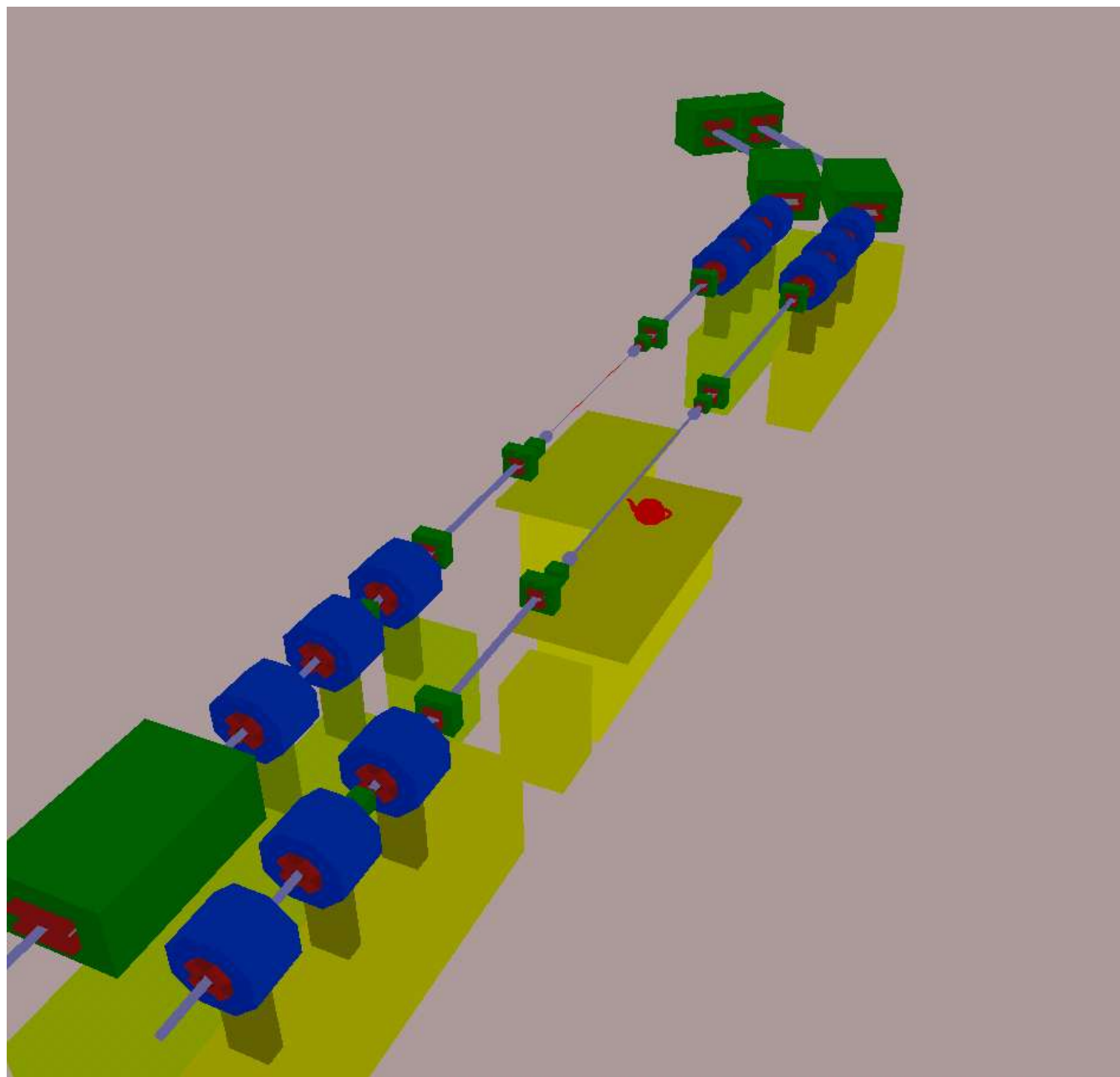


Two-Beam Test-Stand in CTF3

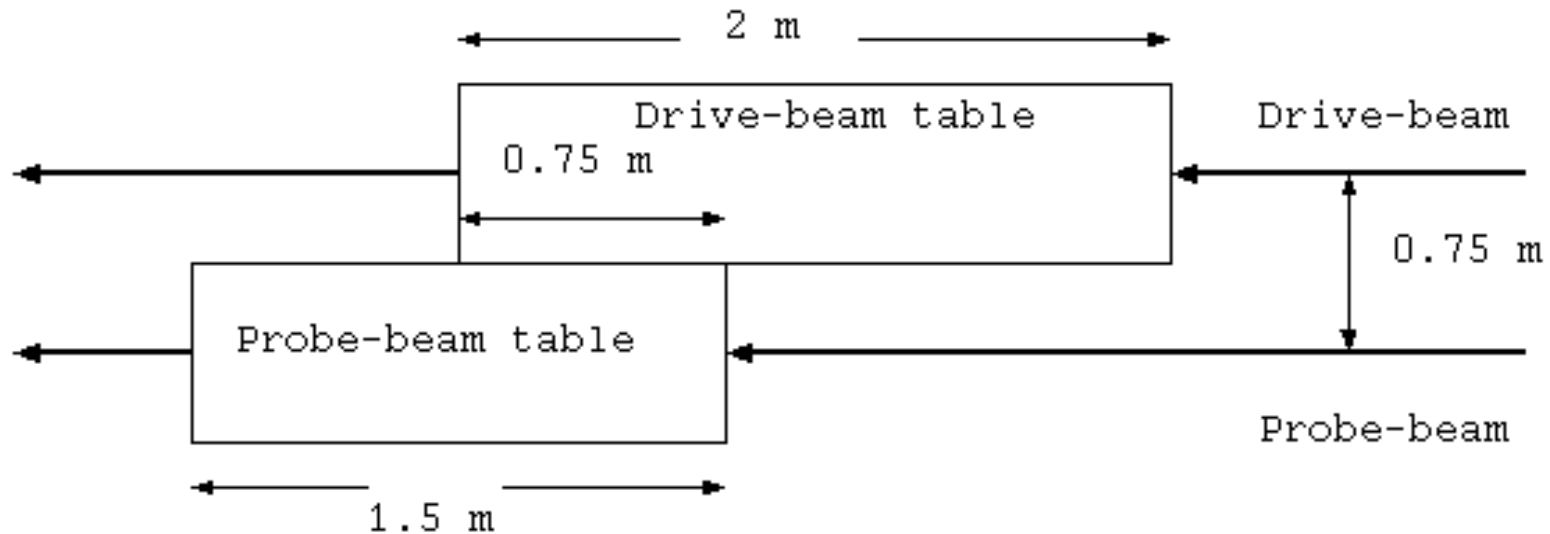
Status and Questions

