

# COMPASS 2018 Run Week coordination report

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## Timeline

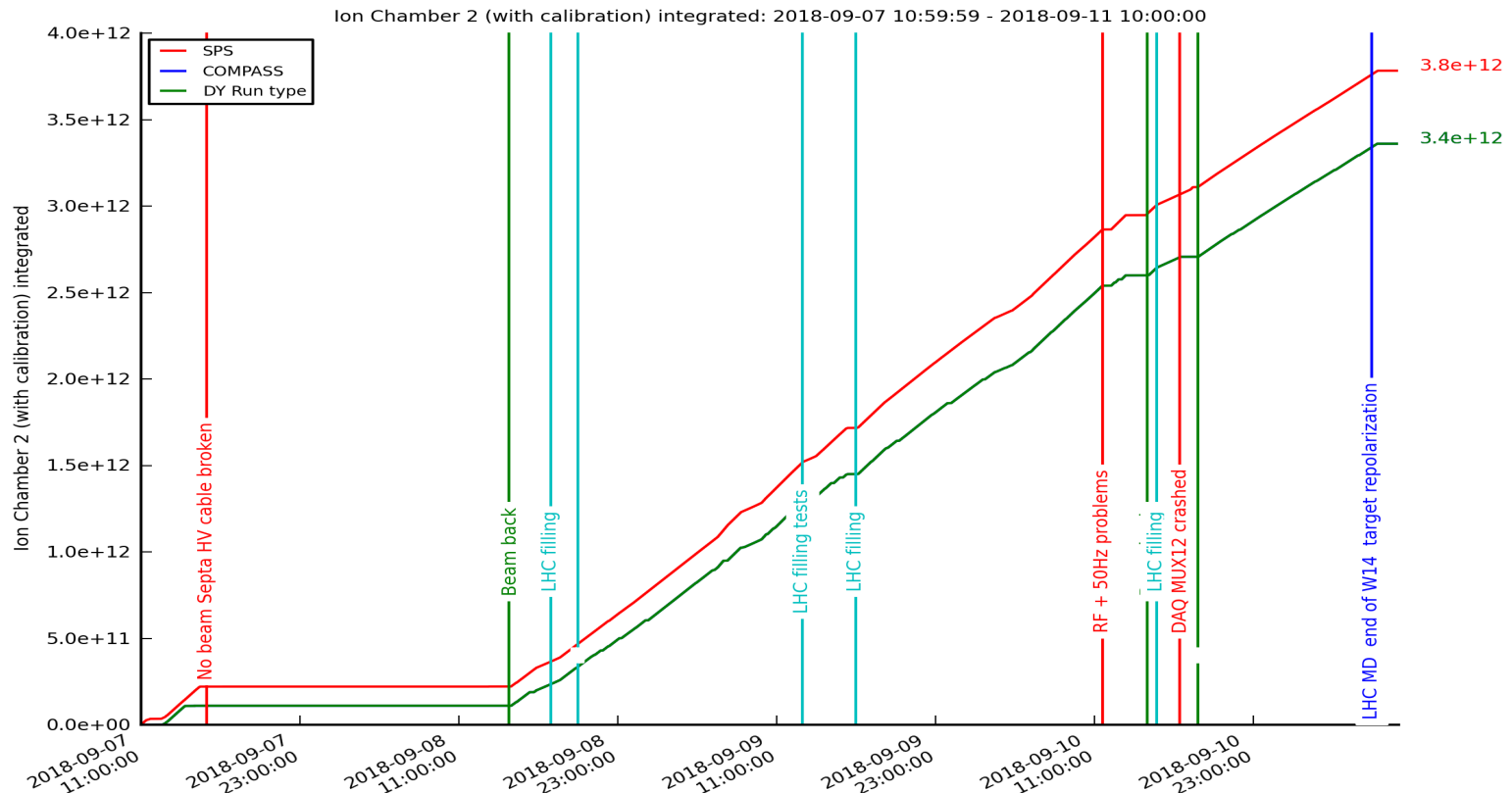
- Last half of W14 period
- LHC and SPS parallel MD since Tuesday morning
- Target polarized in opposite direction up to Wednesday evening
- Interventions and data taking during the MD
- CEDAR studies (cf talk of Moritz)
- DY data taking resuming Wednesday evening with the W15 period

