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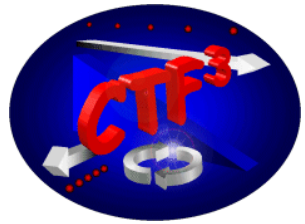

The Two-beam Test-stand: The Next Generation of Tests

Roger Ruber

on behalf of the TBTS team

CTF3 Collaboration Meeting

CERN, 23 January 2008

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- design
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Summary

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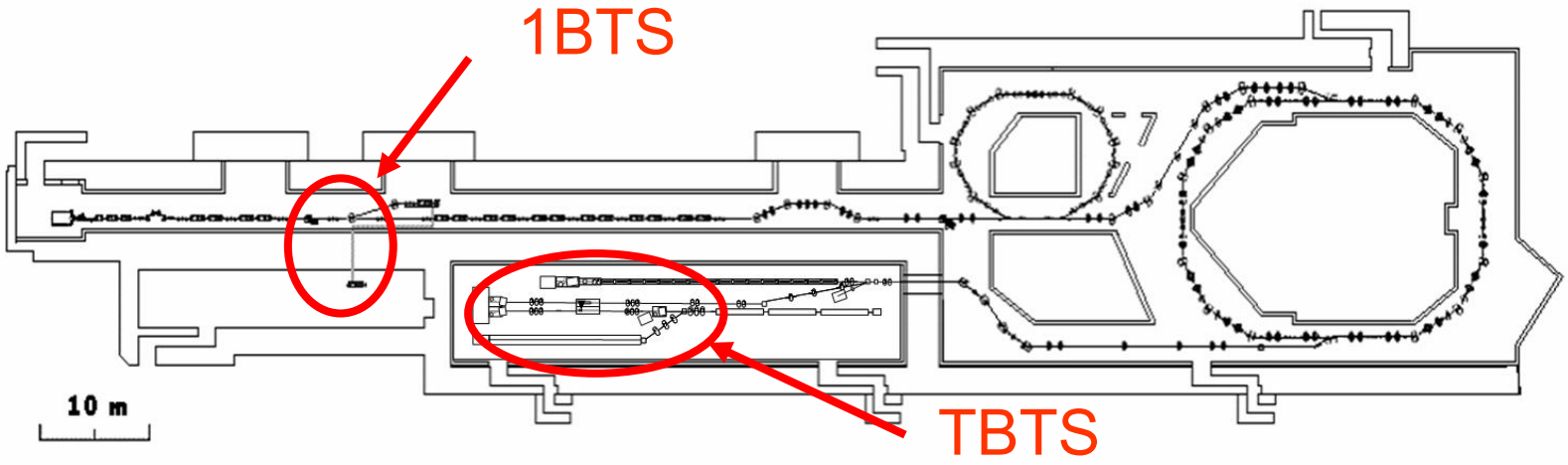
The CTF3 Test-stands



Mid-linac 30 GHz Test-stand (1BTS)

