



BE-ABP-CEI
Coherent Effects and
Impedance

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Coherent Effects and Impedances section (CEI) – general information

Giovanni Rumolo

CEI Section Meeting, 22/08/2024

Scientific secretary: Xavier Buffat

<https://indico.cern.ch/event/1437657/>

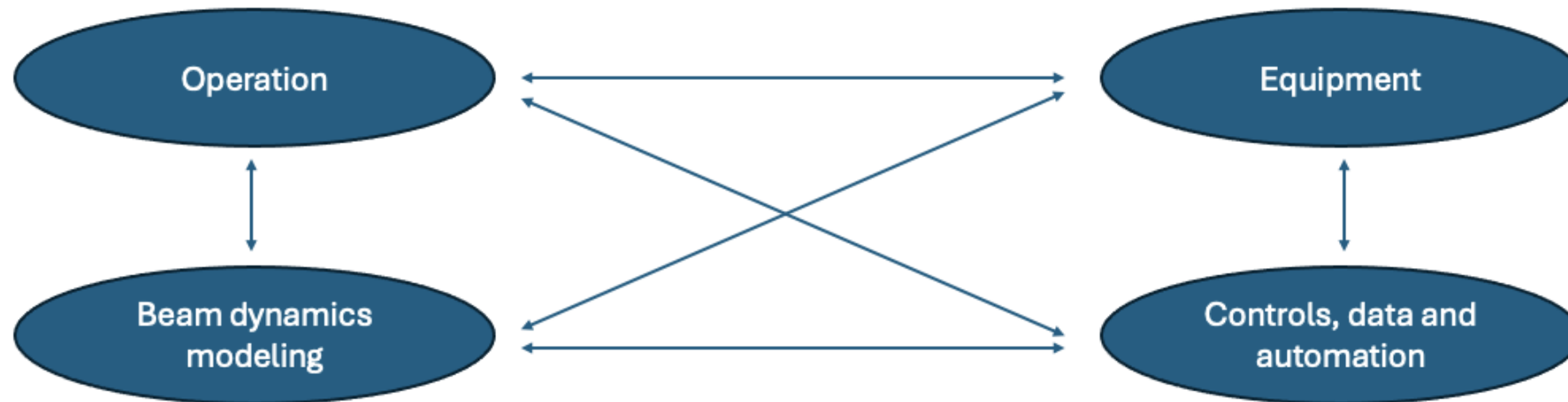


Arising matters

- Next CEI section meetings: some recap and news
 - There will be no CEI section meeting in the next two weeks (holiday, Jeûne Genevois)
 - Next CEI section meeting will take place on Thursday 12 September
 - New starting time will be 13:40 (after further negotiation with Nicolas 😊)
 - Will keep being in 6/R-012 until the end of 2024, then move to 6-2-004

Arising matters

- JAP Workshop 2024
 - Will take place 10-12 December at Royal Plaza in Montreux
 - 130 participants
 - New workshop structure based on the 4 pillars for beam performance





Arising matters

- JAP Workshop 2024
 - **S0: Setting the scene**
 - **S1: Operation <-> Equipment**
 - Chairs (proposed): Giulia P., Nikos C.
 - **S2: Beam dynamics modelling <-> Operation**
 - Chairs (proposed): Daniele M., Foteini A.
 - **S3: Controls, data and automation <-> Operation**
 - Chairs (proposed): Andrea C., Michael S.
 - **S4: Beam dynamics modelling <-> Controls, data and automation**
 - Chairs (proposed): Gianni I., Verena K.
 - **S5: Beam dynamics modelling <-> Equipment**
 - Chairs (proposed): Cedric H., Helga T.
 - **S6: Equipment <-> Controls, data and automation**
 - Chairs (proposed): Francesco V., Alex H.

