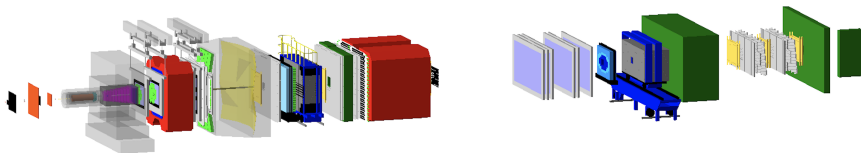


COMPASS weekly coordinator report

17-24/Aug/2018

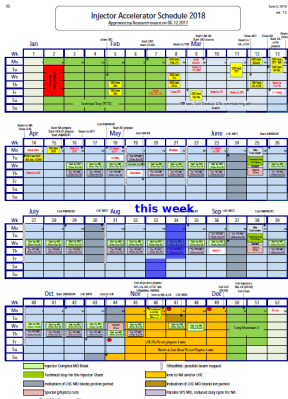
Ana S. Nunes (LIP-Lisbon)



CERN, August 24, 2018



This week in history



SPS user schedule for 2018

schedule issue date: 15-Aug-2018

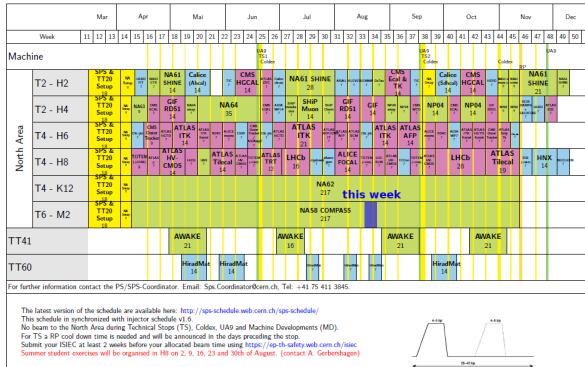
Version: 2.3.3

LHC Exp.

PS/SPS Exp.

Other Exp.

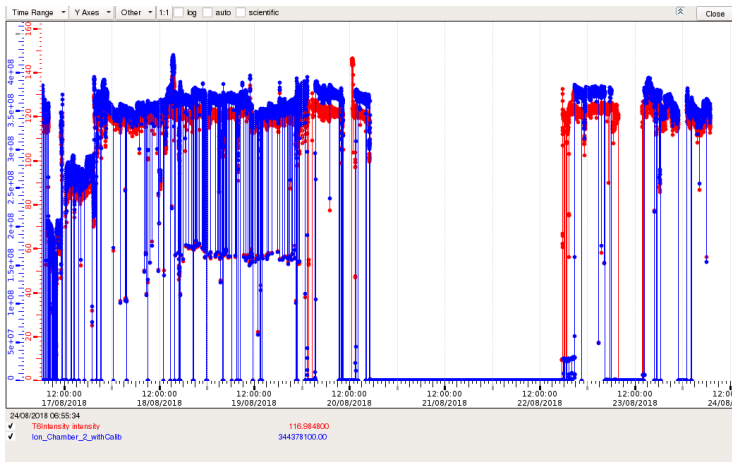
INT Exp.



For COMPASS DY:

- **2018P04-SP1 (+-)** was started on 15/Aug/2018 (Wednesday last week) after MD

Beam: delivered by SPS and entering the experimental hall

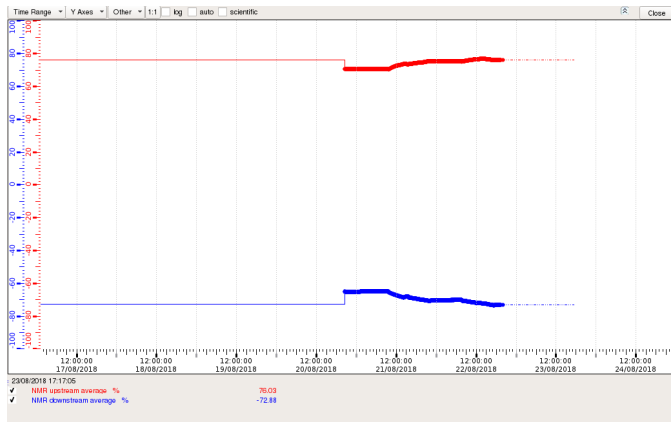


Red: intensity on T6

Blue: ion chamber 2 (calibrated)