- Accelerating structure tests

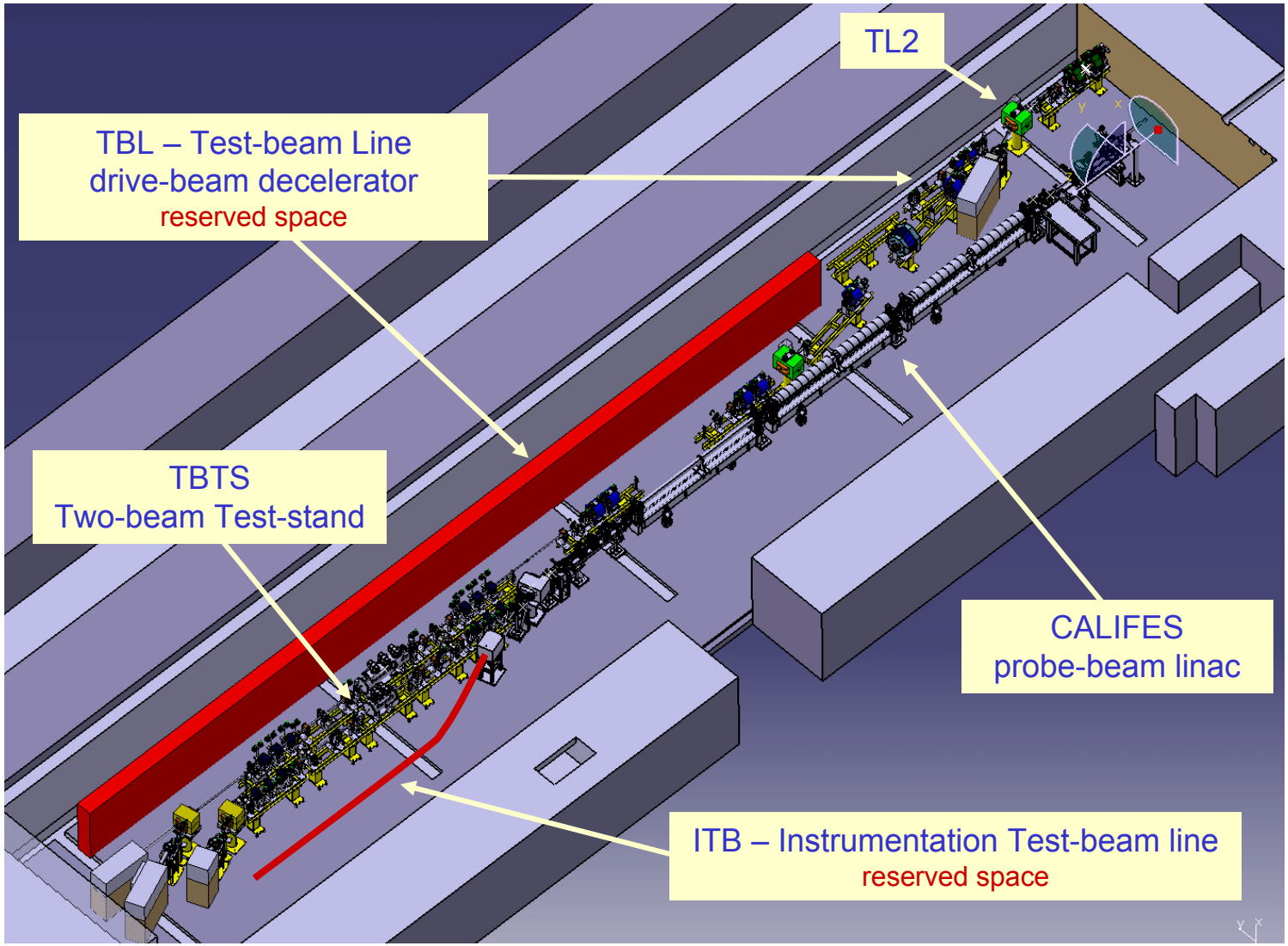
CLEX Two-beam Test-stand (TBTS)

- PETS and accelerating structure (ACS) tests
- Drive- and probe-beam!

