

107th meeting of the
LHC Collimation Study Group
Geneva, 12th October 2009

Report from collimator remote commissioning

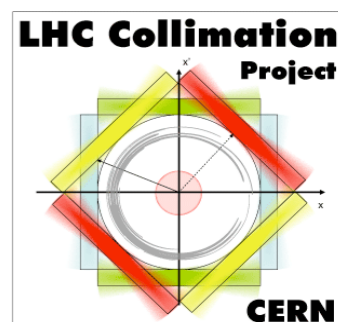
S. Redaelli, BE-OP

for the collimation commissioning team

O. Aberle, R. Assmann, C. Bracco, A. Rossi,

R. Losito, A. Masi, D. Wollmann

Thanks to the OP team



5 TeV ramp tests

Sequences for OP cycles

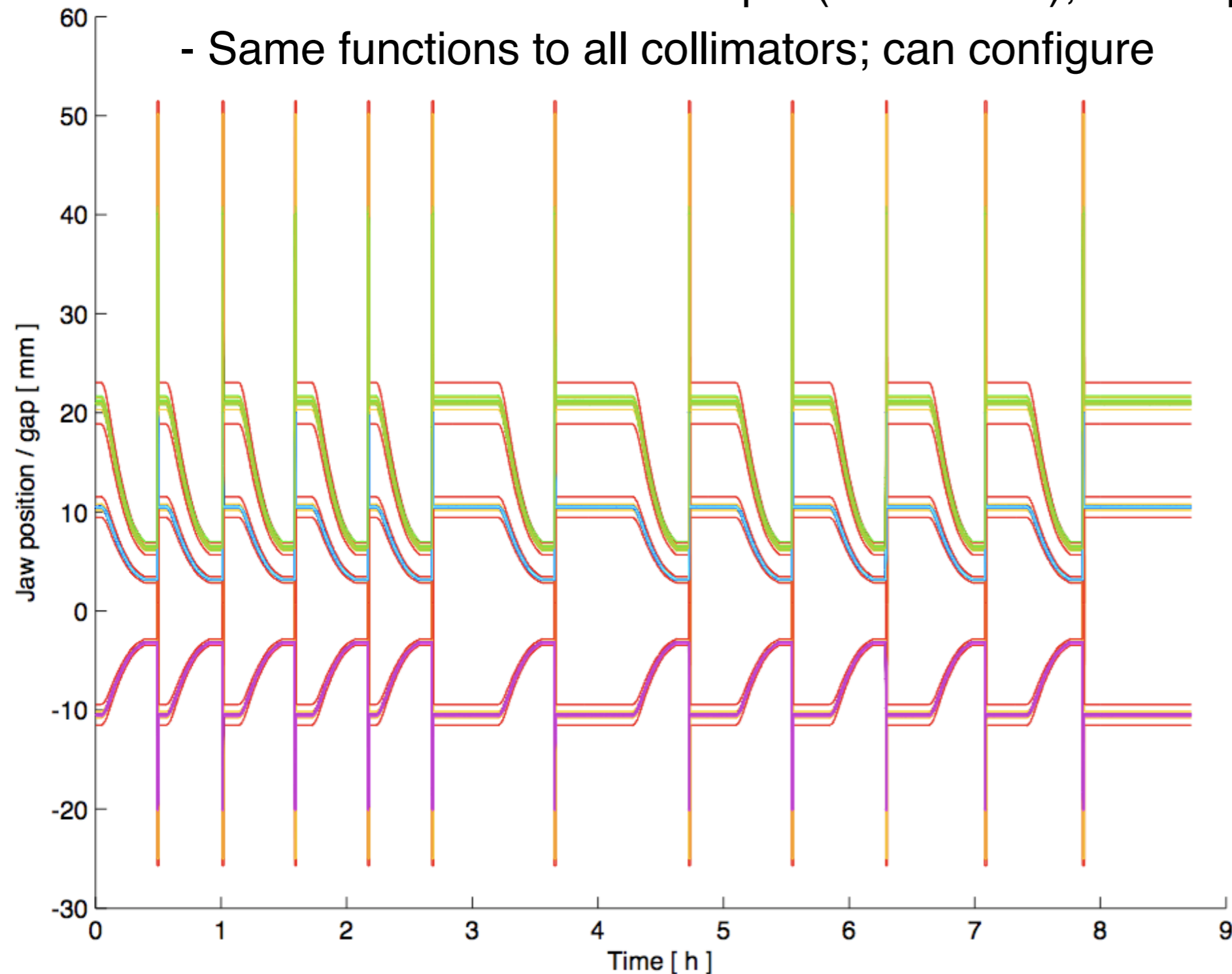
Reproducibility and errors

Synchronization

Outlook

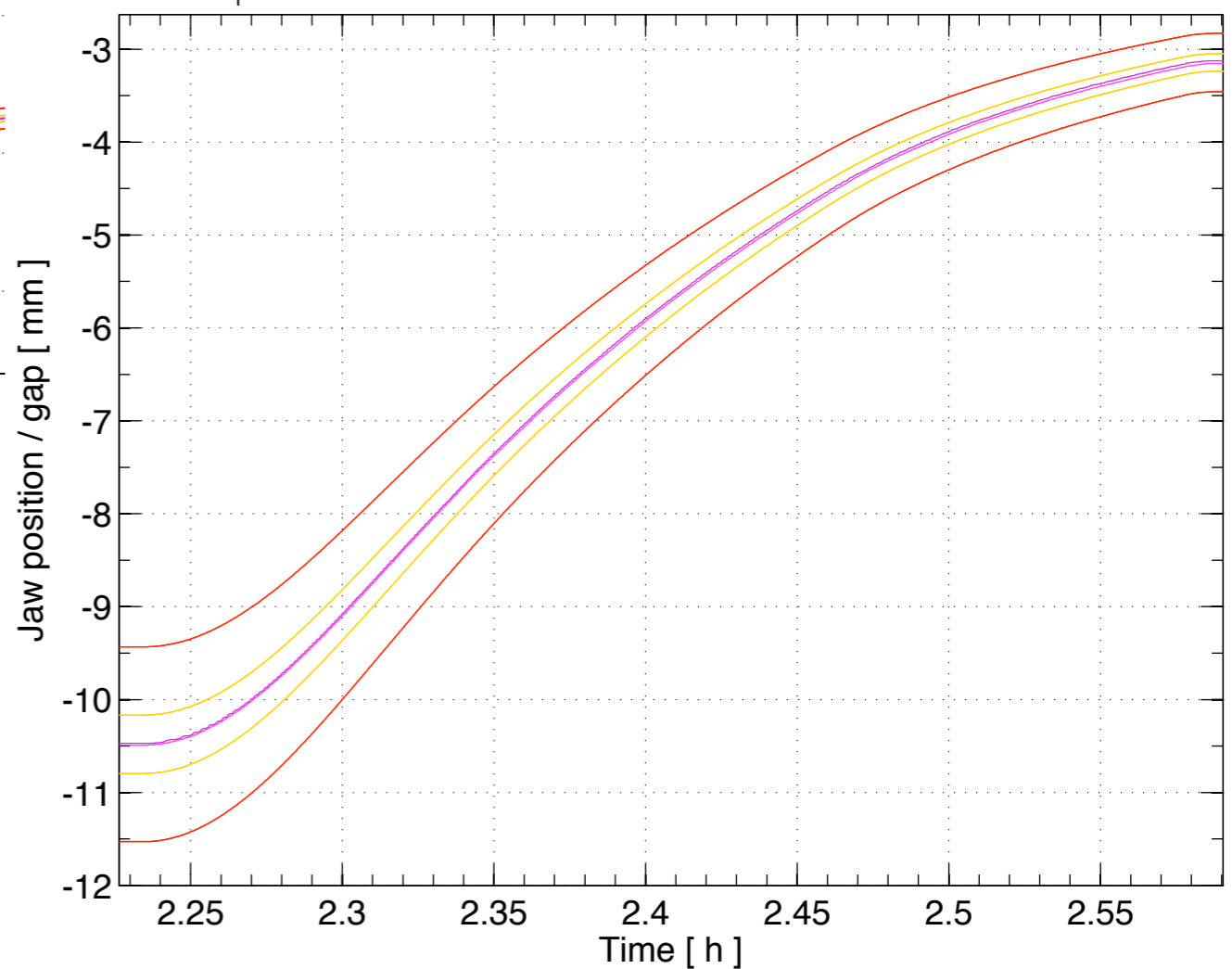
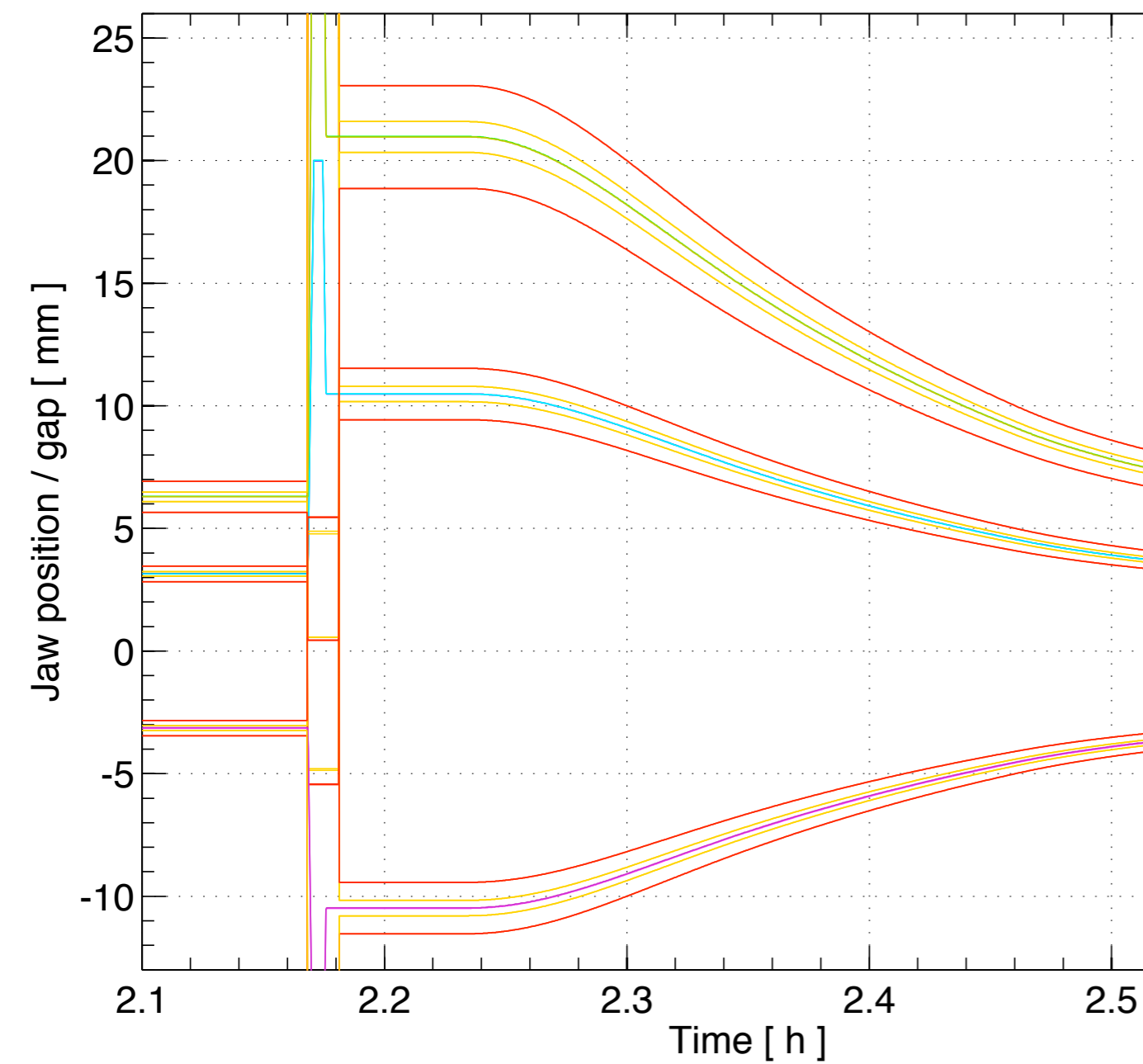
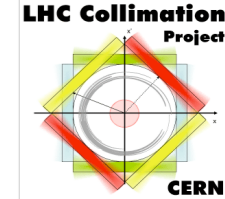
Automatic collimator sequences

