MDs on electron cloud instabilities

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Outline

LHC

SPS
Configure the instability instrumentation to be able to detect e-cloud instabilities. Trigger instability by setting a negative chromaticity.

**Time:** During Beam commissioning. Joint activity with instability team.

**Beam:** Single bunch

**Energy:** Injection (450 GeV), flat bottom

**Instrumentation:** BCT-FBCT, Wire Scanners, ADT obsbox, head-tail monitors
LHC: First measurements before scrubbing with 1 train
S. Johannesson, L. Sabato, G. Iadarola, L. Mether, K. Paraschou
Measure instabilities for strong e-cloud. Expect stronger instabilities before scrubbing. Scan for different chromaticity, damper ON/OFF, scan octupole strengths. Start measurement directly at injection.
**Time:** 8h, synergy with instability team, Floating Machine Development (FMD1)
**Beam:** 1 train with 72 or 48 bunches
**Energy:** Injection (450 GeV), flat bottom
**Instrumentation:** BCT-FBCT, Wire Scanners, ADT obsbox, head-tail monitors, BSRT
LHC: Measurements with stabilized e-cloud
S. Johannesson, L. Sabato, G. Iadarola, L. Mether, K. Paraschou
Do similar measurements of instabilities for stabilized SEY, do not
expect any more scrubbing to happen. Scan for different
chromaticity, damper ON/OFF, scan octupole strengths. Start
measurement directly at injection.

**Time:** 8h, MD2 or 2023

**Beam:** normal beam, 4x72 bunches

**Energy:** Injection (450 GeV), Flat bottom

**Instrumentation:** BCT-FBCT, Wire Scanners, ADT obsbox,
head-tail monitors, BSRT
Measurements with varying bunch intensity
S. Johannesson, L. Sabato, G. Iadarola, L. Mether, K. Paraschou

Scan beam intensity and see when an instability occurs. Scan three points of intensity. In addition: two points of chromaticity, scan octupole strengths

**Time:** 8h alone, 4h if combined with heat load measurements. MD2 or 2023

**Beam:** 4x72 bunches
**Energy:** Injection 450 GeV, flat bottom
**Instrumentation:** BCT-FBCT, Wire Scanners, ADT obsbox, head-tail monitors, BSRT
Outline

LHC

SPS
SPS: Measurements of instability on ramp with varying (low) bunch intensity
S. Johannesson, L. Sabato, G. Iadarola, L. Mether, K. Paraschou

During previous scrubbing run of SPS an instability occurred for a lower than nominal intensity. This MD would determine if it is still there or has been successfully conditioned. The presence of RF experts is needed.

**Beam:** Start at $4 \times 10^{10}$ p/b, increase until instability is seen

**Cycle:** Standard LHC (72b), possibly multiple batches if no instability is seen.

**Instrumentation:** BCT-FBCT, Wire Scanners, e-cloud monitor, bunch-by-bunch BPMs, head-tail monitors