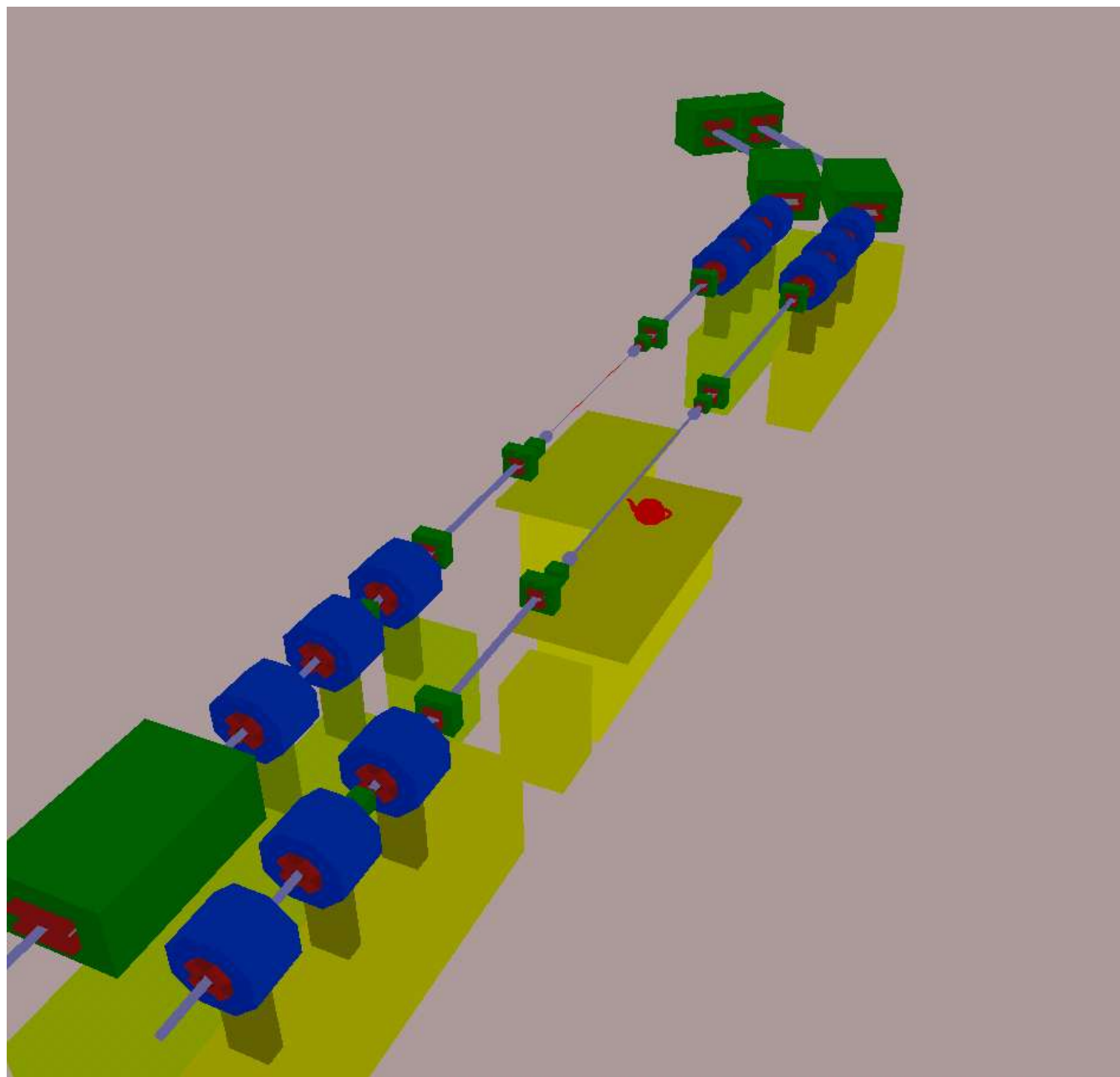# Two-Beam Test-Stand in CTF3
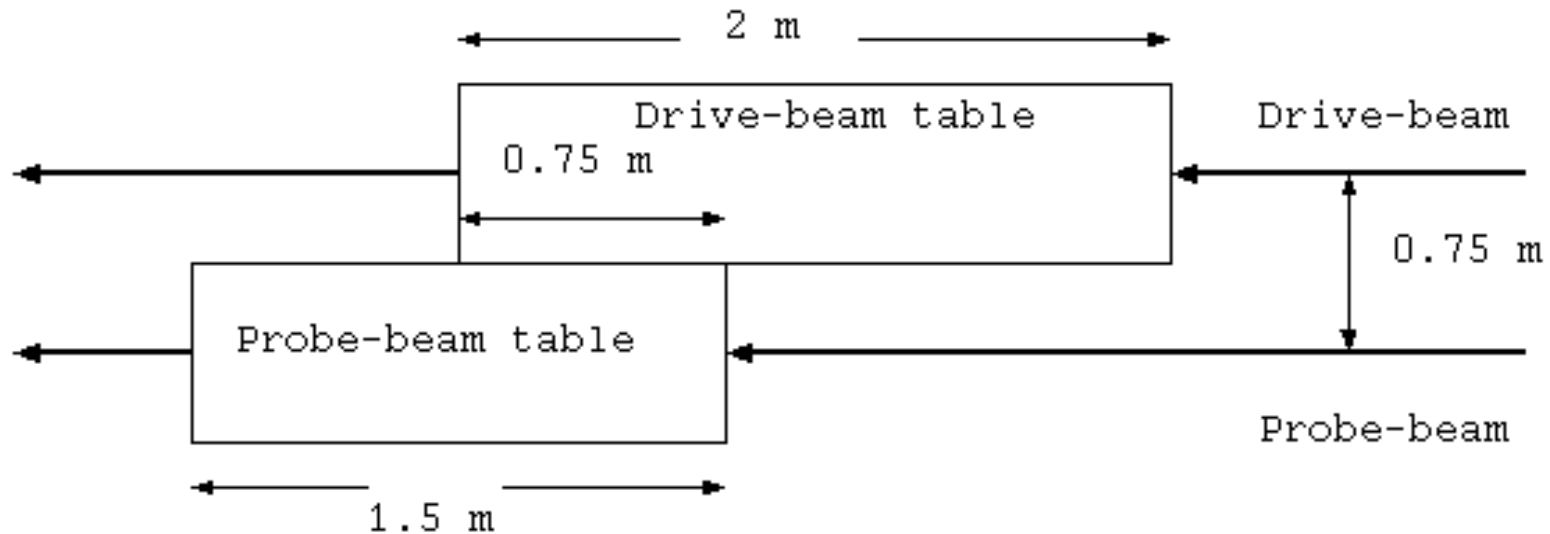# Status and Questions