- 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

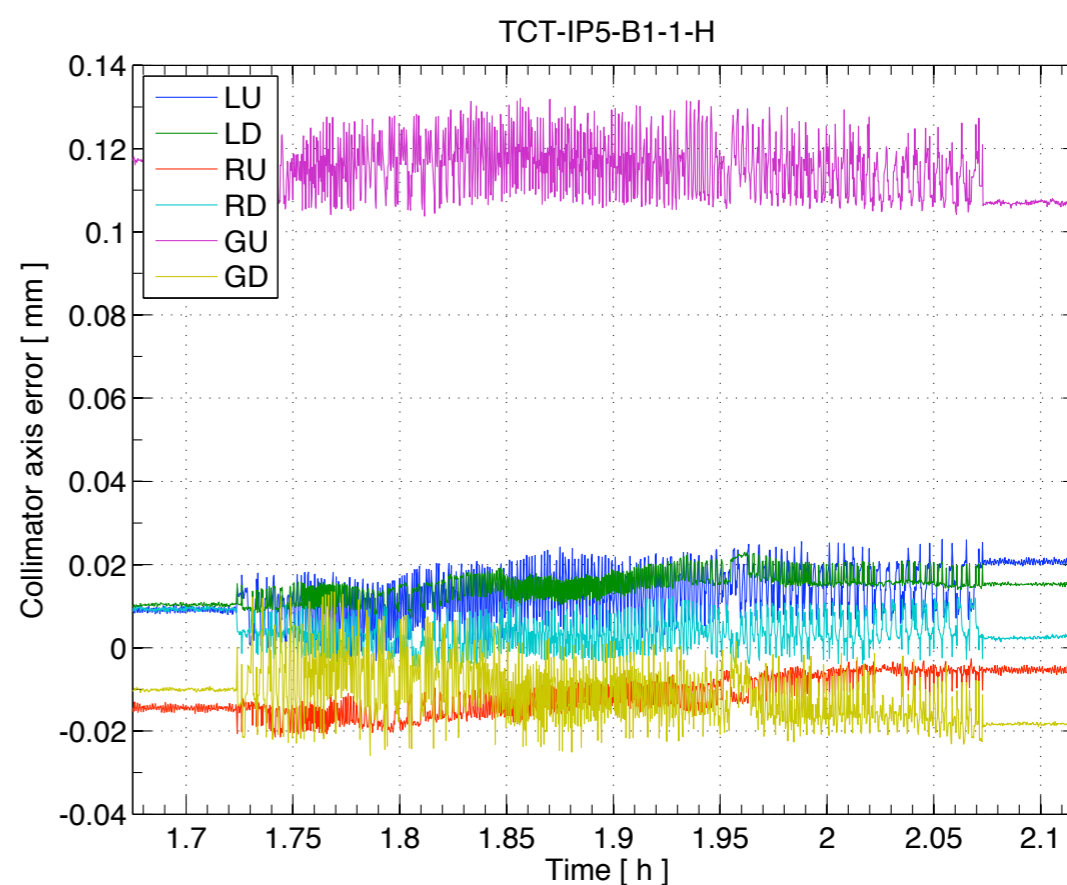
