
Topical session:
CLIC zero, use and preparation

Use of CLIC zero

For the CLIC project

Part of the final project!

- Beam driven processing/qualifying facility for X-band structures/modules
- Significant size series production of cost and performance critical hardware – needed to be ready for CLIC
- Demonstrate nominal drive beam generation & two-beam acceleration/deceleration over a significant distance
- Emittance preservation tests possible, limited by injector parameters

Accelerator R&D

- Free electron laser R&D (already the probe beam injector by itself may be interesting)
- $\gamma\gamma$ collider (or rather test facility…) , photon back-scattering studies
- Synergy with plasma acceleration test facility, medium and long term – may need polarized e- and positrons
- Injector for laser-driven or beam driven plasma booster with compact e+e- arcs (Z, Higgs energies…)
- THz radiation …

Others

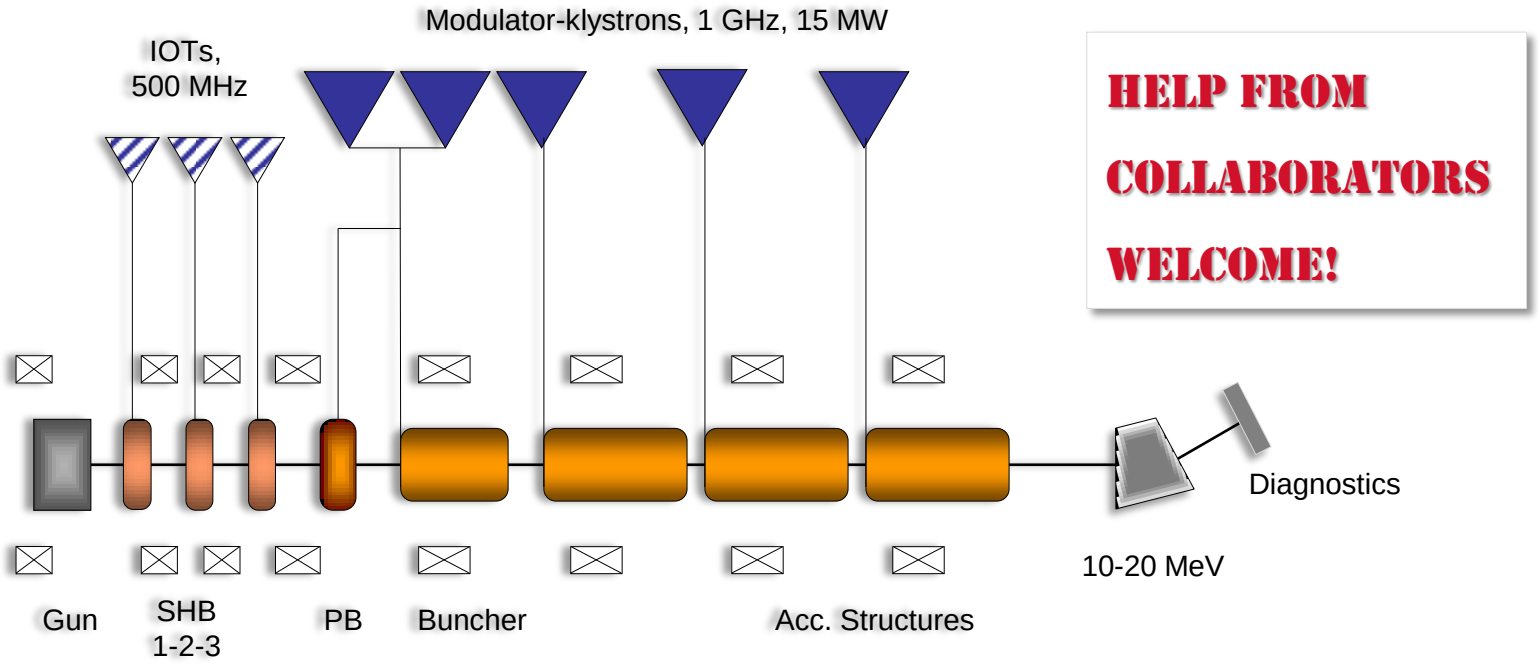
- FEL user facility
- Particle/nuclear physics with e- beams
- Test beams for high-energy physics
- Photon back-scattering for QED and background studies
- Neutron production, Irradiation tests

Some remarks

- Most of the proposals concentrate on the probe beam, but there's some potential for the drive beam also (*irradiation, plasma wake-field driver, neutron production…*). The CLIC drive beam has unique characteristic of intensity/power which may result interesting for some applications.
- Potential probe beam users stress the importance of small transverse emittance and/or short bunches. In some cases higher energy reach would also be a plus.
- Every potential use has somewhat different requirements. It is fundamental to assess the achievable flexibility in beam parameters and its associated cost.
- For many applications, the co-presence of several systems/technologies is definitely a plus (*damping ring/light sources, high-power lasers, positrons, polarization…*).
- Potential conflict between CLIC uses/test facility for accelerator R&D and user facility.
- No obvious "best candidate" – need to investigate in more depth, with the help of the wider community.


From dreams
to reality
2009 5 8

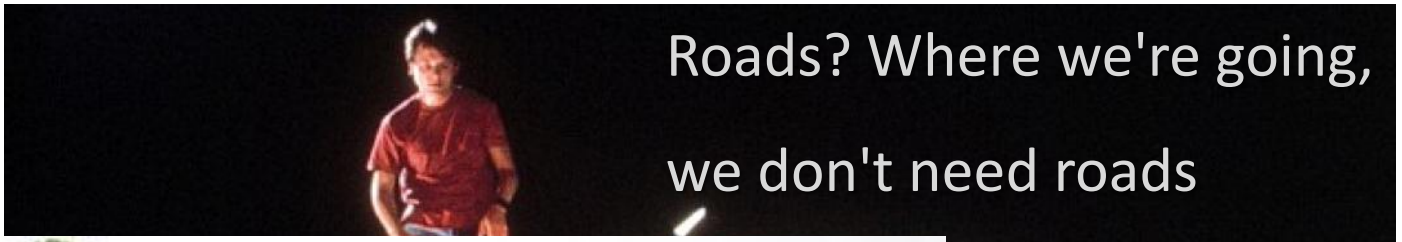
~~CLIC Zero~~ Drive Beam front-end work-package



- Reduced scope from the initial plan – essential R&D to assess drive beam injector (critical for performance) and prepare RF unit for the drive beam linac (critical for cost/efficiency, long development time)
- Good progress on limited parts of the facility (SHB and bunching, modulators)
- Clear goal for the next year: re-adapt beam dynamics & design, prepare a detailed description and plan
- In parallel, proceed on the procurement of the long lead-time hardware (klystrons, modulators, gun…)
- Setting up a working group now

- Relatively clear short term
- Good idea of the final goal

Need a plan for the post-2017 period, leading to CLIC staged construction



Might find useful to have

a good roadmap, though