Volker Ziemann
Institute for Nuclear and Particle Physics
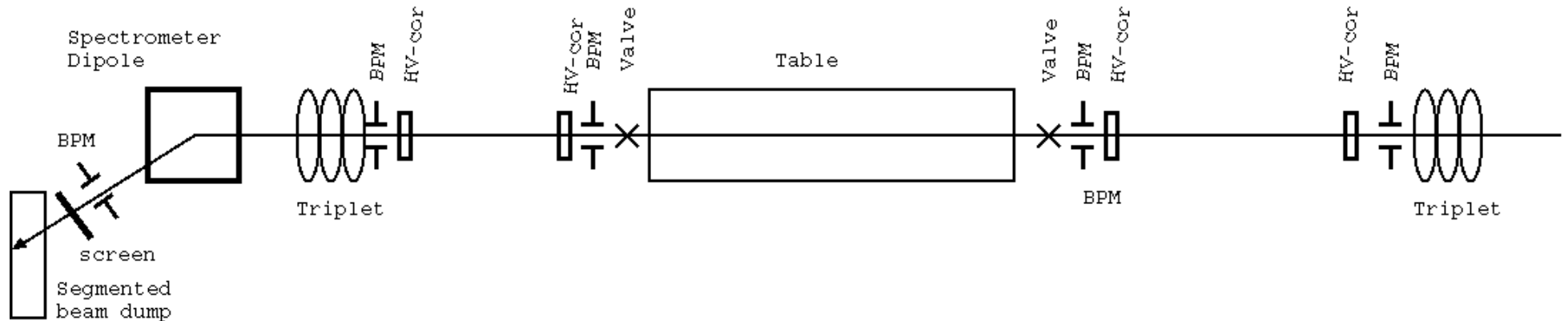Uppsala University
Uppsala, Sweden