# Last part of W14 period



## Data taking

- No beam from Friday 16:00 to Saturday 14:50 due to Septa HV cable broken + cavity problem, target repolarization up to +74.4% and -70%
- ½ no beam period due to RF and 50Hz problems Monday afternoon
- End of period Tuesday 8:00 with the LHC + SPS parallel MD





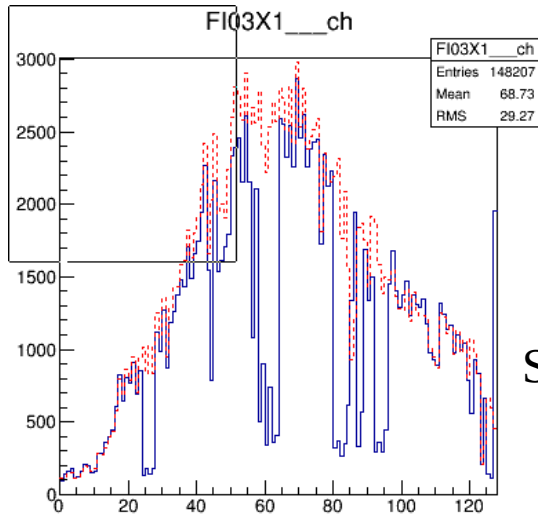
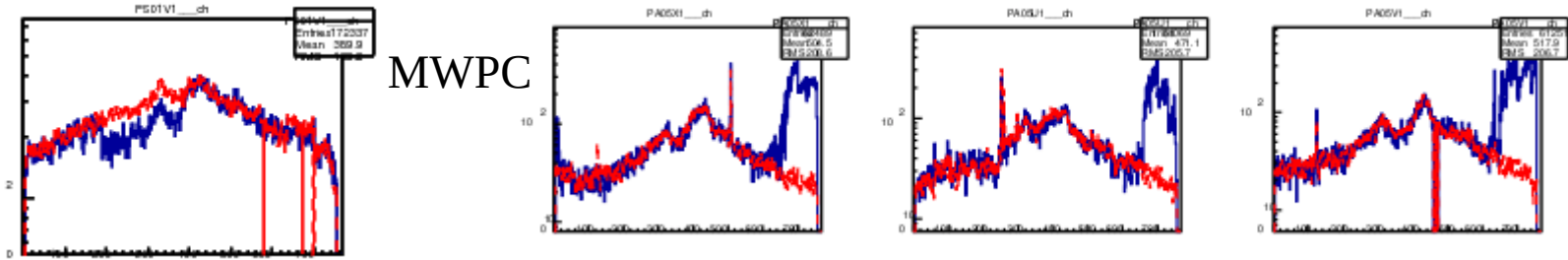
## Spectrometer

- **MWPC**: hotlink transmission errors on sld 460 port 5 (PS01V1), can't be recovered by reload or powercycle. Other errors fixed by cable replugging. Transient noises on PA05
- **RW**: spill skip errors appeared on sourceId 432 port 6, several attempts of disconnection/reconnection, sometimes succeeded
- **Scifi**: channels on FI03X which disappear and reappear by themselves
- **ECAL1**: peak on EC01P01 sum SADC spectrum, linked to HV settings
- **PixelMM**: usual sourceId missing errors and high (or too low) noise, fixed with reload and powercycling
- Crash of **MUX12 DAQ Multiplexer**, powercycled by pulling it from its VME crate (gallery Jura side)