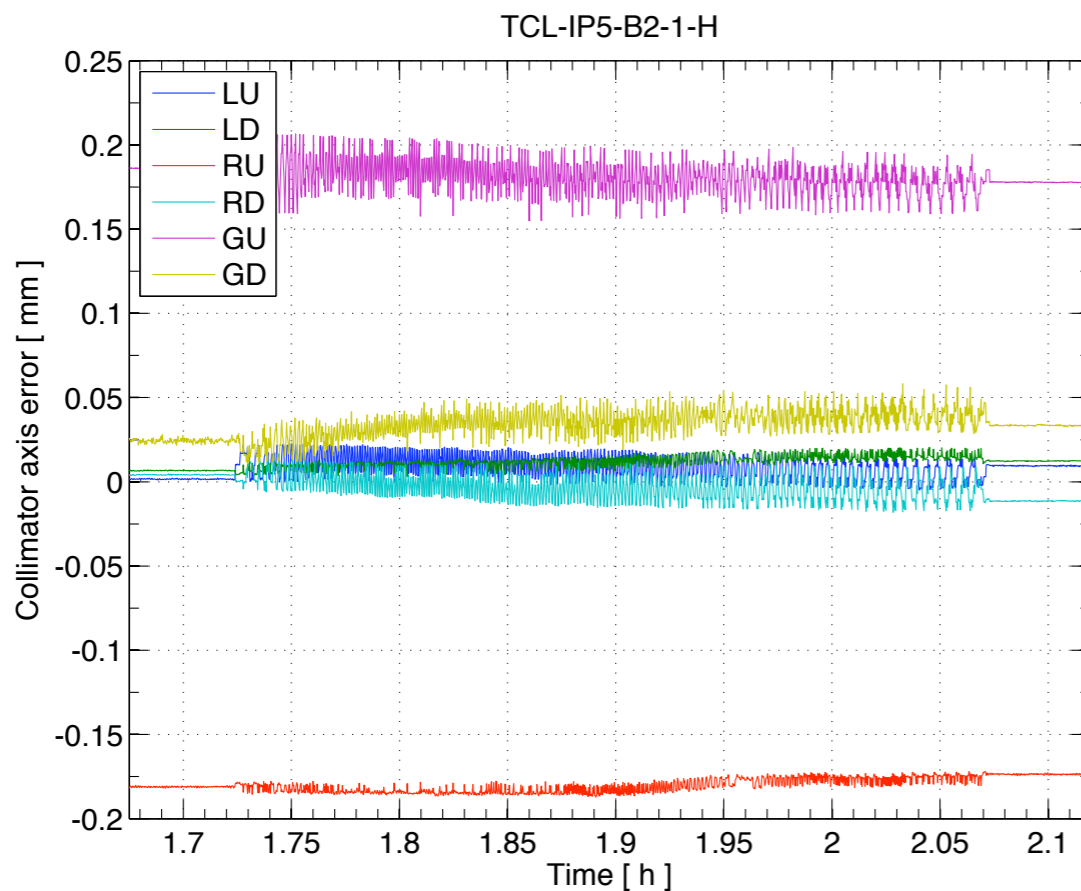
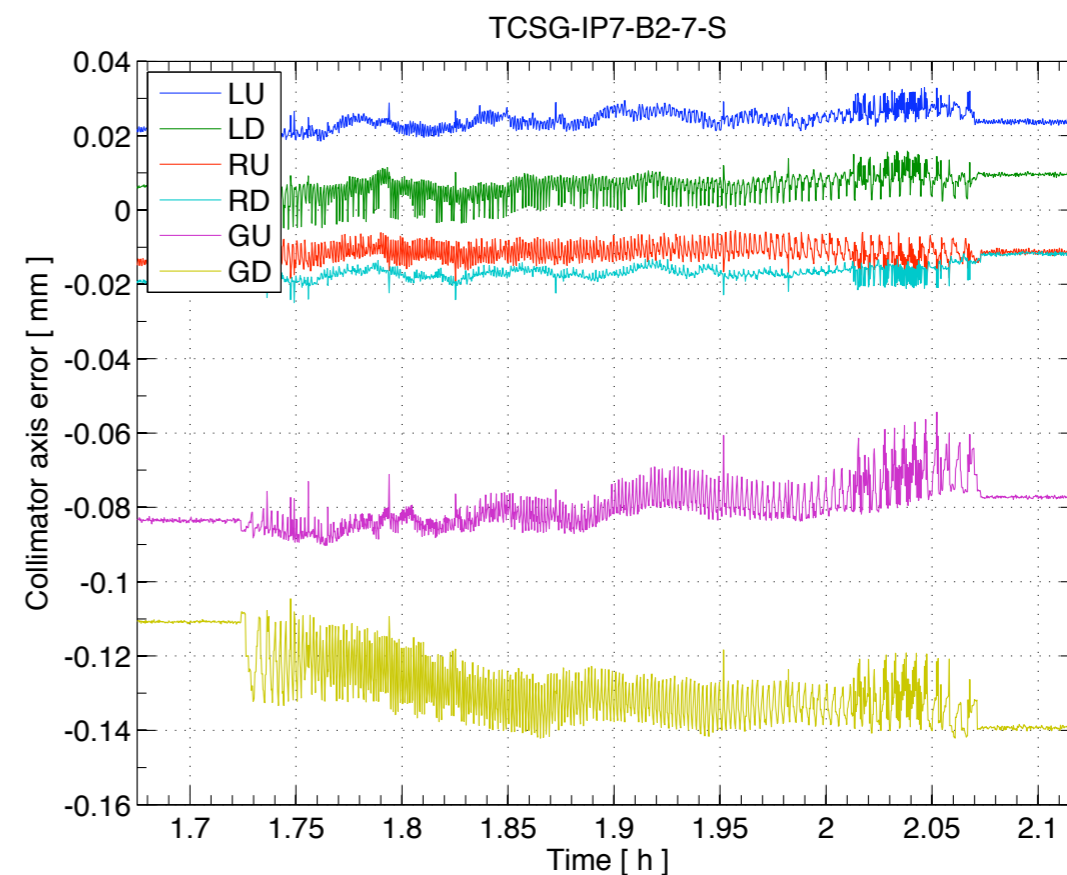
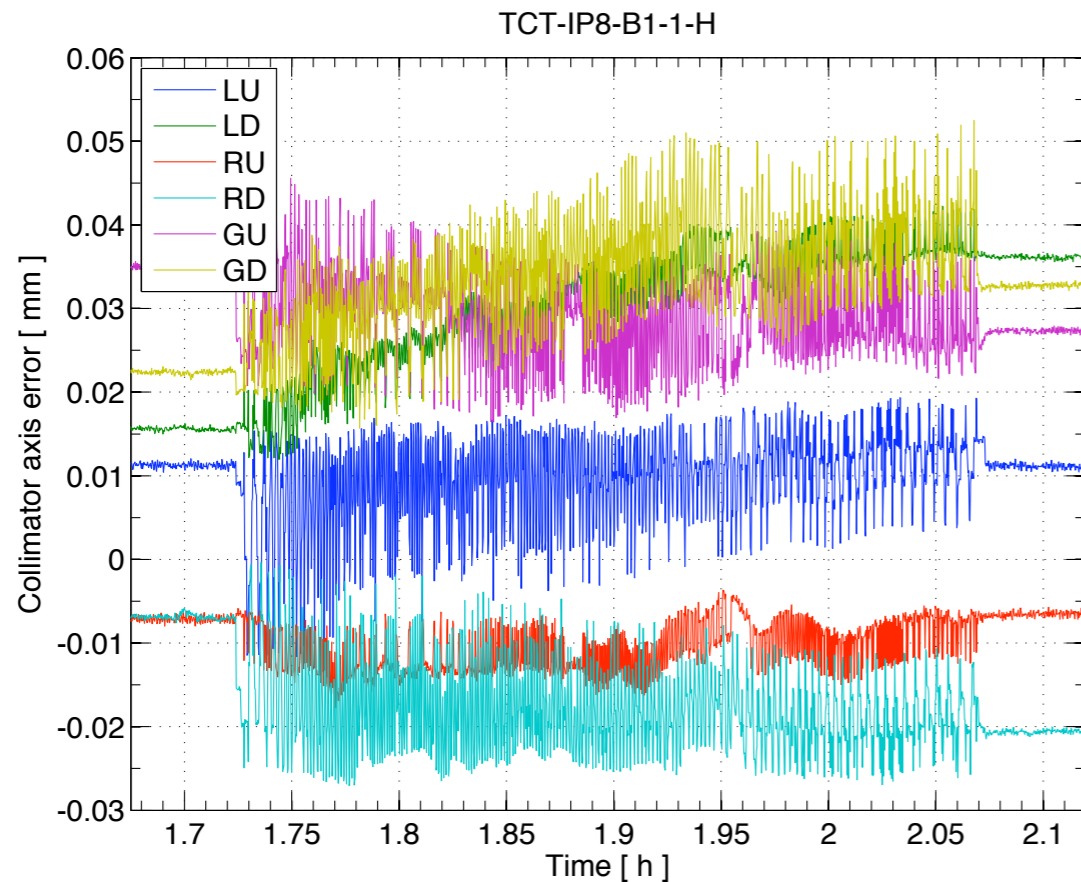