- **SPS FT availability this week** (from 17/Aug/2018 12:00 to 24/Aug/2018 11:00): **61.5%**
[<http://elogbook.cern.ch/eLogbook/statistics.jsp?lgbk=50&from=20180817120000&to=20180824110000>]

Target cells polarisation



Red: upstream cell polarisation

Blue: downstream cell polarisation

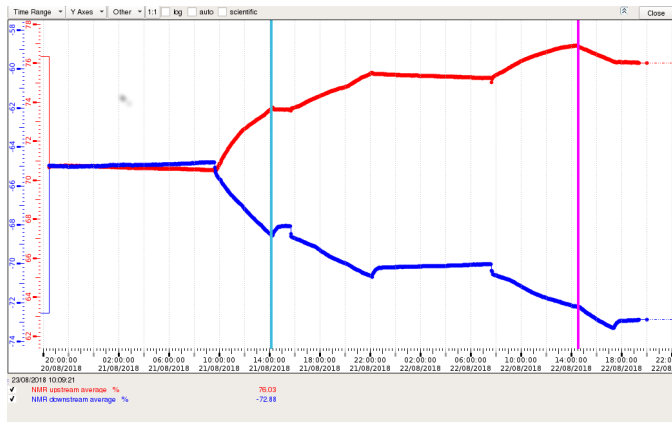
Polarisation measurements:

Fri 17/Aug/2018, 00:33: U 76.4 %, D -72.5%

Mon 20/Aug/2018 20:26: U 70.67%, D -64.96%

Wed 22/Aug/2018 19:23: U 76.03%, D -72.88%

Polarisation top-up (20/8/2018 20:00 - 22/8/18 19:00)



Red: upstream cell polarisation

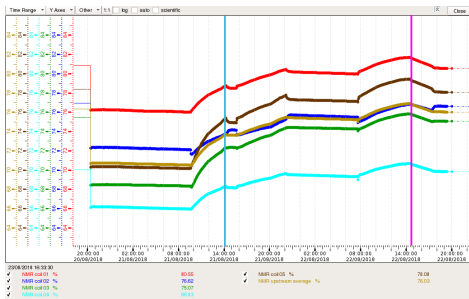
Blue: downstream cell polarisation

21/Aug/2018 14:09: helium-4 pump stopped → polarisation was deliberately interrupted

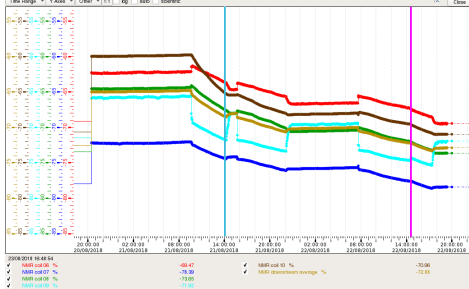
22/Aug/2018 14:30: stopped polarising upstream cell to just polarise downstream cell

Polarisation top-up (coil by coil)

Coils in upstream cell:



Coils in downstream cell:



Most problematic detectors:

- PMM03: LVPS broken \Rightarrow out of data-taking during two shifts
- DC01: SrclD256, port 11 unstable, giving many errors
- RWall: 100% errors in ports 5 and 6 of SrclD 432
- MWPC: some permanent noise
- Straw03: few trips

Spills Recorded by COMPASS Between '2018-08-17 12:00:00' and '2018-08-24 11:00:00'

Run Type	Recorded Spills	Good Spills	Particles per Good Spill	Bad Spills	Particles per Bad Spill	Empty Spills	Particles per Empty Spill
	9587	0		0		9587	6645
detector_test	11675	0		0		11675	486
drell-yan	17351	15601	1.590e+8	1366	1.336e+8	384	18887
trigger_test	144	137	1.989e+7	0		7	765
Total	38757	15738		1366		21653	

Number of runs without online filter: 0

The values are taken from the DAQScaler table, which means that only runs are counted, for which the online filter was not *off*. The number of particles is taken from the sum of the six parts of *SC02P1sf*.

