharp)
- 7' of discussion
- 1 talk per MD user
- Focus on 2023 results/issues and 2024-25 wishes/plans



Many thanks to the friends of the apéro for the help:

Chiara, Vera, Lucie

Many thanks to Lucie for the logistical support

Many thanks to IEFC and ATS for the financial support



# Dedicated MD requests for 2025

- SHIP → 10 slots
- Crab cavities → 6 slots
- COLDEX → 2 slots
- ABT (non-SHIP) → 4 slots
- EPA → 3 slots
- Collimation → 2 slots
- ABP (non-SHIP) → 2 slots
- RF → 1 slot
- Ions (O, Pb) → 3 slots

→ 36 slots (360 h requested) for 150h available

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- Crab cavities → 6 slots
- COLDEX → 2 slots
- ABT (non-SHIP) → 4 slots
- EPA → 3 slots
- Collimation → 2 slots
- ABP (non-SHIP) → 2 slots
- RF → 1 slot
- Ions (O, Pb) → 3 slots

- SHIP → 5 slots
- Crab cavities → 4 slots
- COLDEX → 1 slot
- ABT (non-SHIP) → 1 slots
- EPA → 2 slots
- Collimation → 1 slots
- ABP (non-SHIP) → 1 slots
- RF → 0 slot
- Ions (O, Pb) → 1 slot

→ 34 slots (340 h requested) for 150h available...

# Very draft proposal for dedicated MDs

- March 24: **crab cavities**
- March 25: ABP
- March 26: **ABT** + 3h EPA
- April 28: **crab cavities** + 3h EPA
- May 14: Collimation
- May 28: **SHiP** + 3h EPA
- Cooldown + TS: COLDEX+ **crab cavities** +3 h EPA
- July 23: **SHiP** +3h EPA
- July 30: *SPARE*
- Aug 13: **SHiP** +3h EPA
- Sep 10: **crab cavities** + 3h EPA
- Sep 24: **SHiP**
- Sep 31 : *SPARE*
- Nov 12 (no LHC): **crab cavities**
- Nov 19: **SHiP** +3 h EPA
- Dec 1: ions

→ To be discussed further!