3D-view

Experimental DUT-tables

- Beam height 1.25 m above floor level

- Distance between the beams is 0.75 m

- Table width is about 0.5 m, with holes similar to optical table

- Table is 0.5 m under beam height

- Probe-beam table is shifted downstream for proper timing

Beam Line Layout

- Qualitative same layout for drive- and probe-beam.

- Two-steerers for parallel translation of beam

- Two BPM before and after for kick determination

- BPM in dump line for energy measurement

- OTR/luminescence screen just before the dumps

- Both beams bend to their left or down?

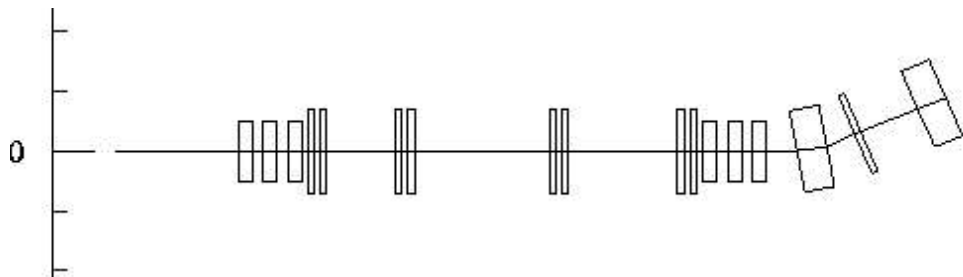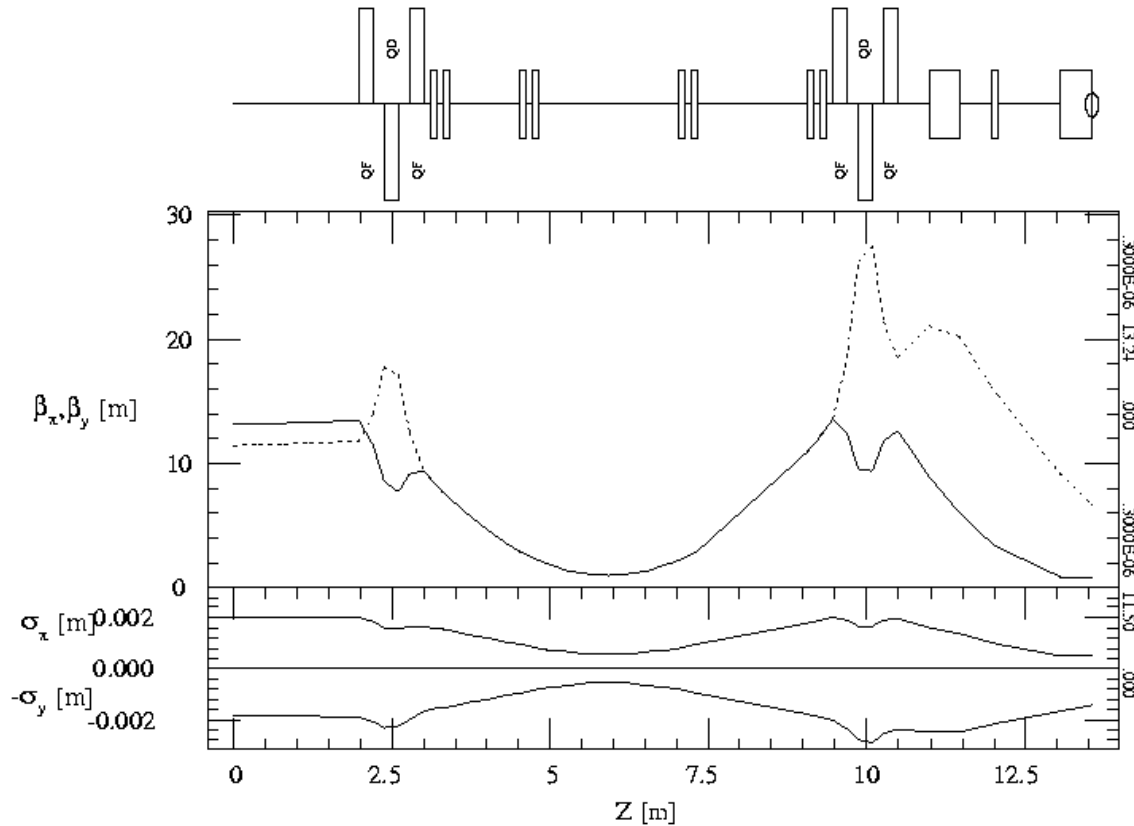- Straight ahead dump in drive/probe beam?