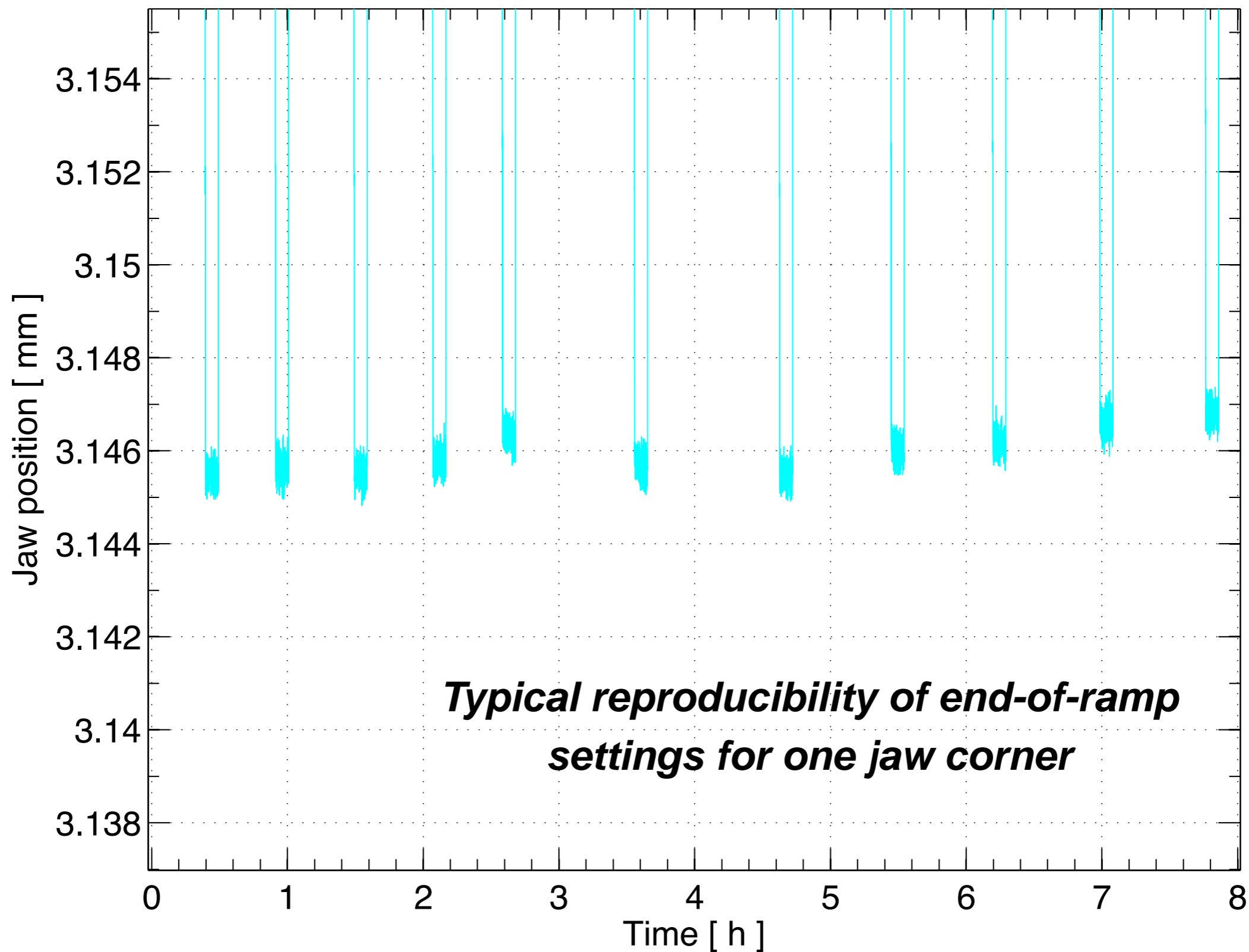
Details of a ramp



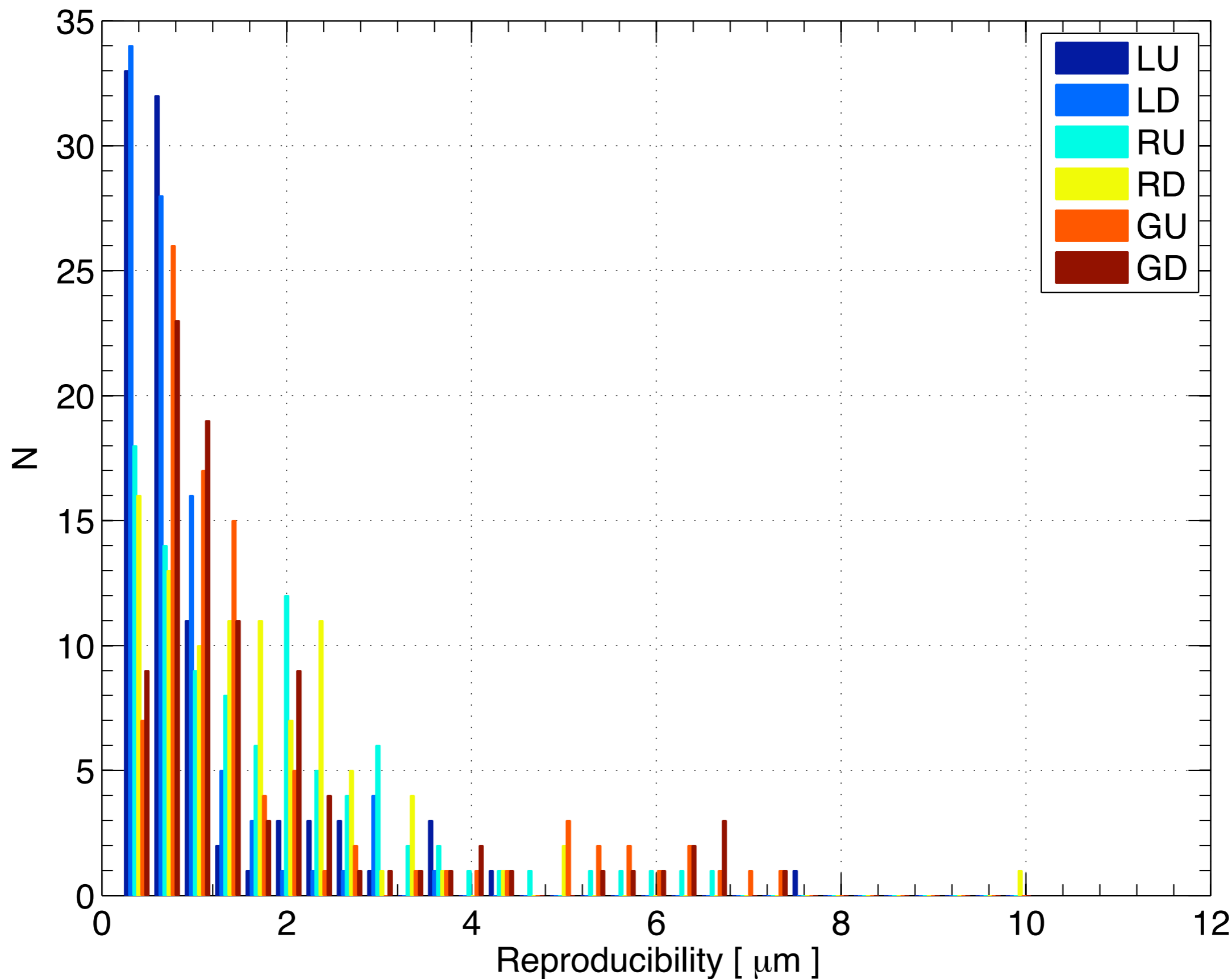
