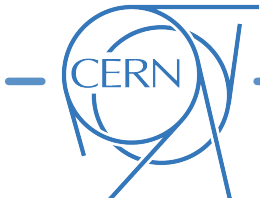


# 2012 SPS Scrubbing Run

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MSWG Meeting  
02-03-2012



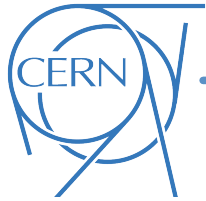
## Main goals of SPS 2012 Scrubbing Run

→ Collect as much information as possible for:

- Identification of the **present conditioning state of the SPS** (and, possibly, of strategies to efficiently obtain further scrubbing)
- A **quantitative characterization of the surface scrubbing process** due to **beam induced** electron bombarding (for comparison with lab measurements data)



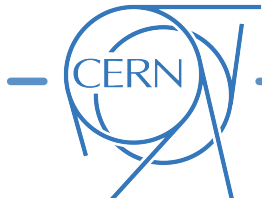
**Further conditioning** of the machine will be achieved



## LHC beams ... (→ *no exotic beams for this scrubbing period!*)

- 25ns beam
  - ~Nominal parameters
  - Higher intensity (up to maximal in PS, transverse emittance not so important) in the middle of the week
- 50ns beam
  - Operational LHC parameters (+higher intensity)

	25ns (nominal)	25ns high intensity	50ns (operational)
Intensity	1.2e11 p/b	max	1.5e11 p/b
Number of bunches	72	72	36
Emittance H,V	2.5-3 $\mu\text{m}$	<5 $\mu\text{m}$	1.8 $\mu\text{m}$
Emittance long.	0.35 eVs	~0.35eVs	0.35 eVs

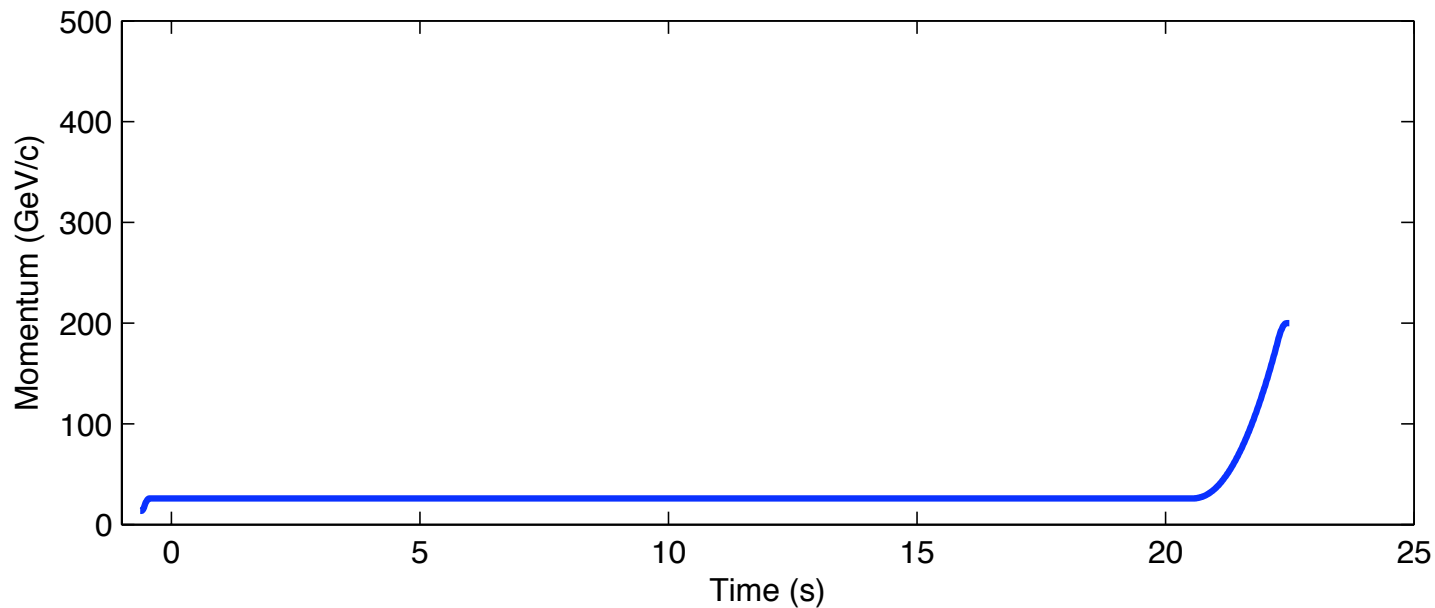


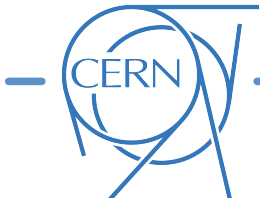
## Long “MD1” (for 25ns beam)