# Last part of W14 period

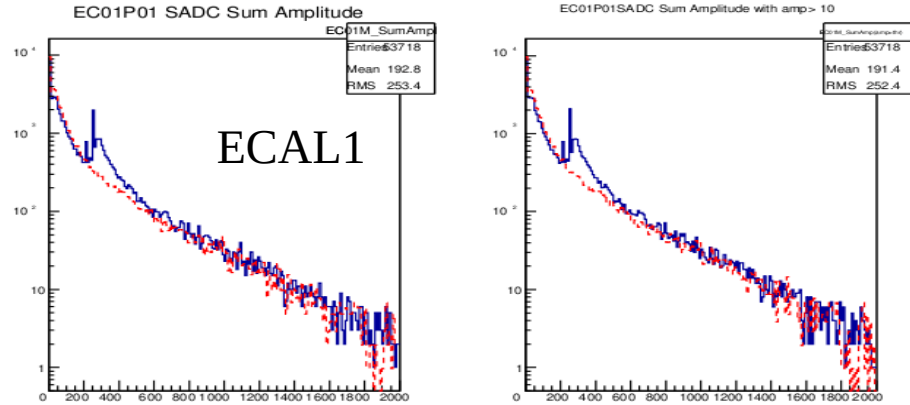


MWPC



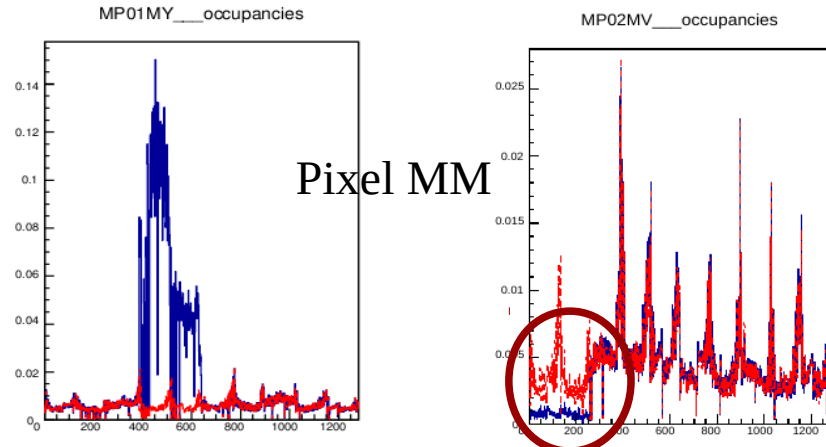
SciFi

ECAL1



ECAL1

Pixel MM





## Beam status

- SPS parallel MD (Tuesday) then LHC MD (Wednesday to Sunday) → lower spill rate due to long super-cycles and possible degraded beam quality

## MD activities

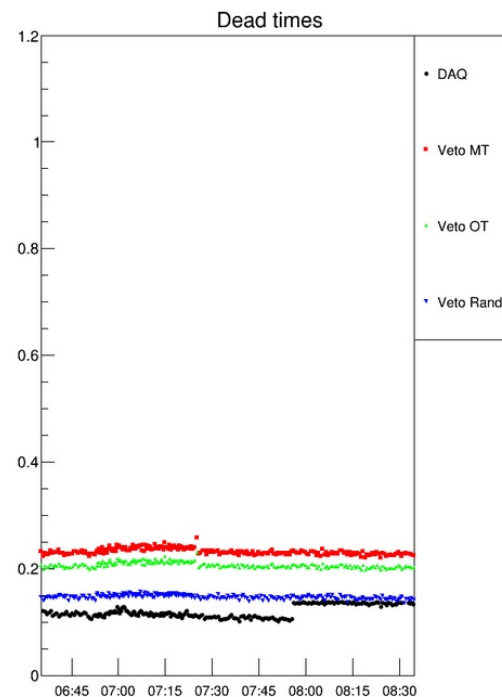
- **Target repolarization** on the opposite direction, to be combined with the W14 period (Tuesday 8:00 to Wednesday evening)
- **Alignment runs** with target solenoid, taken both Tuesday and Wednesday morning
- Data taking for **trigger studies** with low intensity pion beam during the available beam time
- **MWPC**: survey of PS Tuesday afternoon, adjustment of position due to tilts both in vertical and horizontal directions
- **MWPC PS01**: attempt to fix faulty port 460/5 directly on the detector → no success
- **RW**: attempts to swap then to replug hotlink cables, errors finally disappeared
- **CEDAR**: studies on discriminator signals (cf Moritz's talk)

