

Nano-positioning of the main Linac quadrupoles

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CLIC (Compact Linear Collider) is a next generation particle collider under study at CERN. The accelerator will operate beams of nanometric size ($1 \text{ nm} \times 40 \text{ nm}$) and produce a high density of collisions at the interaction cross section ($2 \times 10^{34} \text{ hits}/(\text{m}^2 \text{ s})$). To guarantee this collision quality, the pre-alignment tolerance of the main components of the accelerator must lie within $10 \text{ }\mu\text{m}$. In addition, the quadrupole magnets must be extremely stable (1.5 nm rms at 1 Hz). The beam further can be steered by displacing these quadrupole magnets in between beam pulses, with nanometric resolution. This critical process is the nano-positioning.

I will present the upgrades of the prototype that has been developed for the stabilization and nano-positioning of the magnet, and the results related to nano-positioning tests.

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