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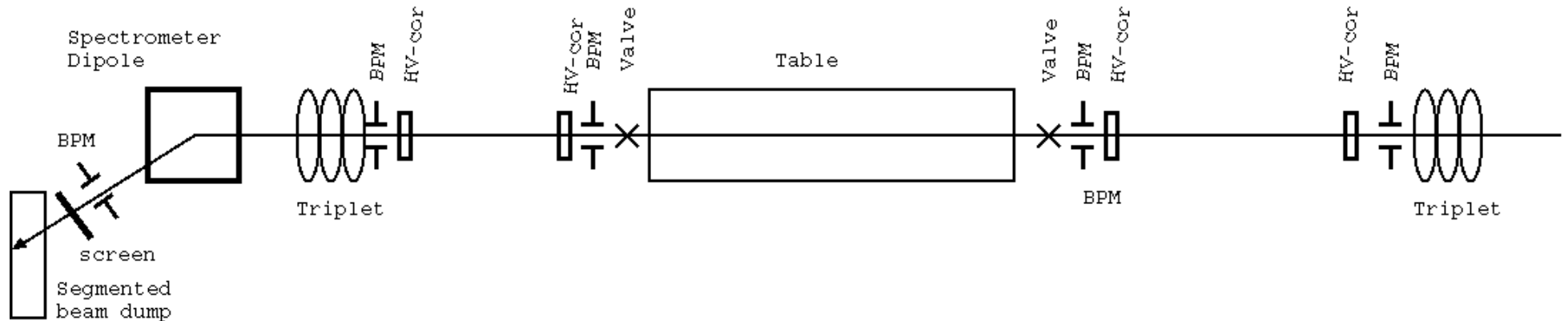
3D-view

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?