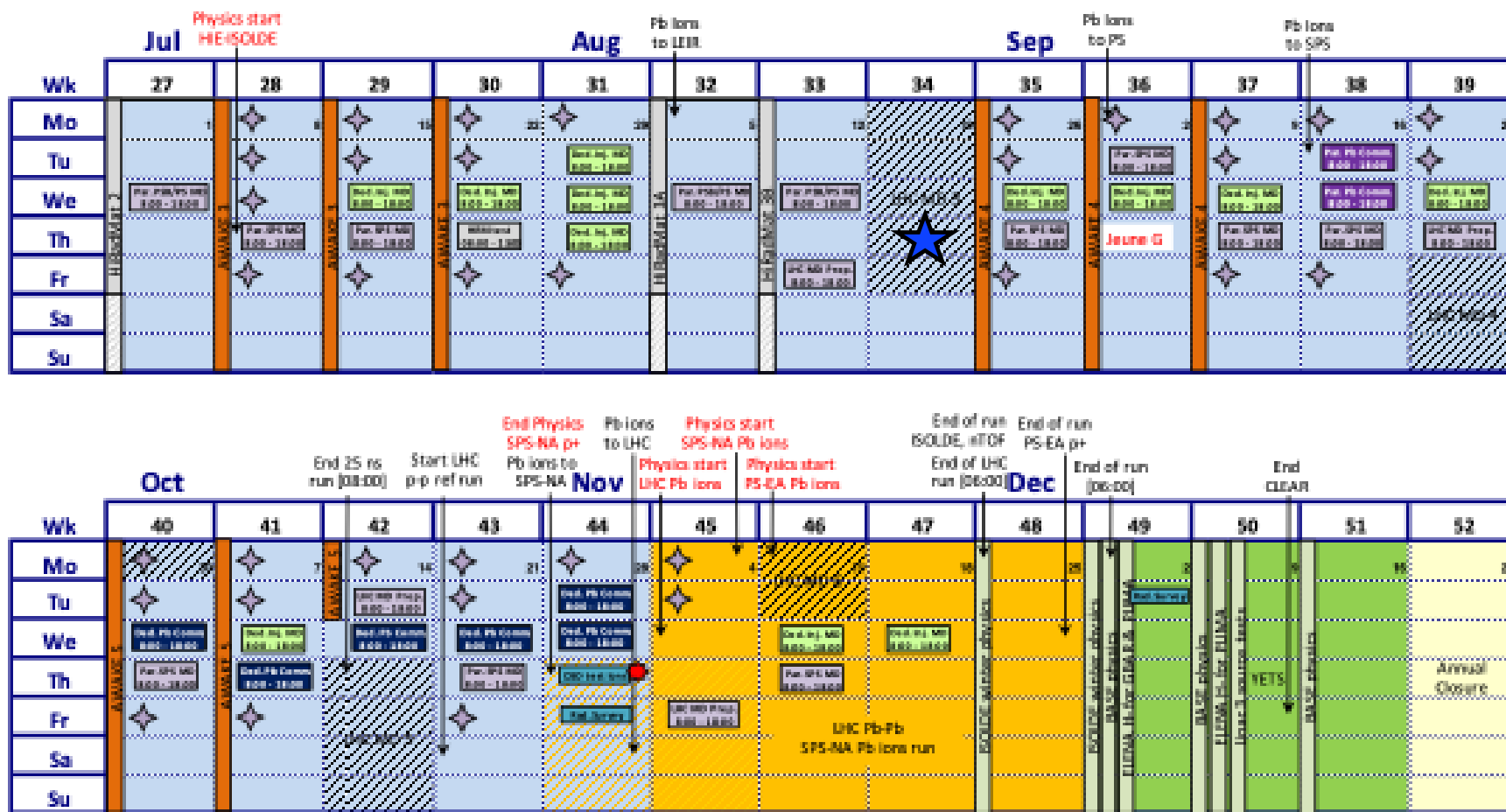


IPP meeting last Friday

- PS optics control (Wietse)
 - Use of NN for the control of PFW to obtain desired working points
 - Zero dispersion optics for H emittance measurements
 - RDT approach for resonance compensation
- SPS WS impedance in the “stuck position” (Elena)
 - Consistency between observations, breaking of the wire and existing impedance model (adapted for the “stuck” position)
 - Power loss global calculation and power loss distribution per physical region and per resonance
→ appearance of new lower frequency resonance depositing most of its power on the wire, which justifies why the breakage occurred with “high intensity” (4x 72b with $1.8e11$ p/b) independently of the acceleration



