



# HL-LHC IR1/IR5 IT BPM electrode orthogonality

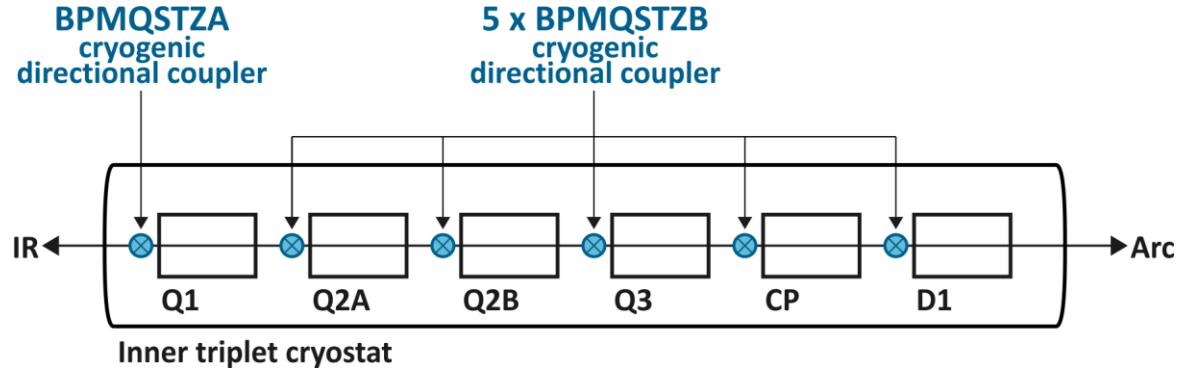
Michal Krupa



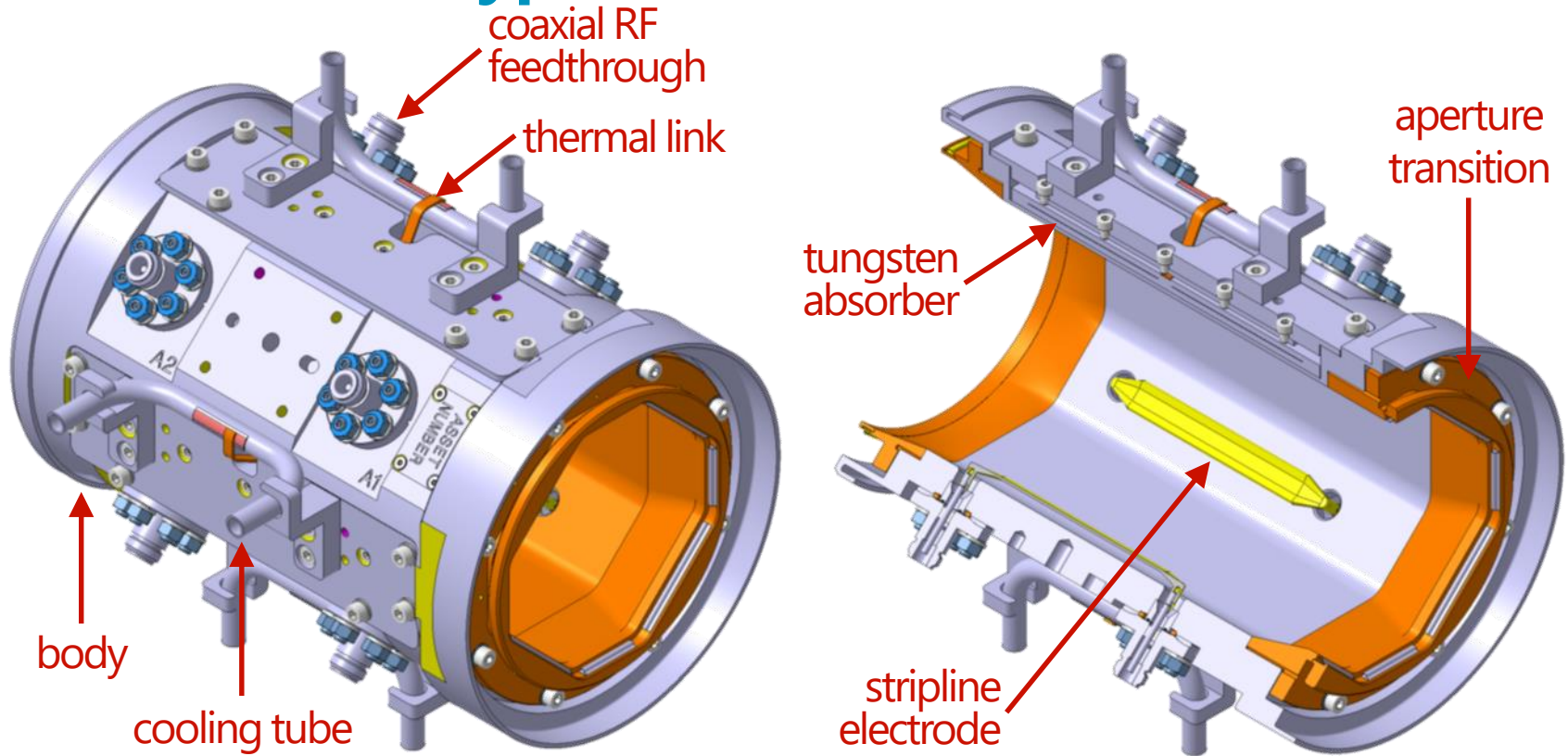
***WP2 meeting, 22/02/2022***

# HL-LHC IR1/IR5 IT BPMs

- 6 BPMs in the IT cryostat – all directional stripline BPMs
- Q1 BPM (A type): no rotation
- Q2A-D1 BPMs (B type): rotated by 45 deg