- Flat bottom cycle with a length of  $\sim 20$  bp
- Can be coasted at 26GeV/c? (if not, coast cycle needed)

→ **Q26**: main scrubbing cycle

→ **Q20**: for comparison of stability



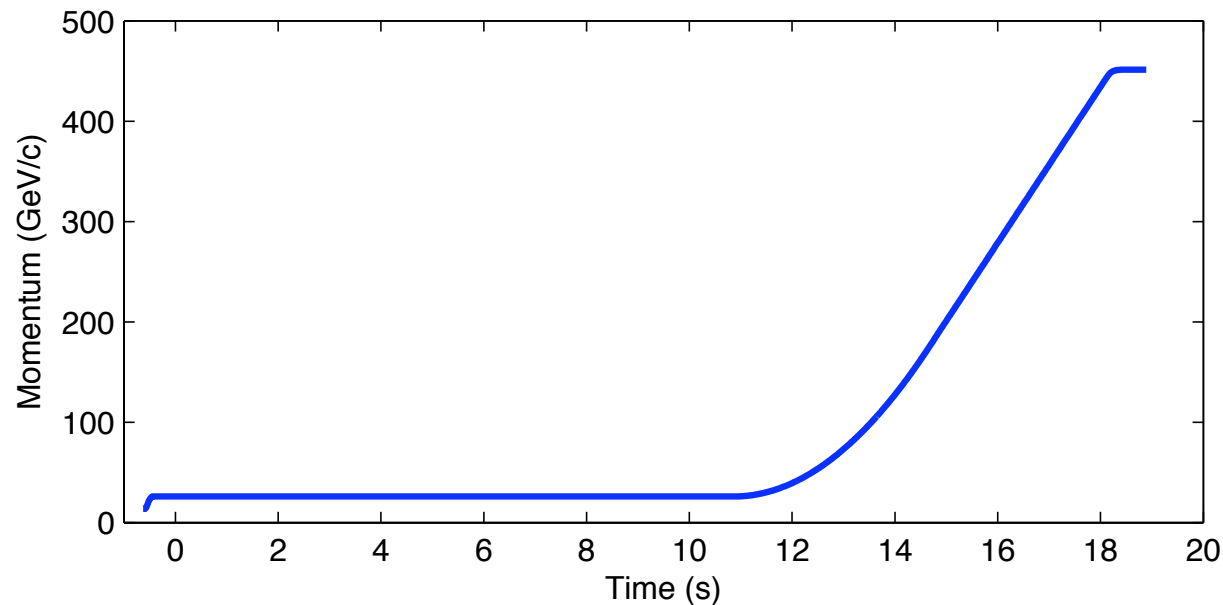


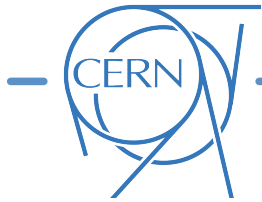
## LHC slow ramp (4 injections)

- 25ns (usual MD cycle)
- 50ns (clone of operational LHC filling cycle)