Errors during function execution



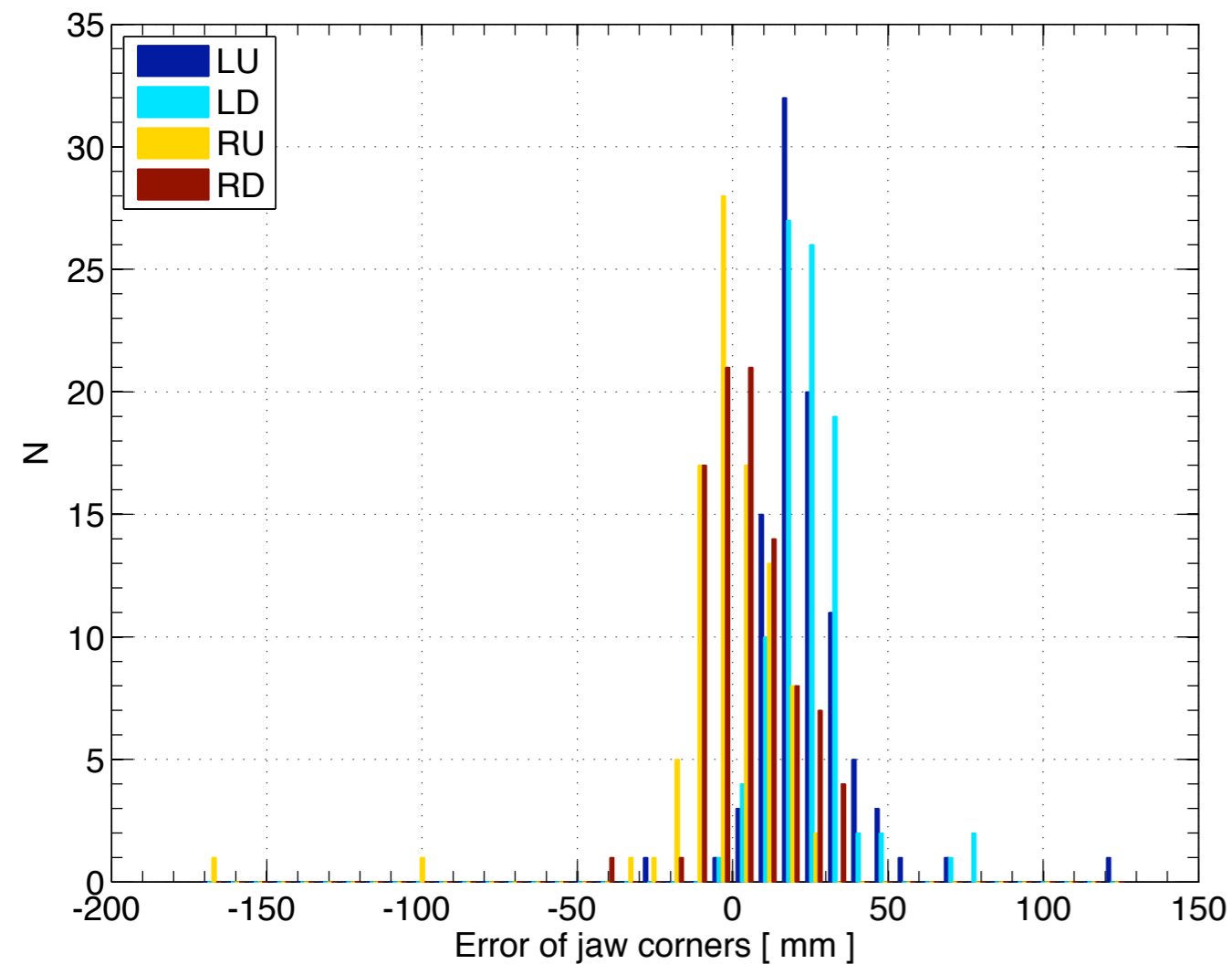
Reproducibility of settings (1)