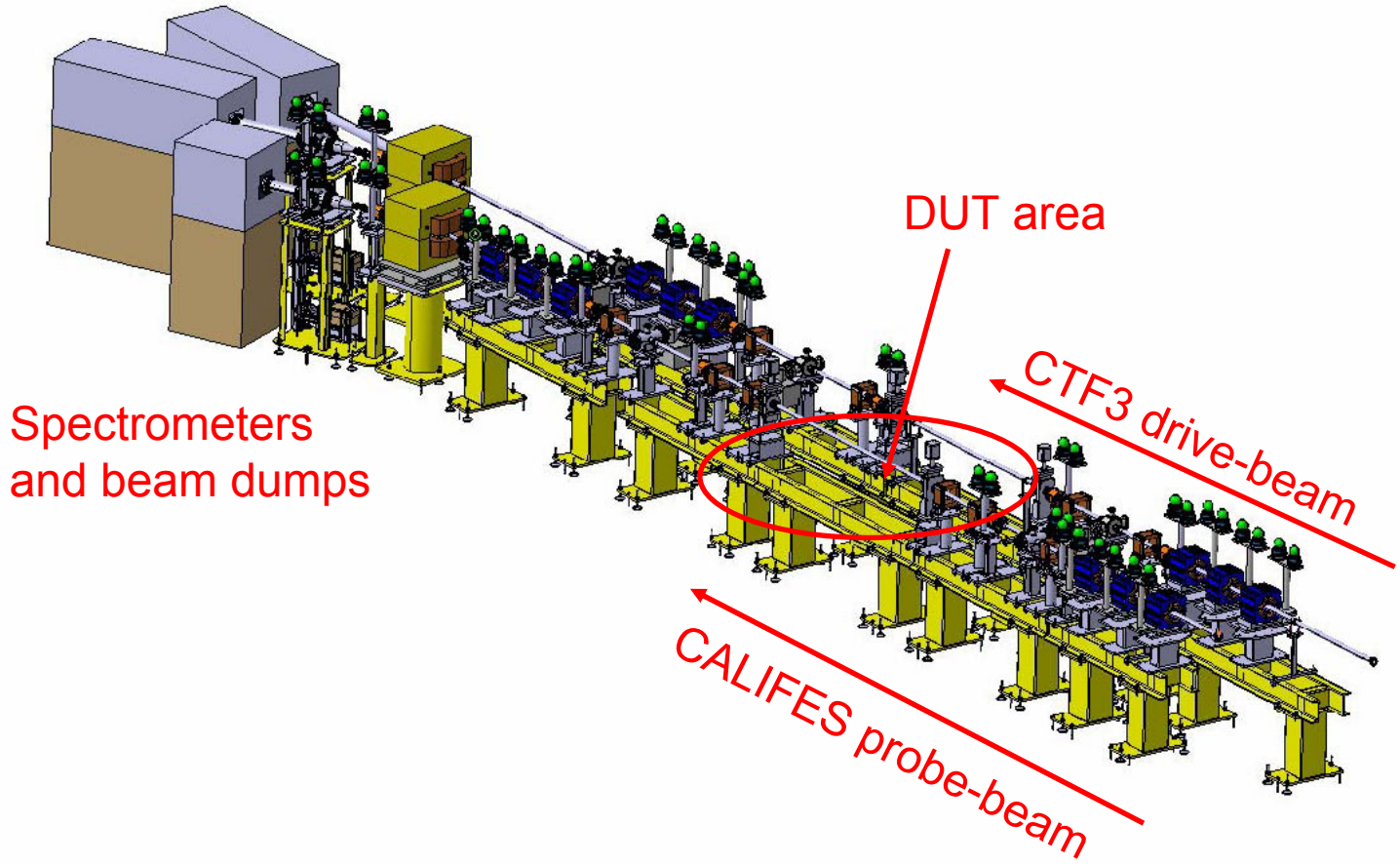
The Two-beam Test-stand

- 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


TL2
TBL – Test-beam Line
drive-beam decelerator
reserved space
TBTS
Two-beam Test-stand
CALIFES
probe-beam linac
ITB – Instrumentation Test-beam line
reserved space

