

Status on CLIC Tuning 3 TeV

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Ground Motion Model

- GM Models: A, B, C, D (B10)
- Stabilization¹: Filter type
 - v2
 - v3
- Pre-isolator:
 - 1: simple version F. Ramos et al.
 - 2: mech. fdbck B. Caron et al.
 - 3: F. Ramos et al. including tilt motion

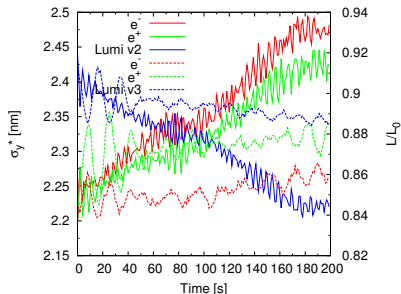
Studies published at CDR

Ground Motion Model	no GM/ + coll.	A	B	B10/ + coll.
No stabilisation	1.21 (0)/1.20 (0)	1.19 (2)	0.96 (25)	0.53 (68)
Preisolator only	–	–	1.13 (8)	0.88 (33)
Preisolator + quad. stabilisation	–	1.16 (5)	1.15 (6)	1.08(13)/ 1.06 (14)
Preisolator + targeted future design	–	–	–	1.18 (3)/ 1.17 (3)

¹Implementation on Placet made by J. Snuverik, scripts provided by J. Pfingstner

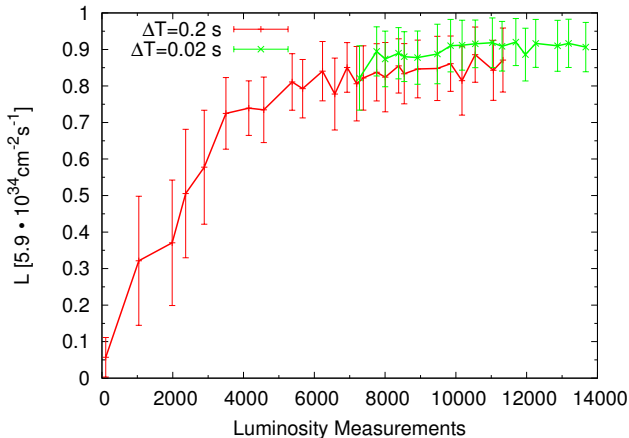
Tuning Algorithm

- Motion of beamlines w.r.t IP
- Considered Interval times (Δt) [s]: 0.02 (50 Hz), 0.2 (5 Hz), 0.8^2 (1.25 Hz)
- Ground Motion acts on both beamlines through the entire tuning procedure
- Perfect IP orbit feedback assumed (relative offset removed from IP beam distributions)



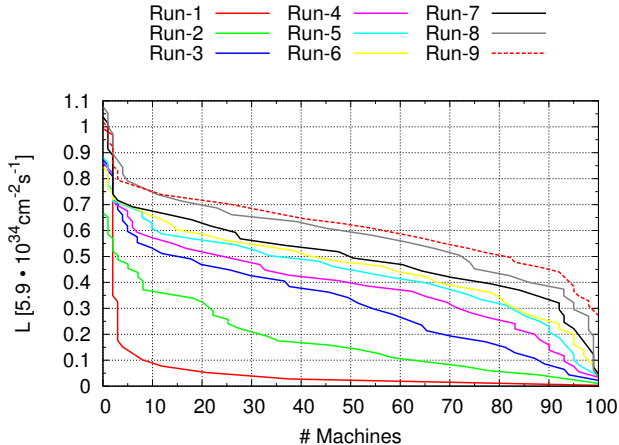
Tuning Results Filter v2

- Filter Type **v2**
- Interval times (Δt) [s]: 0.02 (50 Hz), 0.2 (5 Hz)



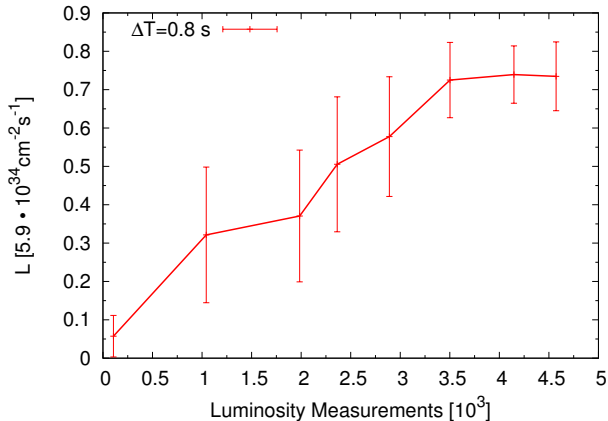
Tuning Results Filter v3

- Filter Type **v3**
- Interval time (Δt) [s]: 0.8 (1.25 Hz)



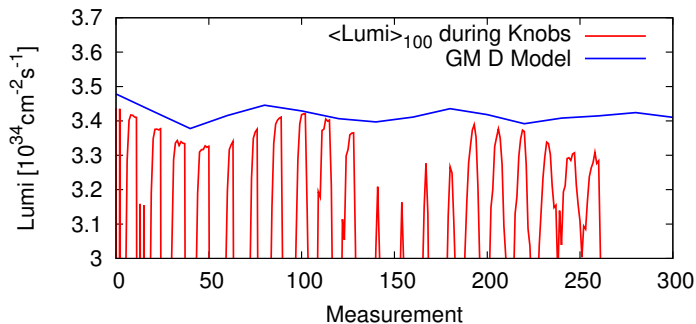
Tuning Results Filter v3

- Filter Type **v3**
- Interval time (Δt) [s]: 0.8 (1.25 Hz)



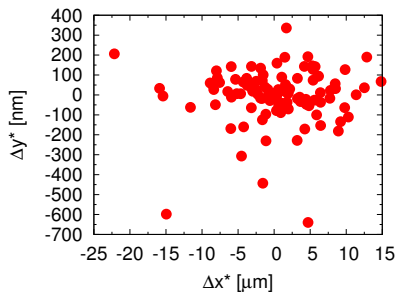
Issue

- Average luminosities during typical linear knob scans (250 measurements)



Issue

- Relative offset at the IP



$$\langle \Delta x^* \rangle = 5 \pm 4 \mu\text{m}$$

$$\langle \Delta y^* \rangle = 0.09 \pm 0.11 \text{ nm}$$

IP orbit feedback range is Y-plane is $10\sigma_{y^*}$ ³

³J Resta-López et al 2010 JINST 5 P09007