Report from collimator remote commissioning

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for the collimation commissioning team

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Thanks to the OP team
Outline

☑ 5 TeV ramp tests
   Sequences for OP cycles
   Reproducibility and errors
   Synchronization

☑ Outlook
Automatic collimator sequences

- Automatic sequence to drive collimators through nominal OP cycles
  *(Thanks to R. Alemany and R. Gorbonosov)*

- 94 collimators in this example (564 LVDTs); 11 ramps in one night

- Same functions to all collimators; can configure
Details of a ramp

![Graph showing details of a ramp](image)

- **Axes:**
  - Y-axis: Jaw position / gap [mm]
  - X-axis: Time [h]

- **Legend:**
  - Color-coded lines represent different data sets.

- **Annotations:**
  - Time values range from 2.1 to 2.5 h.
  - Jaw position / gap values range from -10 to 25 mm.
Errors during function execution

Collection of plots in my public: stefano/Public/RampTests2009
Reproducibility of settings (1)

Typical reproducibility of end-of-ramp settings for one jaw corner
Reproducibility of settings (2)
Maximum errors w.r. to settings

Average of maximum errors with respect to motor settings during 11 ramps.

Jaw corners: < 50 microns
Collimator gaps up to 200+ microns
Isolated cases can be optimized.
But the distribution of errors is not negligible. Impact on settings?
- Motor drivers and PRS functions triggered by timing events
- Additional monitoring properties added for precise synchronization (A. Masi)
- Collimator in different points start together within about $5 \mu s$
- End times of profiles within $10 \mu s$ (1300 s ramp to 5 TeV in the example)
Outlook

☑️ Automatic functions are ongoing - detailed establishment of tolerance windows + reproducibility over long times.

☑️ Machine protection function available, but not yet automated analysis
  - *Done manually like last year for the moment*
  - *Lost 1.5 days last week due to an un-announced change of logic*

☑️ RBAC active now for 1 month+: no major issues so far.

☑️ MCS will be switched on next Monday, when Alessandro is back
  - *Issue for Piquet role with critical limits*
  - *Disable the MDC blockage from PRS?*

☑️ Promising tests done with
  - *Roman pots (collaboration with TOTEM) [Wed. 7th]*
  - *TCDQ (collaboration with dump team) [Thu. 8th]*

☑️ Working on incorporating all the relevant devices in the sequences.