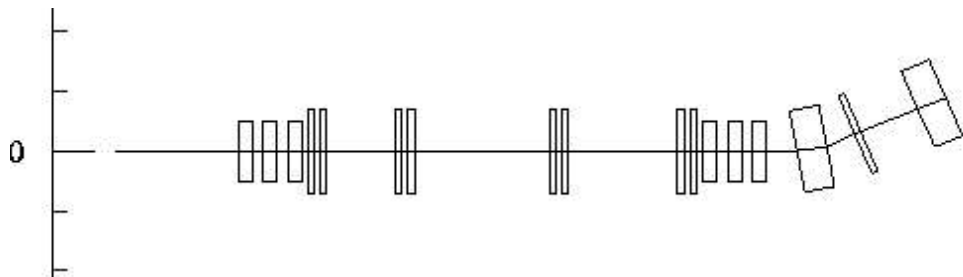
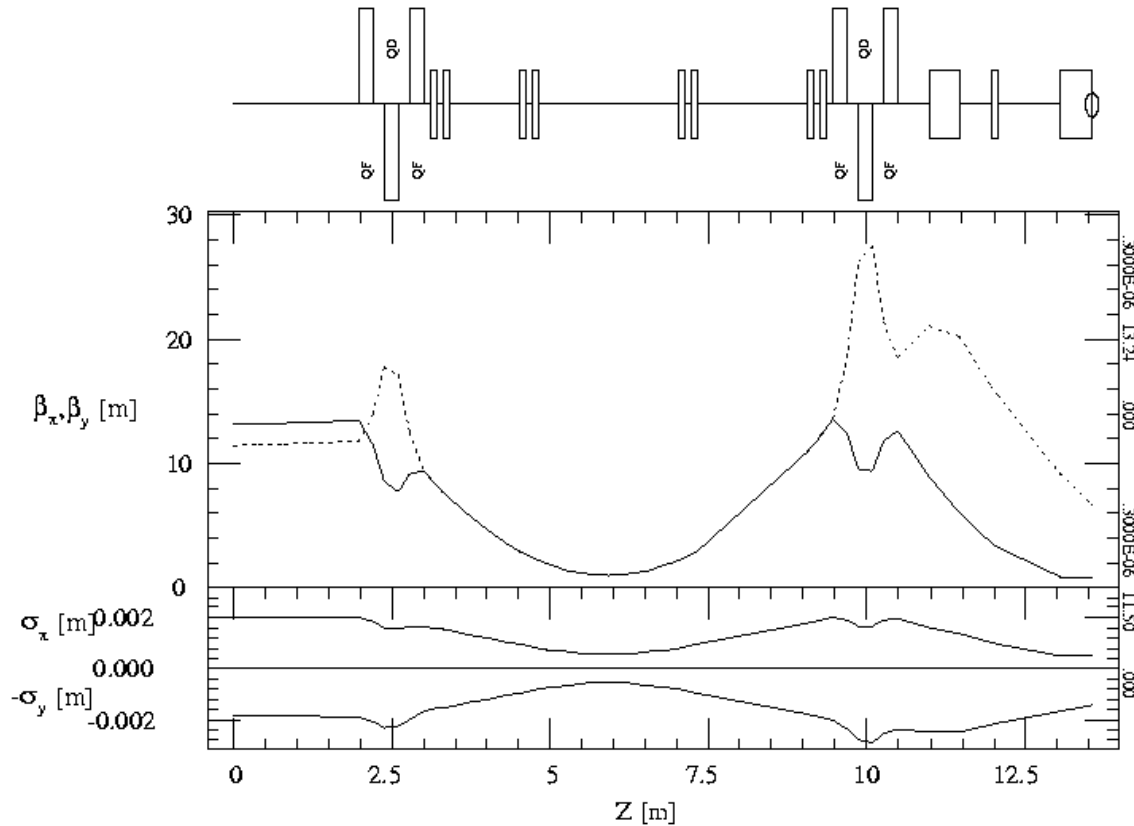
Drive-beam Features