→ **Q26 (25ns)**: studies at high energy

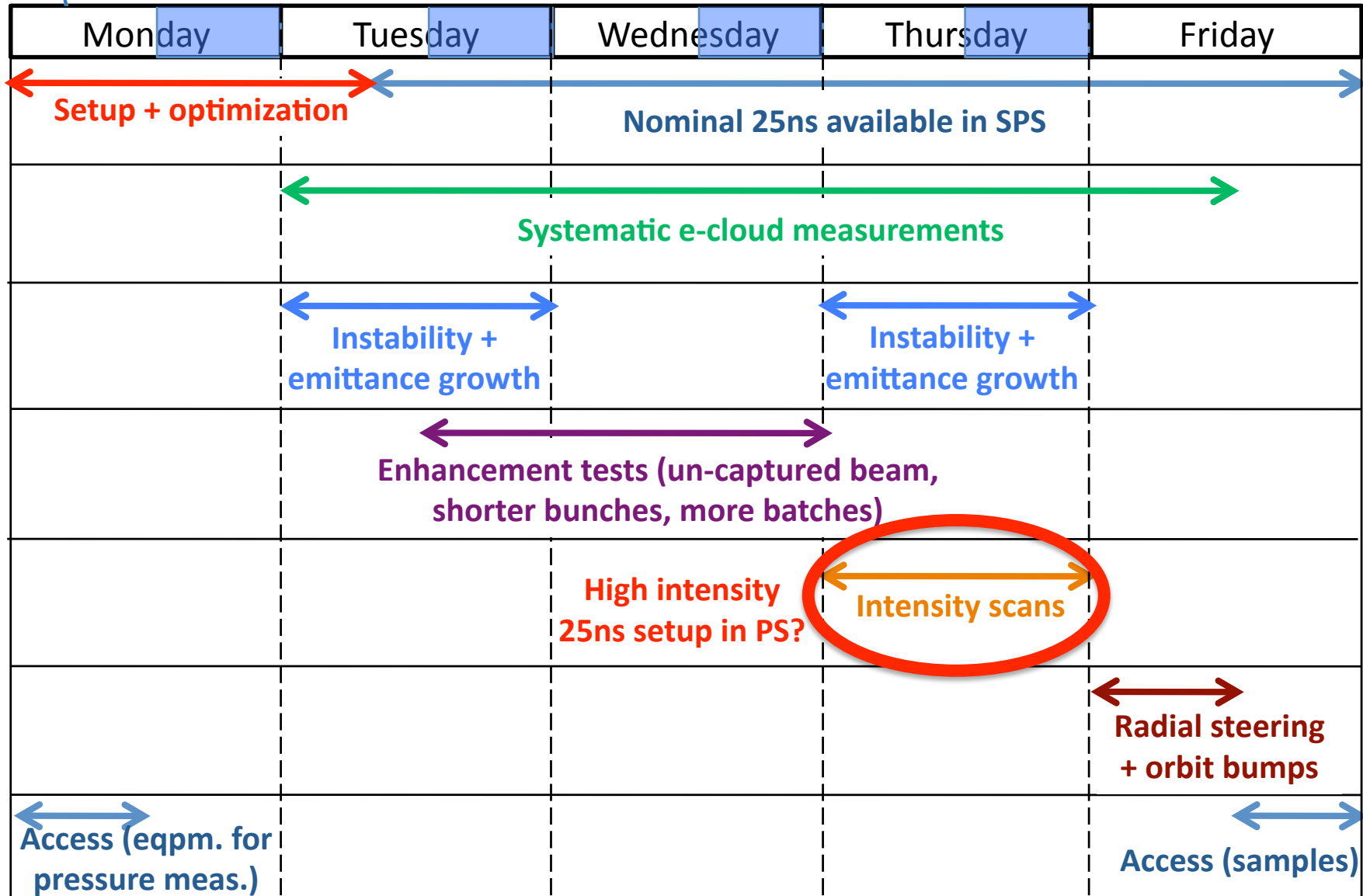
→ **Q26 (50ns)**: study “scrubbing effect” on 50ns beam

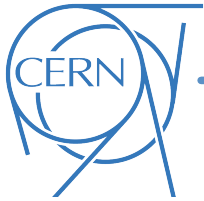




### Beam conditions:

- Injection of 4 and potentially more batches (on “MD1long”) if vacuum and heating OK, last batch with variable delay
- Provoke un-captured beam (5-10%) by longitudinal mismatch at injection
- Bunch length variation by adjusting RF voltage
- Transverse emittance blow-up (only for short time)
- Increased intensity (on Thursday)





## Injectors:

- Mainly “nominal” beams
- High intensity 25ns

## SPS:

- Long flat bottom cycle “MD1” (~20 bp)
- Coast cycle 26GeV/c (long MD1 can be used?)
- Usual LHC MD cycles with slow ramp

## Discussion:

- What happens during LHC filling?
- What type of beam for LHC?