# Beginning of W15 period

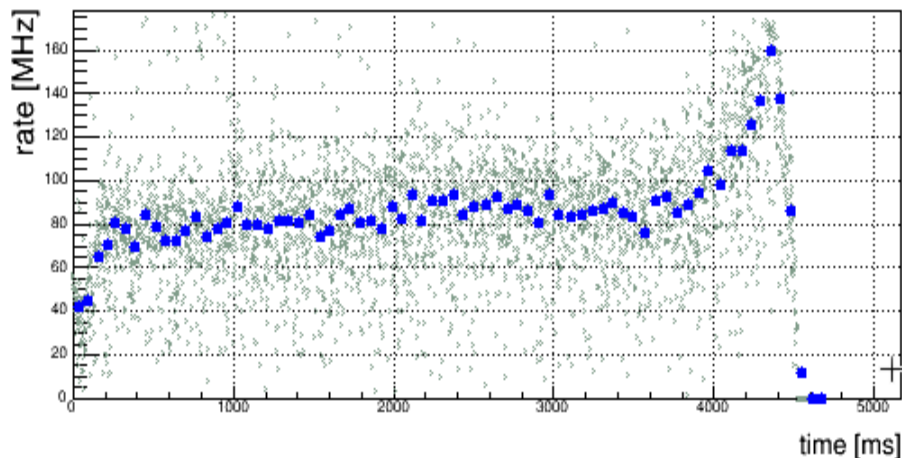


## Data taking

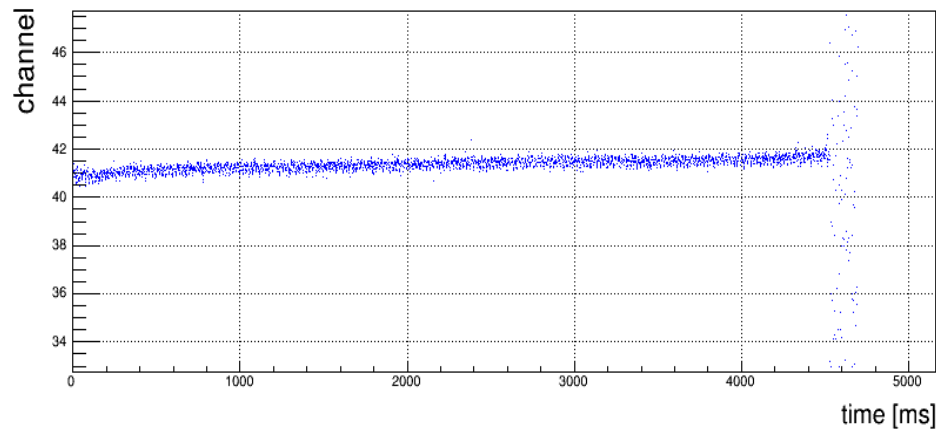
- Started Wednesday evening at 19:30
- Target polarization reached +74.1% and 68.6%
- Large part of the day at 1 spill/SC, sometimes also during night
- Beam slightly unstable, with intensity peaks at the end of the spill, also jumps in DAQ dead times
- Movements of the beam position vs time in spill sometime visible, to be investigated