TBTS Design


DUT area
CTF3 drive-beam
Spectrometers
and beam dumps
CALIFES probe-beam

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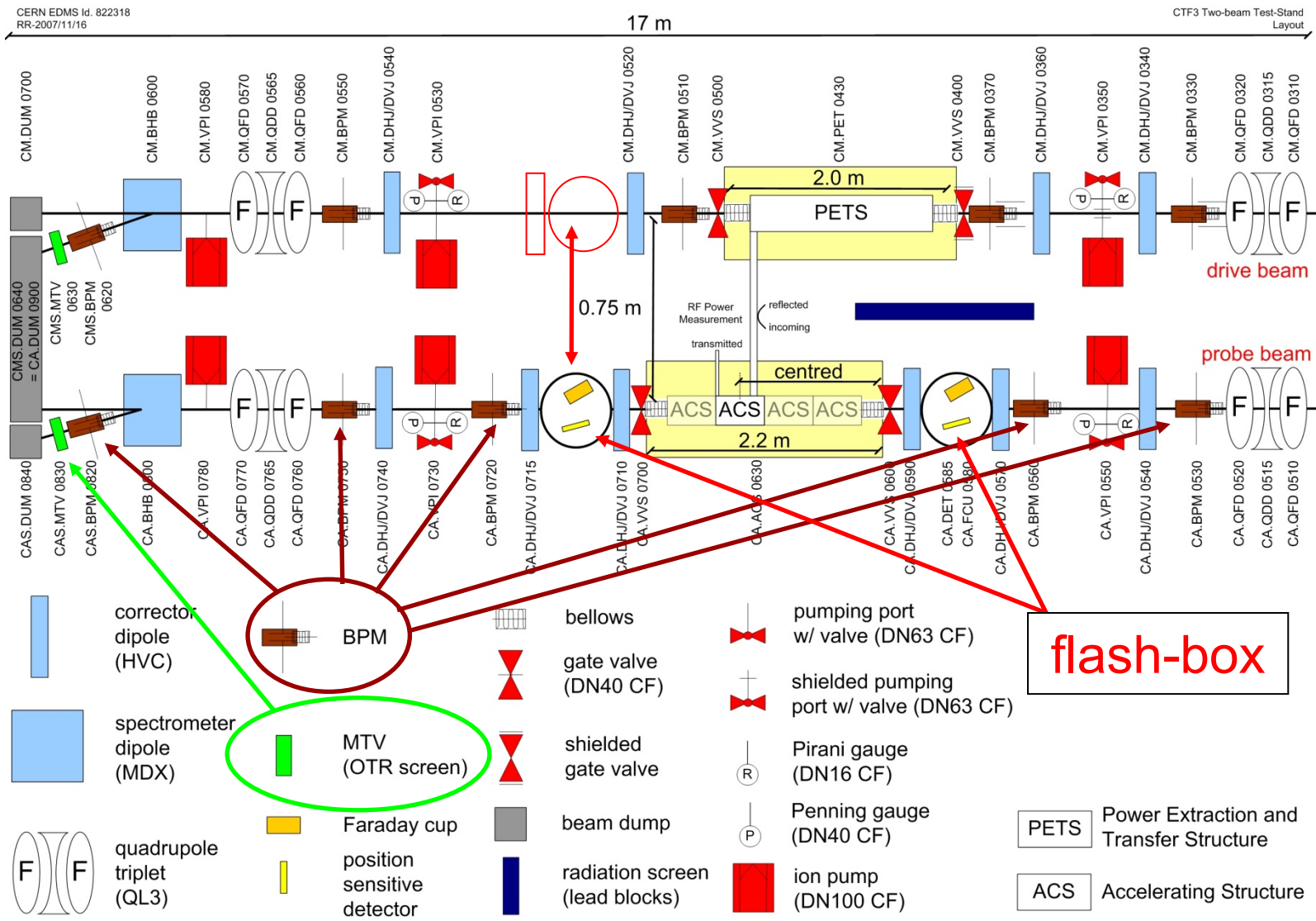
Instrumentation Techniques