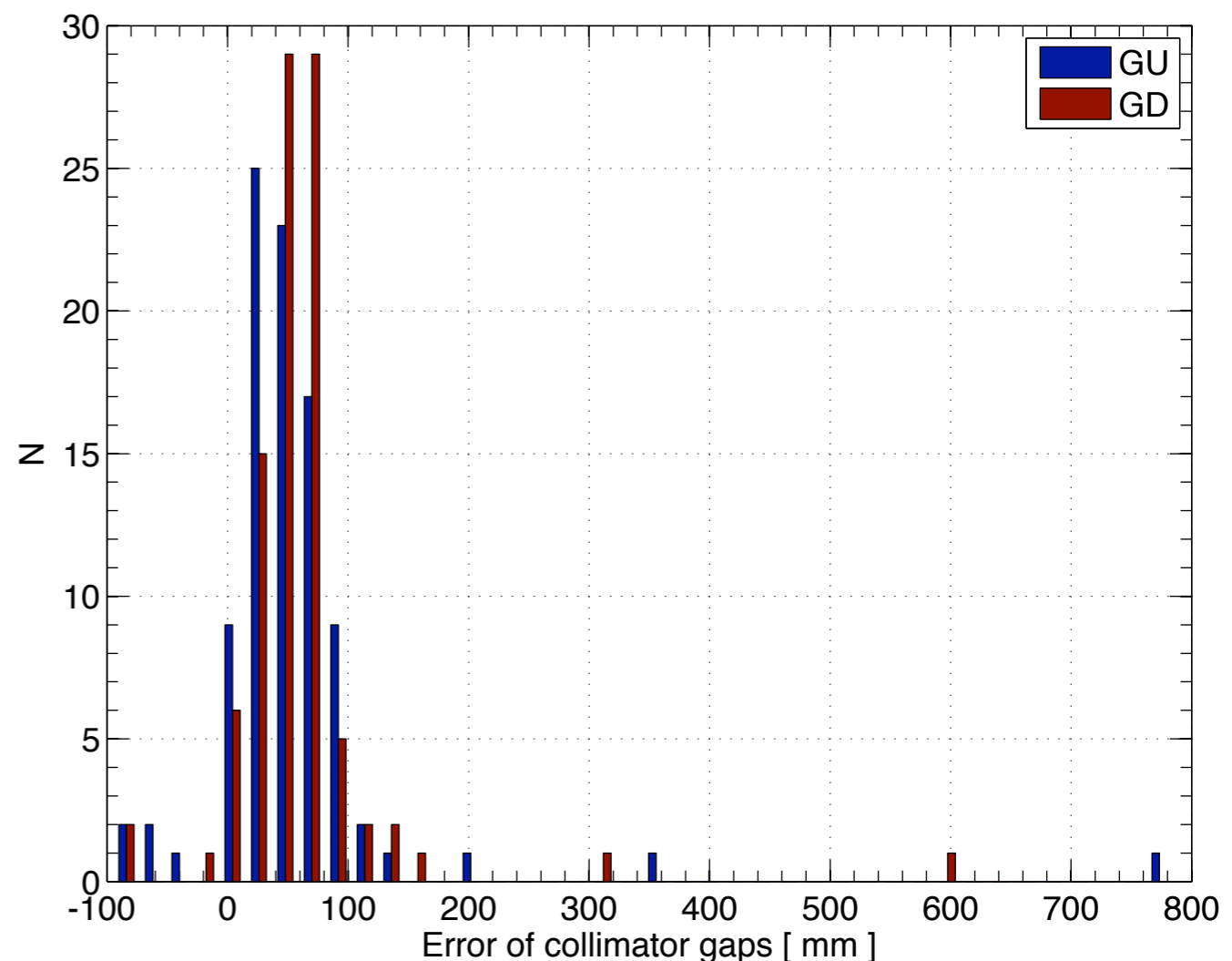
Reproducibility of settings (2)