A **Good Spill** is a non-empty spill from a run which is marked good, mostly good or unknown.

A **Bad Spill** is a non-empty spill from a run which is marked as having problems.

An **Empty Spill** is one for which the counts in the scaler SC02P1sf are below 1E6.

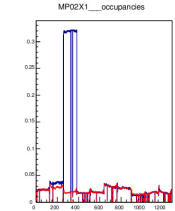
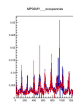
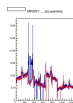
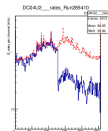
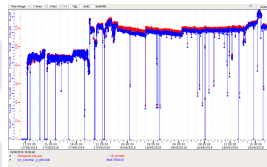
Spills Delivered

	Good Spills	Empty Spills	Total
SPS on T6			0
to COMPASS	17650	21759	39409

The number of spills on T6 is taken from the SPSinformation table; an empty spill is one with less than 30E11 protons on T6. The number of spills to COMPASS is taken from the MunichScaler table, which is filled by an independent readout and works thus without running DAQ; as above, an empty spill is one with less than 1E6 particles on the beam counter. **Warning:** these numbers should be taken with a grain of salt as there may be small inconsistencies between them.

Almost continuous beam, starting with low intensity (90 ppp) until ~20:00, then 120 ppp

- **DC04U2 half plane missing** in cool plot: not recovered by reloading, recovered by itself after 30+ spills
- **Noise in MP02V1, MP02X1, MP03Y1**: fixed by reloading
- **100% errors in SciFi15**: not fixed by reloading, fixed by power-cycling pccofe15
- DC05 timing plot below reference (\Rightarrow reference to be updated)
- Step in DAQ dead time in Scaler Display at 15:30 [12% \rightarrow 16%] (not in other quantities) \rightarrow known problem in DAQ dead time from Munich Scaler
- CEDARs giving permanent 30% errors in MurphyTV \rightarrow should disappear when the threshold scan stops

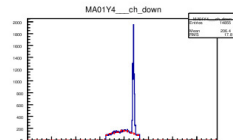
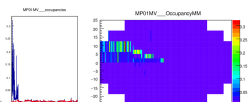
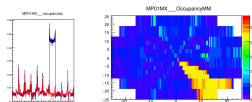
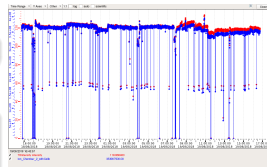


Good spills: 1967 delivered by the SPS; 927 recorded DY [78%].

Almost continuous beam at nominal intensity of 120 ppp

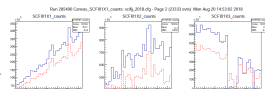
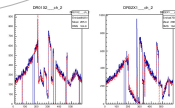
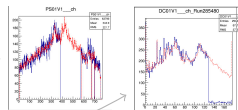
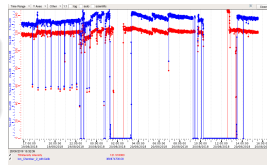
- **pccofoe08 (for DC00 and DC01) was not reachable**: had to be power-cycled (from the DCS)
- **pccofoe41 (for the BeamMon) stuck and not reachable** (⇒ to be power-cycled in site)
- **Noise in MM01MX, MM01MV (2 different sectors)**: cured by reloading
- Few noise in MW1
- Straw: 1 HV channel tripped: recovered
- CEDARs giving permanent 30% errors in MurphyTV ⇒ when the script for the threshold scan finished, a reload should be tried

Good spills: 4842 delivered by the SPS; 4435 recorded DY [92%].