2024 injectors schedule v2.1



- No dedicated nor long parallel SPS MDs for three weeks due to HiRadMat run and then LHC MDs
- All beams for LHC MD were prepared and were ready as of last Friday



2024 LHC schedule v2.0

	Jul			Aug				Sep				Oct	
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo	1	8	15	22	29	5	12	19	26	2	9	16	23
Tu													
We								MD 3					
Th								★	Jeune G.				
Fr													
Sa													MD 4
Su													

- LHC MDs ongoing this week
- Unfortunately, not all went according to plans due to an RF issue following the RF power MD

	Nov							Dec					
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Mo	30	7	14	21	28	4	11	18	25	2	9	16	23
Tu				TS2	p-p ref run		MD 6						
We													Xmas
Th				p-p ref setup	★		Pb-Pb Ion run			YETS			Annual Closure
Fr			MD 5		Cryo reconfig.								
Sa					Pb Ion setting up								
Su													



LHC MDs: Update from Gianni

- MD program of this week has been impacted by a serious issue with the RF system
 - After Tuesday, MD users could only inject few bunches and no trains.
 - Yesterday the RF team made significant progress in identifying the cause of the problem, but more work is needed today before operation with bunch trains can be fully restored.

	Wed 8/21	Thu 8/22	Fri 8/23
00	00:00 - MD12844 Faser background mitigations	MD12723 HL-LHC optics cycle (part II)	MD6943 60deg arc FODO cell phase advance LHC optics
01	01:00 - 03:00 Recovery		
02			
03	MD11786 Threshold of longitudinal loss of Landau damping		
04			
05		05:00 - 07:00 Recovery	05:00 - Recovery
06			MD9325 Beam Halo Population Measurements using Collimator Scans at the End of Squeeze
07		MD12805 Impact of longitudinal impedance and betatron coupling on the Schottky spectrum	
08			
09	09:00 - 18:00 Access and RF investigation		
10			
11		11:00 - 13:00 RF investigation	
12			
13		13:00 - 16:00 Cycle test for MD 12663 or continue RF investigation	
14		MD12663 Wire compensation during the beta*-leveling	
15			
16		16:00 - 18:00 Recovery	
17			
18	MD12723 HL-LHC optics cycle (part II)	MD6943 60deg arc FODO cell phase advance LHC optics	
19			
20			
21			
22			
23			



LHC MDs

- Any news from the CEI MDs?

MD number	MD title	Required beams
6925	Electron cloud coupled-bunch tune shifts at injection	Bunch trains of 2x48 bunches with intensity 1.2e11 p/b, 1.6e11 p/b, 2.0e11 p/b, 2.3e11. Operational 12b train needed as well.
12783	Octupole sweet spot width	INDIV bunches with 1.6e11 p/b, 4x1b per injection change the transverse emittance by changing the time on the foil. Xavier Buffat knows how perform this manipulation and will be present at the MD.
12804	Negative octupole polarity and electron clouds at injection energy	Bunch trains of 2x48 bunches with intensity, 1.6e11 p/b. (same as MD6925) Operational 12b train needed as well.
12805	Impact of longitudinal impedance and betatron coupling on the Schottky spectrum	Single bunches of varied intensity and longitudinal emittance in the range of 0.1-0.3 eVs, 5e9-2.4e11 p/b (taken already in past MD blocks, contacts S. Albright, A. Lasheen)