rate vs. time // Fri Sep 14 00:44:52 2018



mean[channel] vs. time // Thu Sep 13 08:15:19 2018

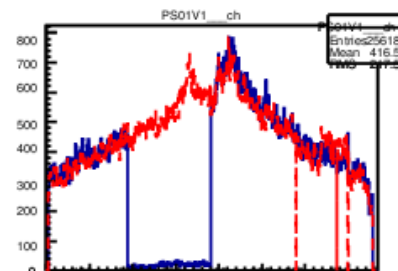


# Beginning of W15 period

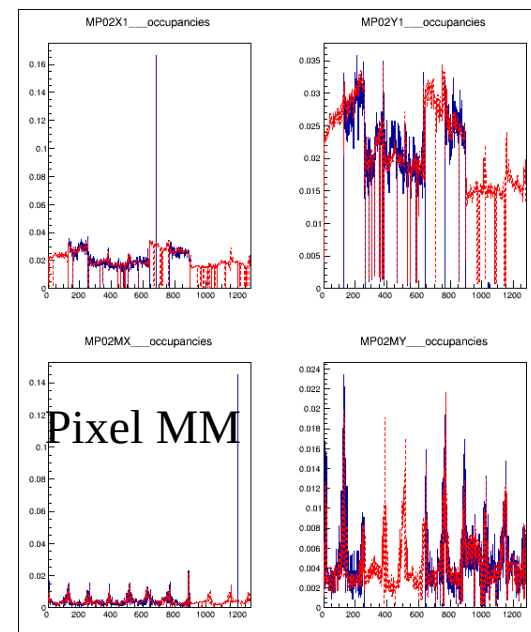


## Spectrometer

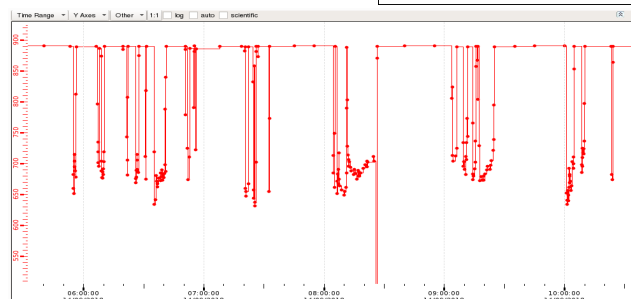
- **MWPC**: hotlink transmission error on sourceId 460 port 5 still present, inducing lower efficiency on a part of PS01V1, to be investigated during the next MD
- **RW**: spill skip errors disappeared on port 6 but appeared on port 0
- **PixelMM**: broken fuse the last night on the station 2 XY doublet, 16 APV cards without power; beside usual sourceId missing errors and high noises
- HV crate for **SciFi Japan** unable to communicate, went back after restart
- **RICH MAPMT** Jura-top HV n°4 unstable this morning
- **CEDAR** efficiency studies ongoing