Improvements

- probe-beam table length → 2.2 m
  for full CLIC module

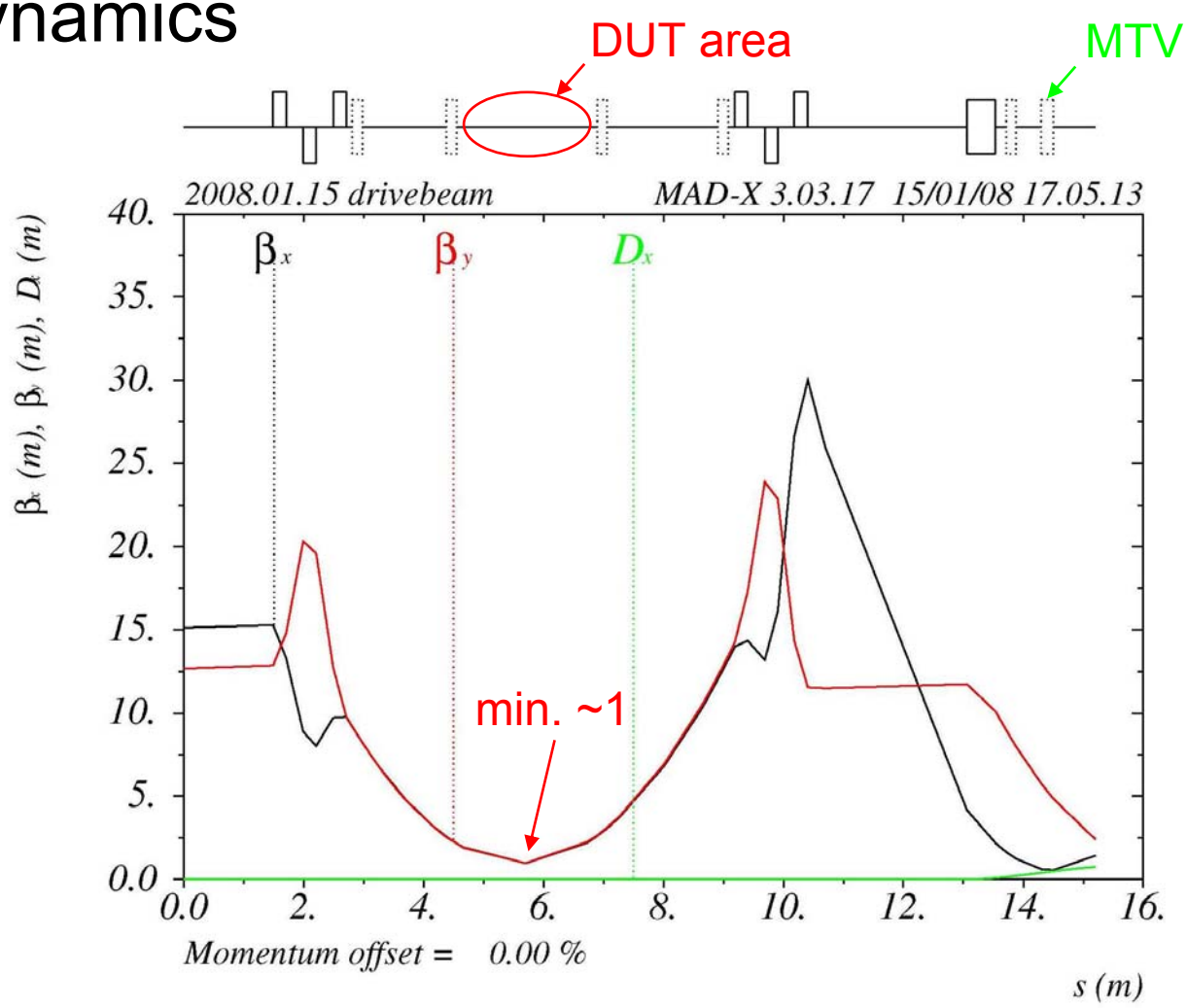
- drive-beam dump turned left
  for increased space Test-beam Line (TBL)
- combined drive- & probe-beam dump

- 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



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Installation Work

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TBTS Today

Roger Ruber

CTF3 Meeting

23-Jan-2008

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.

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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.

The work is supported by the Swedish Research Council (VR) and the Knuth and Alice Wallenberg Foundation.