Few beam interruptions: 01:36-02:33 (RF pb); 09:16-09:26 (water cooling pb in NA \Rightarrow Bend4/5/6, Mib03, Quad34 off); 10:18-12:28 (LINAC down: amplifier tube broken, needed repair)

- 00:35: **MM03 broken power supply (Wiener PL6021):** spare not okay, replaced by an Epool LVPS
- **MWPC SrId 260, port 6 (1/4 of PS01V1) 100% errors:** excluded, reincluded, intervention during MD needed
- **DC01 SrId 256, port 11 giving 100% errors:** hoping that it recovers by itself? Propagated to other planes?
- **RWall SrId 432 giving 100% error:** recovered
- **pccofe41 (for the BeamMon) stuck and not reachable:** power-cycled in site solved the pb
- **Straw few HV channel trips:** recovered
- **CEDARs MTV permanent 30% errors:** cured by reloading
- **SciFi1,15,2 counts above reference**

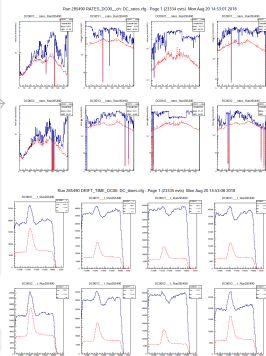
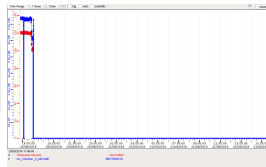


Good spills: 3666 delivered by the SPS; 3095 recorded DY [84%].

No beam since yesterday at 17:03. Vacuum problem in the SPS. ("Hole drilled in the vacuum chamber of a main dipole by the beam.") More news on Wednesday morning.

- **LV PS for MM03 replaced** by the Saclay group, Christophe&Vincent
- **High noise in most planes of DC00** during part of the intervention on the LV PS for MM03 (runs 285489-285492): fixed by itself when the intervention finished
- **Changed target magnet from dipole to solenoid**, done by Christophe&Vincent
- **Topping up the polarisation** since this morning at 9:30, by the target group, Christophe&Vincent
- Water dripping near Quad33 and Quad31

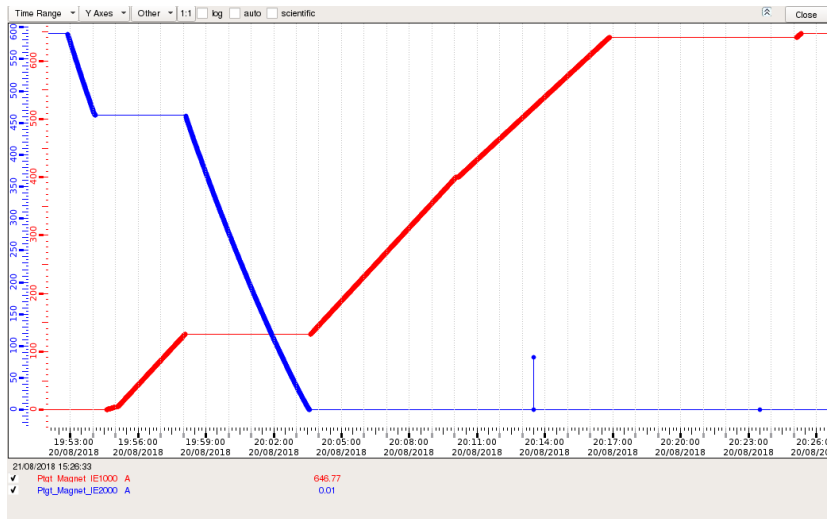
Good spills: 189 delivered by the SPS; 109 recorded DY [58%].



Wiener LV PS for the MM03



Changing target magnet from dipole to solenoid



Recovery from SPS vacuum problem

SPS main dipole ready for installation in front of BA3 (CCC)



Plan

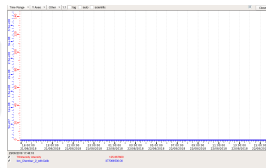
- SPS magnet replacement today
- Vacuum pumping until 12:00 tomorrow
- SPS conditioning with beam (e-cloud), no estimate (large fraction of SPS has been exposed to atmosphere)
- Investigating if some activity with low intensity can be moved forward while SPS conditions (MD, HI etc.)