MWPC



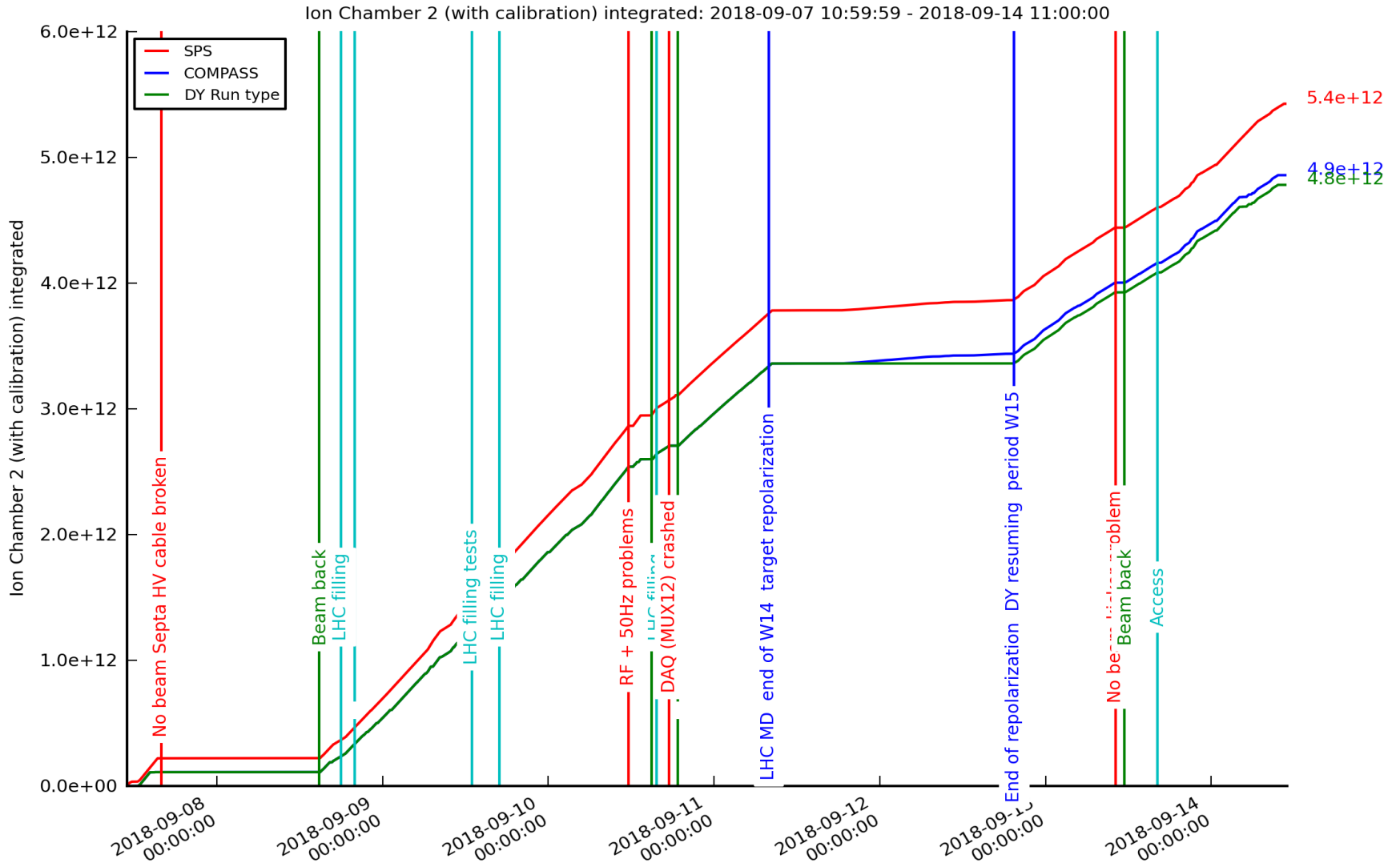
Pixel MM



RICH  
MAPMT



# Overview of the data taking



# Conclusions



- End of W14 period with 15395 spills
- Good beam during W14 excepted 1 day without beam, used to increase polarization
- LHC MD since Tuesday morning until Sunday
- 1.5 days used to reverse polarization, hardware interventions, alignment and trigger studies data taking, and CEDAR studies
- New W15 period since Wednesday evening, 4090 spills so far despite the LHC MD

Thanks to all shifters and experts, my best wishes to Dominik !

# Spares





| Spills in W14 | SPS spills | Recorded | Good | Empty |
|---------------|------------|----------|------|-------|
| 6401          | 686        | 517      | 482  | 35    |

## Beam

- Some small beam stops end of Friday morning (30 minutes intervention)
- Then Septa HV cable broken → no beam from 16:00 to 13:00 Saturday
- Beam back 13:13 but immediate cavity problem requiring intervention
- Beam really back at 14:50
- Stable beam and smooth data taking since then

## Spectrometer

- **Target:** repolarization Friday evening and Saturday morning, went from +73 to +74.4%, and from -65% to -70%
- **MWPC:** several front-end errors (port 9 and 11), solved by LV unplugging/replugging, also one faulty MUX12 port ?
- **CEDAR:** access to power cycling
- **RICH:** 2 times trip of MAPMT HV (Salève and Jura down), probably related to the HV power supply
- Some noisy or missing channels here and there (PA05, DC00U, Rich wall)



|               |            |          |      |       |
|---------------|------------|----------|------|-------|
| Spills in W14 | SPS spills | Recorded | Good | Empty |
| 13369         | 3793       | 3544     | 3535 | 9     |

## Beam

- Stable beam during the period
- LHC filling 18-20:00, then some LHC filling tests around 13:00

## Spectrometer

- **MWPC**: usual hotlink errors on PS01V1 (sld 460 port 5), several attempts of reload and powercycle without success. Also errors appeared on PA04U (sld 453) around 15:45 port 11, fixed during access b unplug/replug LV cable
- **RW**: GeSiCa missing errors appeared around 15:30, reload did not help, fixed by unplug/replug hotlink cable during the access
- **DC**: event number smaller error fixed after powercycle
- **PixelMM**: 2 powercycles during the night due error on sld 380 then 382, also VM crate powercycle to recover access to pccofe15
- **ECAL01**: additional peak on SADC sum spectra for EC01P1, expert investigates
- **RICH MAPMT**: 1 new sector failed



|               |            |          |      |       |
|---------------|------------|----------|------|-------|
| Spills in W14 | SPS spills | Recorded | Good | Empty |
| 13369         | 4091       | 3475     | 3433 | 37    |

