

PS Report W14 – “Beam Commissioning”



Many thanks to: Fernando, Patrick, Mike, Antoine, Thierry, Pieter, Alvaro, Didier, Thibaut, Denis, Frank, Raul, Vincent, Fabrice, Abdel, Oliver, Stephane, Jeroen, James, Yves, Fulvio, Quentin, Gilles, Raul, Jean-Marc, Todor, Carlo, Heiko, Alexander, Matthew, Ana, Olivier, Dominique, Anthony....

Beam commissioning (2021 week14)

14	5	6	7	8	9	10	11
MTE kicker synchro + TFB + islands							
Easter		12a LHC multi-bunch splittings					
8a LHC multi bunch		12a 10 MHz 1-turn delay feed-back		8a Low-beta quads on high intensity			

Trying several local vertical bump in order to remove losses mainly after injection

LSA : new parameter **relativistic beta** implemented in order to get the correct dispersion in FWS app

Correlation found between vertical shaving in PSB and losses reduction in SS80-SS100 at injection

Week-end : many tests performed in order to find the best SMH16 position with and without TPS15

LHC25#72b high losses at extraction observed when splitting is enabled

Several trips of KFA45 due to vacuum spikes (beam losses at ejection)

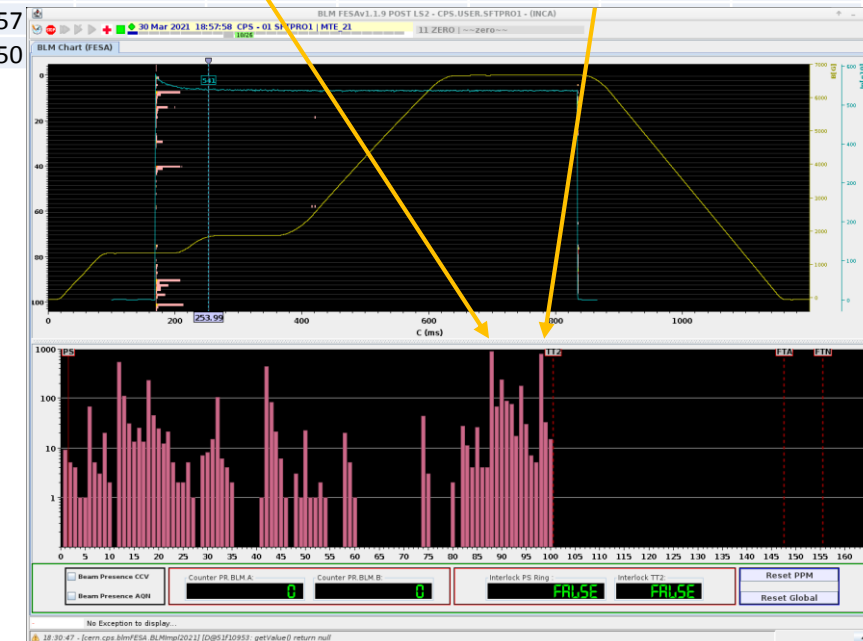


Some Items / Measurements

- Survey RP requested around SS88
 - Vacuum spike tripped C80-88,
 - Investigations show a hot stop in MU88
 - RP survey done around SS80-100
 - Losses map reflect what we saw on BLMs
 - Several vertical bumps added in order to minimize losses
- This week update:
 - Losses at injection reduced with strong shaving in PSB.
 - bigger vertical aperture SMH42 post –LS2 (injected beam)
 - New vertical aperture limitation seems to be in SS88-98(tbf during TS1)