LHC morning meeting 21/8/2018 (E. Bravin, D. Nisbet),

https://indico.cern.ch/event/746039/contributions/3083488/attachments/1702884/2743010/LHC_morning_meetings_21082018.pdf

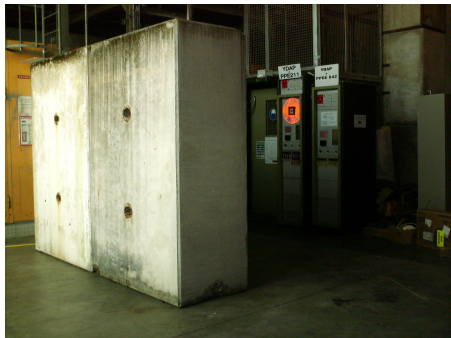
No beam since Monday at 17:03. Vacuum problem in the SPS. (“Hole drilled in the vacuum chamber of a main dipole by the beam.”)

- **Topping up the polarisation**, done by the target group, the run coordinator and Christophe
- **DAQ multiplexer configuration reshuffled** (connected DAQ MUX04 to x-Switch)
- **Threshold scan for CEDARS done**
- **Shielding reinforced around door PPE211**
- **COMPASS COMPR Oracle database patched** with latest security updates
- Exchange of 10 HV bases for ECAL2
- Water dripping near Quad33 and Quad31 fixed

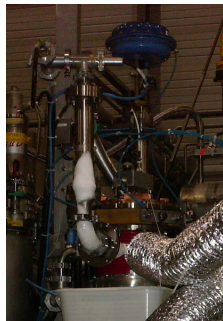
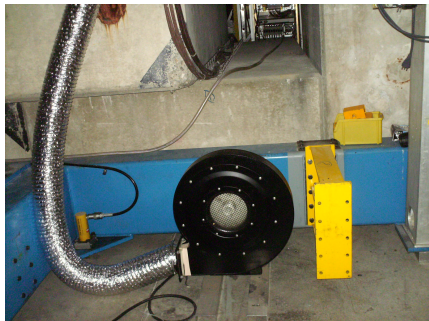
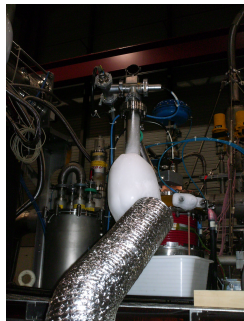


Good spills: 0 delivered by the SPS; 0 recorded DY.

Reinforcement of shielding in front of door 211

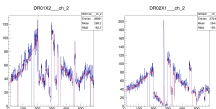
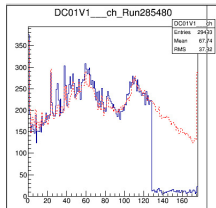
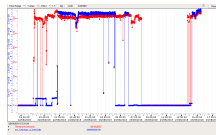


Bigger fan for target ice



Beam arrived at 18:00, with nominal intensity, but **one spill per super-cycle of 40.8 s**. 04:20-05:33, 06:04-13:44 Bend4/5/6, Mib03, Quad34 off (\Rightarrow beam OFF) due to **water leak in the M2 beam line**.

- 18:05-20:39 **detector test runs** for trigger efficiency and CEDARs. Low intensity π^- beam (40 mm on T6). Collimators C1-C4 at 6 mm. CEDAR diaphragms at 0.4 mm and 2 mm for kaon peak
- 19:26-19:51 **solenoid to dipole rotation**, done by Christophe&Vincent
- **DY data-taking** started at 20:56
- **Part of DC01V** (SrclD 256, port 11) excluded from data-taking, because it was completely blocking SrclDs 256,257,258
- **RW srcID 432 ports 5 and 6** excluded due to 100% errors



Good spills: 1035 delivered by the SPS; 709 recorded DY [68.5%].