- 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



```

! Drive-beam lattice
0 0 3e-7 13.2373 0,0 '#BEAM,X'
0 0 3e-7 11.5039 0,0 '#BEAM,Y'
!..starting point is 2,5 m upstream of center of upstream triplet
3 .400000 .0000000000E+00 .00000 .1500000
3 .400000 .0000000000E+00 .00000 .1500000
3 .400000 .0000000000E+00 .00000 .1500000
3 .300000 .0000000000E+00 .00000 .1500000
0 .000000 .2000000000E-01 .00000 .0000000 '#PIPERAD'
3 .488000 .0000000000E+00 .00000 .1500000
55 .224000 16,613 .00000 .1500000 '#QF'
3 .176000 .0000000000E+00 .00000 .1500000
55 .224000 -31,62 .00000 .1500000 '#QD'
3 .176000 .0000000000E+00 .00000 .1500000
55 .224000 16,613 .00000 .1500000 '#QF'
3 .100000 .0000000000E+00 .00000 .0000000
4 .100000 .0000000000E+00 .00000 .1500000 '#BPM1'
3 .100000 .0000000000E+00 .00000 .0000000
4 .100000 .0000000000E+00 .00000 .1500000 '#HV-COR'
3 0,300000 .0000000000E+00 .00000 .1500000
3 0,300000 .0000000000E+00 .00000 .1500000
3 0,300000 .0000000000E+00 .00000 .1500000
3 0,200000 .0000000000E+00 .00000 .1500000
4 .100000 .0000000000E+00 .00000 .1500000 '#HV-COR'
3 .100000 .0000000000E+00 .00000 .1500000
4 .100000 .0000000000E+00 .00000 .1500000 '#BPM2'
3 .100000 .0000000000E+00 .00000 .1500000
!.....flange start
!.....flange end
!..table center
3 .320000 .0000000000E+00 .00000 .1500000
3 .320000 .0000000000E+00 .00000 .1500000
3 .320000 .0000000000E+00 .00000 .1500000
!.....flange start
!0 0 0,04 0 0,0 '#PIPERAD'
3 0,04 0 0 0,0
!0 0 0,02 0 0,0 '#PIPERAD'
!.....flange end
!0 0 0 0 0 '#TBTS_FINAL'
!.....
3 0,1 0,0 0,0 0,15
4 0,1 0,0 0,0 0,15 '#BPM3'
3 0,1 0,0 0,0 0,15
4 0,1 0,0 0,0 0,15 '#HV-COR'
3 1,75 0,0 0,0 0,15
4 0,1 0,0 0,0 0,15 '#HV-COR'
3 0,1 0,0 0,0 0,15
4 0,1 0,0 0,0 0,15 '#BPM4'
3 0,1 0,0 0,0 0,0
55 0,224 20,6723 0,0 0,15 '#QF'
3 0,176 0,0 0,0 0,15
55 0,224 -33,9608 0,0 0,15 '#QD'
3 0,176 0,0 0,0 0,15
55 0,224 20,6723 0,0 0,15 '#QF'
3 0,5 0,0 0,0 0,15
44 0,479 -4,1446 0,0 0,15 '#BHZ/Spect'
!0 -0,05 0,05 -0,02 0,02 '#APERLIM'
3 0,5 0,0 0,0 0,15
4 0,1 0,0 0,0 0,15 '#BPM'
3 1,0 0,0 0,0 0,15
4 0,5 0 0 0,15 '#SEGIDUMP'
0 0 0 0 0 '#BEAMDUMP'
!.....
  
```

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 (→ 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?
- Experimental 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)