## Beam

- Smooth beam during the whole period
- ½ hour interruption around noon due to RF problem + 50Hz problem 13:17-15:00
- LHC filling around 17:00

## Spectrometer

- **MWPC**: still permanent connection errors on sld 460 port 5 (PS01). To be investigated during MD
- **RW**: errors appeared yesterday on mux 2000 (sld 432 port 6), fixed after access but went back. Possible action during MD
- **DC**: some errors recovered after reload (+ 1 powercycle)
- **PixelMM**: errors fixed after reload
- **SciFi**: several missing channels on FI03X which recovered by themselves
- **ECAL1**: EC0P01 SADC sum spectrum finally recovered by himself
- **Straws**: MTV errors, correlated with beam quality ?



## Beam

- SPS parallel MD + LHC MD from Tuesday morning 8:00 to Sunday evening
- Probable degraded beam conditions

## Program

- 2 days to reverse polarization, **no detector movement allowed**
- Alignment runs Tuesday and possibly Wednesday
- Access for survey of MWPCs Tuesday afternoon
- Investigation on errors on MWPC and RW
- New firmware on CEDAR read-out, threshold to be remeasured afterward
- Other foreseen activities ?
- DY data taking to resume Wednesday evening

## Foreseen schedule

- 13369 good spills in W14 up to now ~4.5 days
- Next MD starting from Monday 17 morning ~4.5 days from Wednesday evening
- → Repolarization to be started from Tuesday morning 8:00
- Alignment Tuesday from 10:00 or 11:00



|               |            |          |      |       |
|---------------|------------|----------|------|-------|
| Spills in W14 | SPS spills | Recorded | Good | Empty |
| 15395         | 2152       | 2034     | 2026 | 8     |

## Data taking

- Smooth beam during the evening and the night
- SPS MD since 8:00, 2 spills in 48s
- Alignment runs taken this morning

## Spectrometer

- **Target** being repolarized in opposite direction
- **MWPC** and **RW**: still usual errors, + noise on PA05 was back
- **Pixel MM**: usual errors fixed by reload
- **DC**: 10-20% errors on sld 258 port 1 (DC00V1), disappeared by themselves
- **Scifi**: a lot of missing channels on FI03X again
- **MUX12 multiplexer** crashed yesterday end of afternoon → fixed by unplugging/replugging it

## MD in progress

- Survey of MWPC, CEDAR studies, attempt to fix of RW + DC errors





|               |            |          |      |       |
|---------------|------------|----------|------|-------|
| Spills in W14 | SPS spills | Recorded | Good | Empty |
| 15395         |            |          |      |       |

## Data taking

- LHC + SPS parallel MD during Tuesday 8:00, limited impact on the COMPASS beam
- Data taken: alignments (yesterday and today), trigger test data

## MD activities

- **Target:** polarization in progress, +73.3% / -67.8% at 15:50
- **MWPC:** surveyed yesterday afternoon, some position adjustments of PS01
- **MWPC** readout errors: faulty hotlink cable but no improvement
- **RW** readout errors: tentative to swap hotlinks on multiplexer but errors disappeared; went back and disappeared later; new transient errors on port 4
- **CEDAR:** studies on discriminator signals, some problems observed
- **COMPASSVM22:** crashed due to db disk full, not used for the moment



| Spills in W14 | W15  | SPS spills | Recorded | Good | Empty |
|---------------|------|------------|----------|------|-------|
| 15395         | 2011 | 2240       | 2030     | 2011 | 19    |

## Data taking

- DY run resumed around 19:30, new period W15
- Good beam during the evening and night (3h LHC filling), 1 spill/cycle since this morning due to LHC MD, 1 hour stop (kicker problem)
- Some instabilities observed at the beginning of the MD (DAQ dead time, beam position)

## Spectrometer

- **Target** polarization just before to go to transverse: +74.1% / -68.6%
- **MWPC**: usual hotlink transmission errors on sld 460 port 5
- **Pixel MM**: usual errors fixed by reload and powercycle
- **DC**: transient errors on sld 258 (DC0) fixed by OFFSPILL reload
- **CEDAR**: efficiency studies ongoing
- **Gateway pccogw02** crashed once