From the PS/SPS user meeting of 23/Aug/2018

Since then & follow-ups

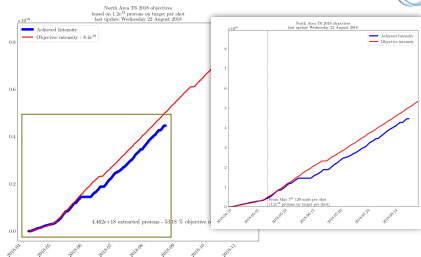


Monday

- Unstable compensation of the 50 Hz component already in the morning. Along with this, the **QDA.219 issue came back Monday evening**.
- Adjusting the vertical tune the losses could be further reduced and **also the 50 Hz compensation could be stabilized**.
- During the optimization process, the beam went unstable causing a **vacuum leak in an MBB**. The magnet had to be exchanged. The exchange was started on Tuesday.

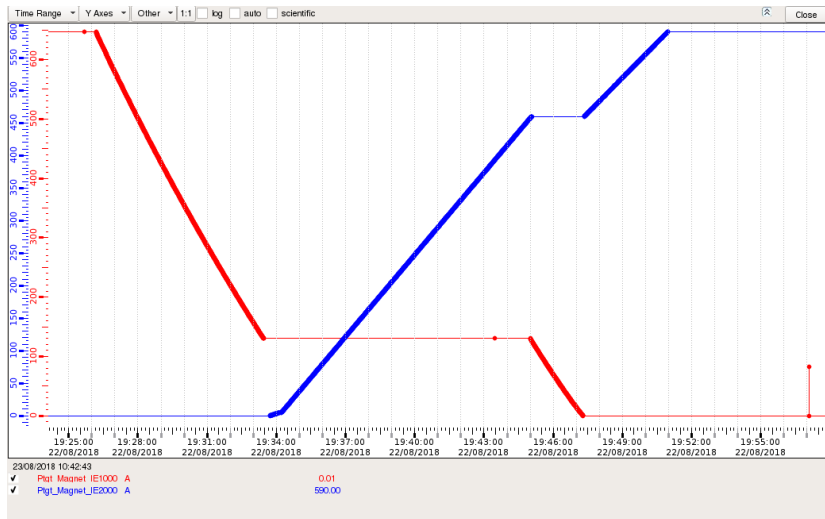


Intensities



[SPS Machine report, Kevin Shing Bruce Li]

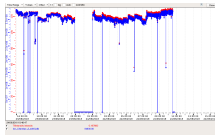
Changing target magnet from solenoid to dipole



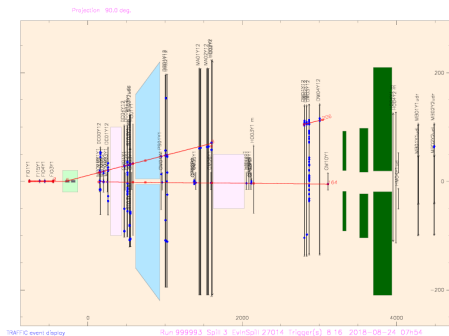
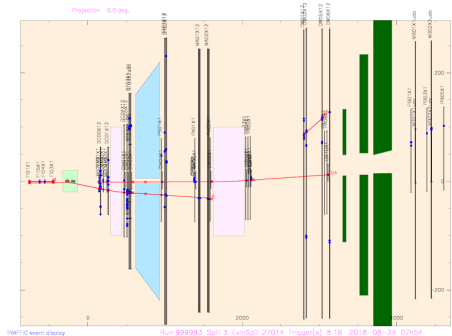
Beam mostly okay. 22:53-01:01: no beam, MKD (horizontally deflecting extraction kickers) problem. 10:47: Access needed for PS, no beam for 1 hour.

- RW srcID 432 #5 and #6 excluded from the DAQ
- DAQ crash → cleanDAQ helped

Good spills: ~2700 delivered by the SPS; ~2700 recorded DY [~100%].



Thank you!



- to all the shifters
- to all the experts on-call
- to the run coordinator
- Next weekly coordinator: **Antonin Kveton**. **Good luck!**