The Two-beam Test-stand: The Next Generation of Tests

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on behalf of the TBTS team

CTF3 Collaboration Meeting
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The CTF3 Test-stands

Mid-linac 30 GHz Test-stand (1BTS)
- Accelerating structure tests

CLEX Two-beam Test-stand (TBTS)
- PETS and accelerating structure (ACS) tests
- Drive- and probe-beam!
The Two-beam Test-stand

• drive- and probe-beam parallel along ~10m
• unique test possibilities
  – PETS & accelerating structures
  – two-beam operation, high-power drive-beam
  – beam loading breakdown rate & energy spread compensation
  – RF breakdown transverse kick
  – full CLIC module
  – beam-based alignment

• versatile facility
  – excellent beam diagnostics
  – easy access for changing components & layout
  – space & flexibility for future upgrades
CLEX Design

TBL – Test-beam Line
drive-beam decelerator
reserved space

TBTS – Two-beam Test-stand

TL2

CALIFES
probe-beam linac

ITB – Instrumentation Test-beam line
reserved space

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TBTS Design

- intro
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Summary
Instrumentation Techniques

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The Two-beam Test-stand: The Next Generation of Tests
Improvements

- probe-beam table length → 2.2 m for full CLIC module
- drive-beam dump turned left for increased space Test-beam Line (TBL)
- combined drive- & probe-beam dump
- BPM front-end & digitizers by LAPP
- flash-box at both sides DUT area
- flash-box in drive- and/or probe-beam
Beam Dynamics

Drive- and probe-beam with similar beam dynamics

DUT area

MTV

min. ~1
Installation Work

TBTS
• intro
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Summary

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TBTS Today

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Summary

The Two-beam Test-stand: The Next Generation of Tests
Installation & Commissioning

Hardware
- supports, dipoles, quads on-place & tested
- orbit correctors, on their way to CERN
- vacuum chambers, ready end January
- BPMs, under calibration
- MTVs, arrival mid February

Cabling and tests ongoing,
ready in time for closure CLEX mid April.

Beam & diagnostics commissioning from May,
with beam tubes in the DUT area.
Summary

The Two-beam Test-stand offers many unique and exciting possibilities for test and development of CLIC components and further understanding of their behaviour.

The installation and preparations are well on schedule thanks to our colleagues at CERN.

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