Element	Inside			Element	Outside		
	40cm	40cm	MU		40cm	40cm	MU
SS78				SS78			
SS79				SS79	2	6	
SS80				SS80	1	1	
SS81				SS81	2	3	
SS82	6	22	160	SS82	4	16	
SS83	120	85		SS83	90	75	
SS84				SS84	12	15	
SS85	23	23		SS85	20	40	
SS86	5	10		SS86	10	5	
SS87	22	12		SS87	10	13	
SS88	150	140		SS88	60	140	100
SS89	28	40		SS89	20	35	
SS90	76	50		SS90	100	65	120
SS91	85	45	80	SS91	30	80	
SS92	12	72		SS92	25	50	50
SS93	24	20		SS93	15	20	
SS94	80	35	40	SS94	70	35	
SS95	30	15		SS95	14	13	
SS96	5	6		SS96	4	5	
SS97	15	12		SS97	7	8	
SS98	120	95		SS98	100	120	
SS99	53	57					
SS100	12	50					

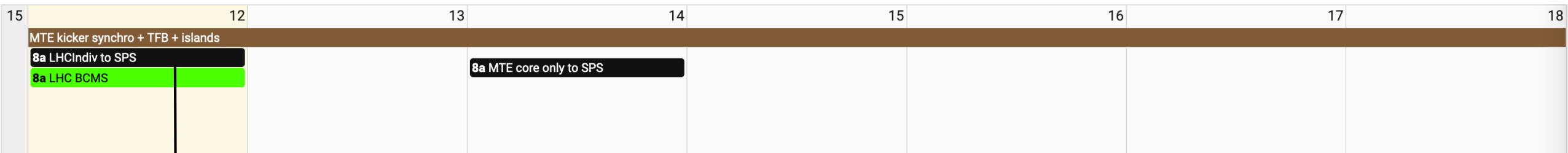
Nadine Conan



Some details / Work in progress

- BLMs / BLM vistar
 - noise on TT2 monitors
 - -> firmware update that aim to reduce the background noise in TT2(to be tested)
- Several no-blocking issue during week-end :
 - SMH16 position : problem with a circuit breaker (solved on Monday morning)
 - BHZ377/BHZ378: Economic mode not taken into account (solved on Monday afternoon)
 - REF.ECONOMY.DEST.MODE was set enable but not REF.ECONOMY.MODE
 - POPS in degraded mode since Saturday morning (intervention planned during TS1)
 - DFA frequent trips followed by expert today.

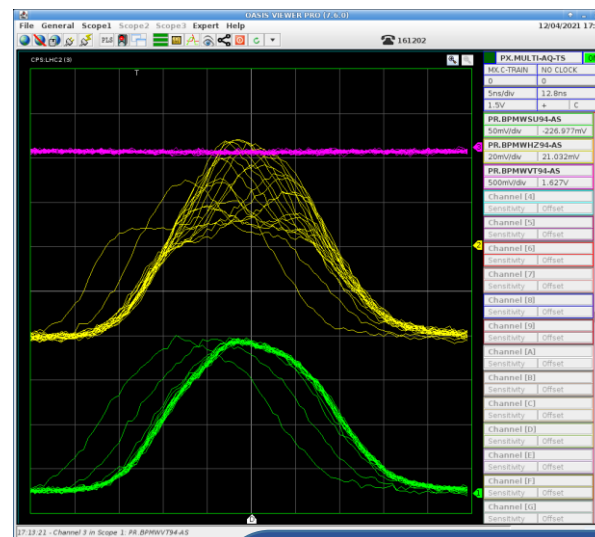
Beam commissioning (2021 week15)



Scan on
F16.BHZ377/378
followed by TT2 access
in order to understand
where the beam goes

LHC25#72b : Horizontal
instability observed in
correlation with high losses at
extraction.

Wrong calibration curve in LSA and NORMA :
nominal current expected to be 1012A finally need to be
increased to 1530A in order to get the beam centered on
the first BTV downstream BHZs (been followed up with
MSC)



LHC25#72b : PFW function
regeneration solved this issue.

Beam update

New MTE version available with smaller E_v (to be tested in PS this week)

Questions and Comments

Planning: Contact **Denis** and **Frank** (Last week)



17:00 Daily Zoom meeting during BEAM commissioning

Web address: <https://cern.zoom.us/j/9372114100?pwd=L29BcmIHUENCdFBRSytXYVcrM1B4Zz09>

Meeting ID : 937 211 4100

Passcode: 525463