Drive-beam Features

- Aluminum vacuum pipe with 40 mm diameter

- Beam pipe in DUT must be designed for 16 mm diameter

- Steerers need to move the beam by about +/- 4 mm

- Shared roughing turbo-pump for drive- and probe-beam

- Gasior BPM's bandwidth needs to be increased to 400 MHz

- No wall-current monitors, will use BPMs

- Spectrometer magnet

Probe-beam Features

- Stainless Steel vacuum system with 40 mm pipe

- Beam pipe in DUT must be designed for 3 mm diameter

- Steerers need to move the beam by about +/- 1 mm

- Use Gasior BPM with slightly modified electronic

- Zero-degree port for light observation

- OTR screens see weaker beam and higher drive-beam background

- Spectrometer dipole

Drive Beam Optics

Other activities

- Hired doctoral student (Magnus Johnson)
  - RF kick diagnostic
  - Control system interface

- Hired physicist (Roger Ruber)
  - Project coordinator at CERN
  - Magnet issues

- Technician
  - BPM mechanical assembly
  - OTR screens
  - Vacuum system

Questions 1

- Floor plan
  - Coordinate system?
  - Real size of the CLEX hall.
  - Distances to the TBL, IBL, and the walls?
  - Beam dumps horizontal or vertical?

- Beam optics
  - Interfaces (z, beta, alfa)
  - TL2' optics
  - CALIFES optics

Questions 2

- Spectrometer dipoles
  - Can we use the existing ones?
  - Do they need to be repaired, do they need new coils?

- Quadrupoles (need a dozen)
  - Simplify the tender, do we need all those samples for epoxy, iron, copper, etc.
  - Alignment on tables or individually ($\rightarrow$ affects tender, extra flat alignment surfaces)
  - Rewrite the tender specs for our quads but follow the Saclay template.

Questions 3

- Steering magnets
  - Drawings for iron and coils.
  - Just order?

- Power supplies for all magnets
  - Can we use open tenders?
  - When to order?
  - Triplet-quads in series or individually powered?

- Control system interface

Questions 4

- Beam position monitors (5 per beam line)
  - DB: Marek-type
  - PB: Marek-type with modified electronics? OK?
  - Head electronics (Marek or LAPP)
- OTR screen
  - Use the new Thibaut design?
  - When are the drawings ready?
  - Mechanical design of screen holder/revolver
  - OTR vs. luminescence in PB, sensitivity and background
  - Light optics

Question 5

- Synchronization between BPM and RF diags
  - 1.2 s heartbeat is too slow.
  - Need time stamping
- Beam dumps
  - Drive/probe beam straight ahead dump needed?
  - Segmented beam dumps needed?
- Experimetal table
  - like an optical table?
  - One big or two smaller ones?

Questions 6

- Water connections

- Power connections

- Alignment
  - triplets on table or individually aligned?

- Support structures
  - availability of girders

- Vacuum system
  - DB:Al and PB:SS, pumps, valves

Priorities

- Quadrupole Tender

- Acquiring BPM components

- Spectrometer dipoles

- Floor assignment and beam optics

- Can we share/trade workload?

  - steering magnets

  - OTR vessels

  - Vacuum structures (Al, SS)