Maximum errors w.r. to settings

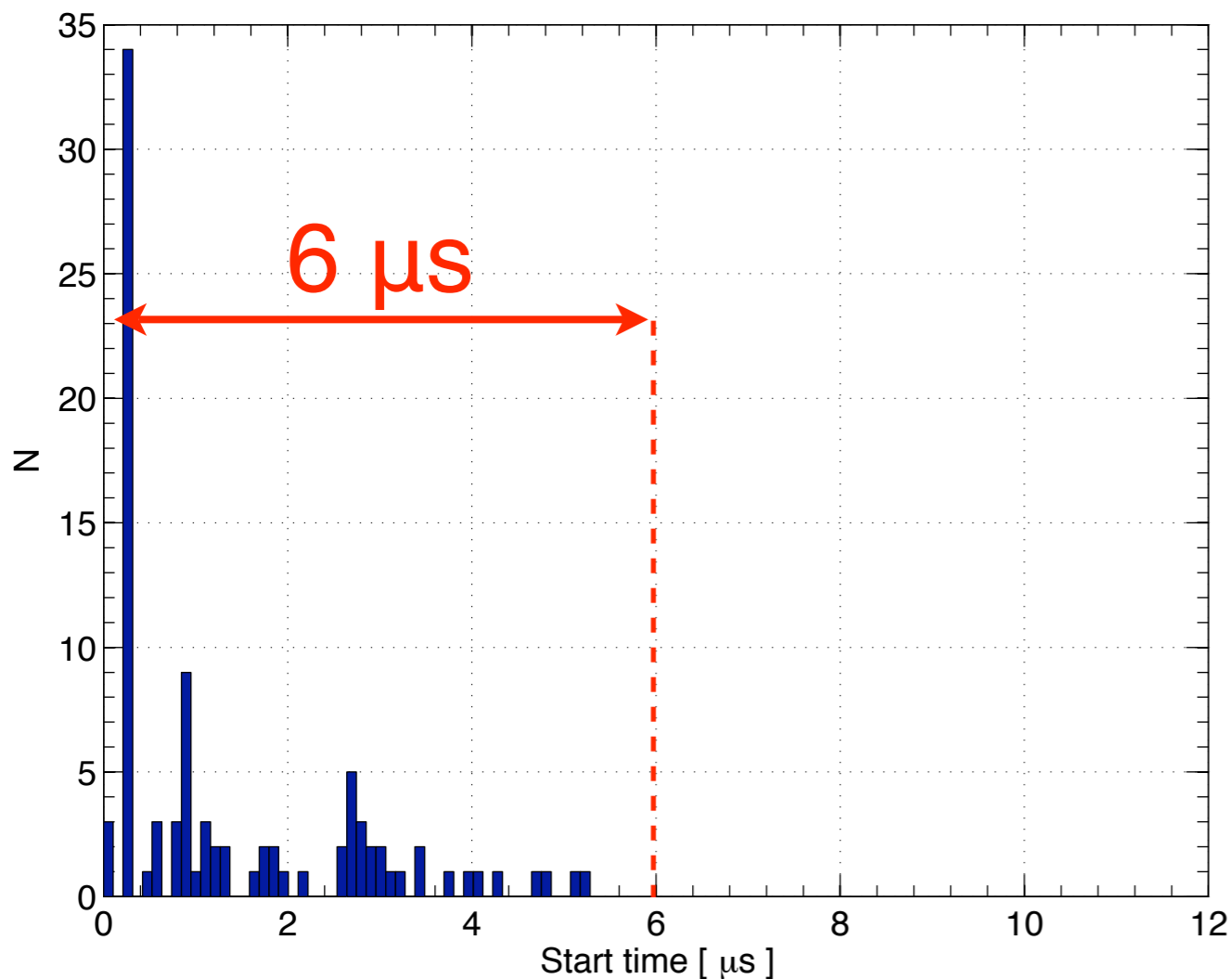


Average of **maximum** errors with respect to motor settings during 11 ramps.

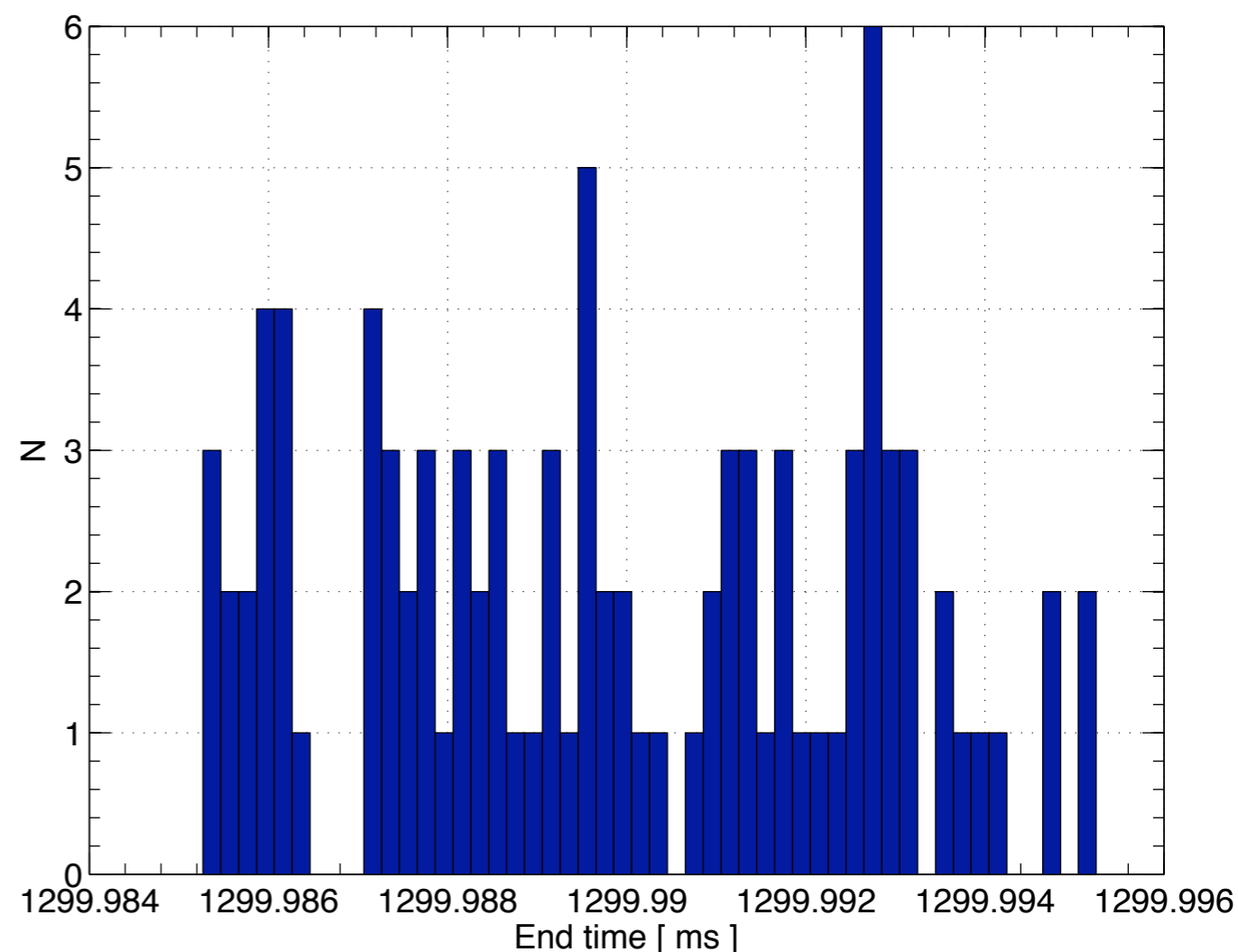


Jaw corners: < 50 microns
 Collimator gaps up to 200+ microns
 Isolated cases can be optimized.
 But the distribution of errors is not negligible. Impact on settings?

Start times of functions



End times of functions



- 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 μs**
- End times of profiles within **10 μs** (1300 s ramp to 5 TeV in the example)

- ☑ 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.