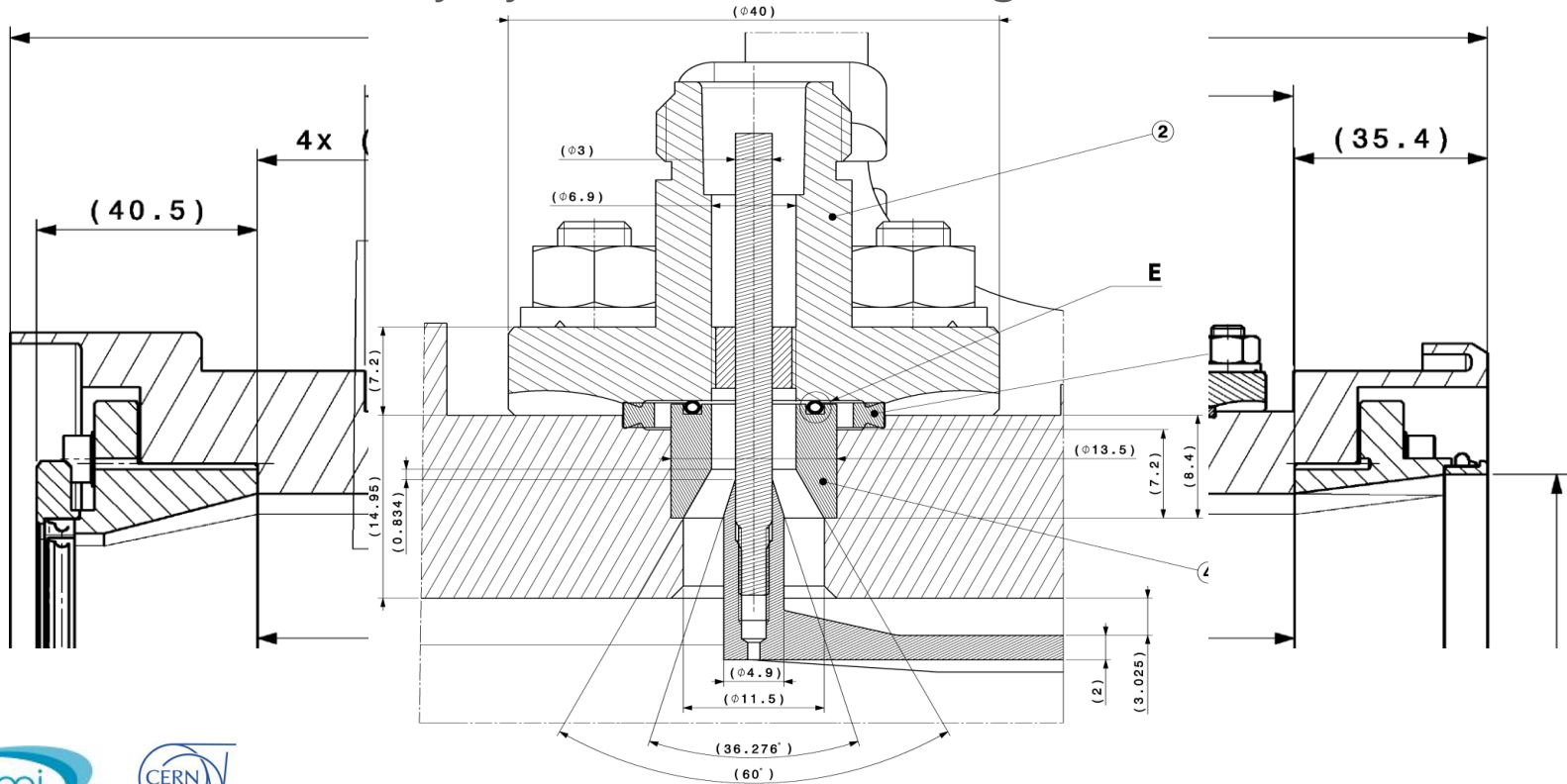


# B type BPM construction

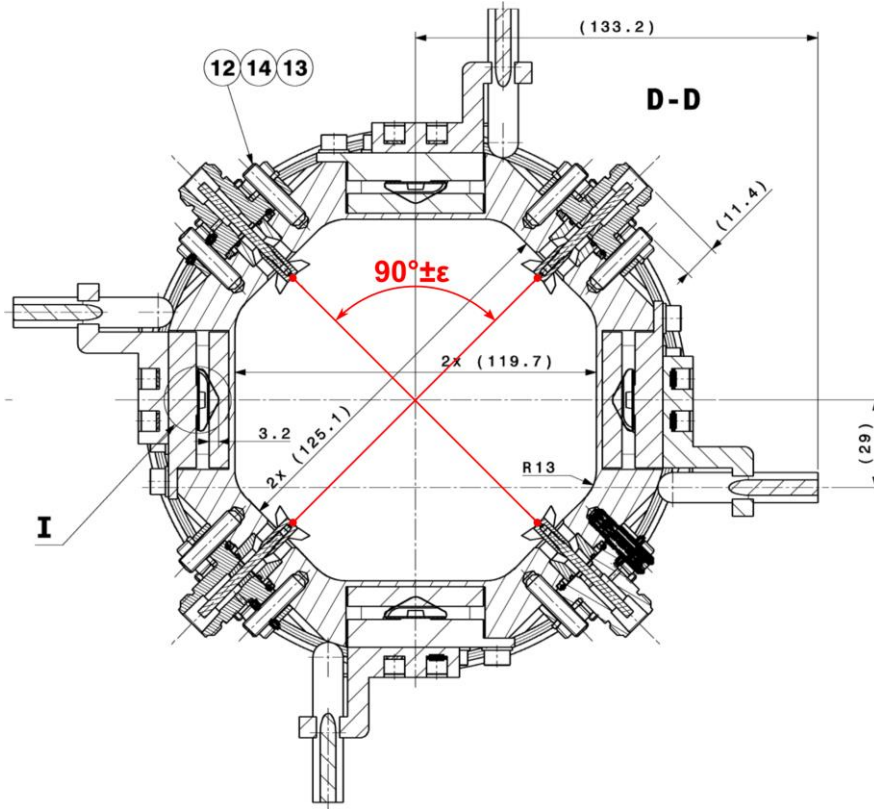


# Stripline electrode assembly

- Electrode held only by 2 coaxial feedthroughs



# Electrode orthogonality error

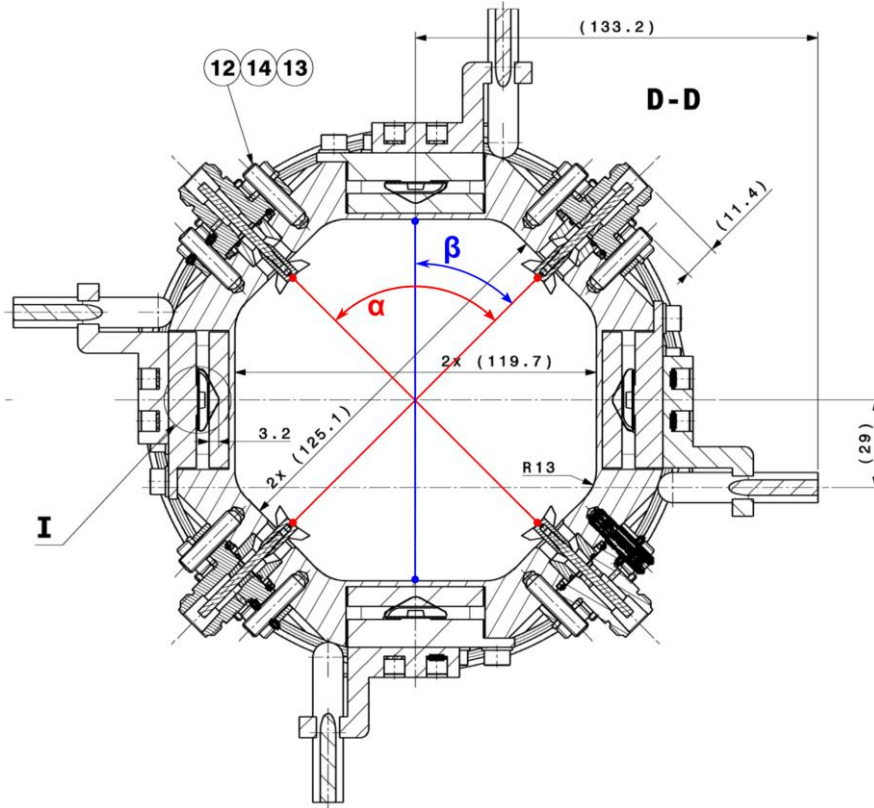


Max. value of  $\epsilon$  calculated  
from the technical drawings

	deg	mrاد
HL-LHC	0.66	11.5
LHC	0.95	16.6

- Electrode orthogonality was not measured for the installed LHC stripline BPMs
- HL-LH pre-series BPMs under construction – electrode orthogonality will be measured

# Electrode orthogonality measurement



- Proposed measurements:
  - $\alpha$  – orthogonality
  - $\beta$  – deviation from the cardinal orientation
- Measure and record for each HL-LHC IT stripline BPM after the final assembly
- Decision if BPM-by-BPM orthogonality correction is needed to be taken later based on the measurement results



***Thank you for your attention***

