Recap – *possible DQW improvements towards LHC*

MATERIAL DISCUSSED PREVIOUSLY AT…

- Dedicated meeting 20 January 2017: https://indico.cern.ch/event/603221/
- US-LARP/CERN/UK Crab Cavity Weekly Meeting, 3 March 2017
- “Crab cavity performance review” at CERN, 5 April 2017

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ALREADY RESOLVED

#	Part	Scope	Status
1	Aperture	Satisfy 84 mm aperture requirement (Tuning methods change aperture.)	BE/AP accepted smaller aperture
2	Cavity stiffening	Increase cavity stiffening to reduce sensitivity to welding	Consensus that increasing stiffening is not desired as it also will reduce capability for tuning.
3	Port-cavity interface	Ease interface and further reduce Bpk	Manufacturability was proved. There is no much margin for improvement of Bpk, so benefit would not be large.

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ON-GOING

#	Part	Scope	Status
1	Port length	Reduce losses in flanges to avoid Nb-coating for cold tests	See next slides
2	Pickup coupler	Simplify fabrication	S. Verdu inspecting alternative designs and larger port
		Increase damping of 1.7 GHz mode	
3	HOM filter	Simplify fabrication (esp. connection inductive rod and capacitive cylinder)	J. Mitchell inspecting alternative designs.
		Increase damping of 930 MHz mode	B. P. Xiao proposed filter 4 cm longer than current design. EN-MME shall review integration and cooling.

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1) PORT LENGTH

- The BP2 flange does to need to be coated (Q for non-coated BP2 is about 3e12).
- Current cavity requires Nb-coated SS flange in BP1 to reduce losses during cold tests.

➔ Make both beam pipes symmetric – that is, beam pipe length = 349.8 mm

Actions:

- ❑ EN-MME: check integration issues
- ❑ Upload “power dissipated by Joule effect summary” in EDMS

- Main heat load in cold tests comes from the current text input probe (Q ~ 4e11).

Actions:

- ❑ Review test input probe to reduce losses

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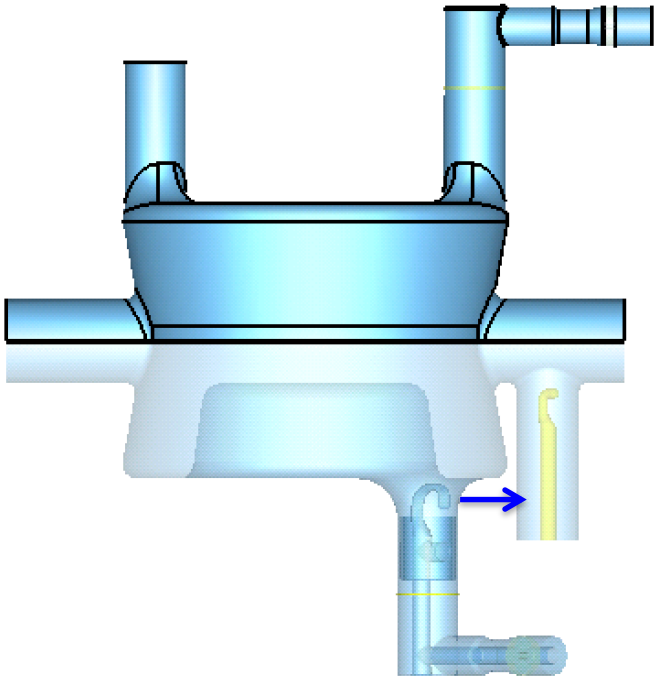
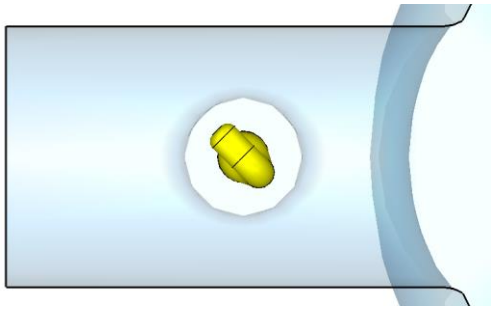
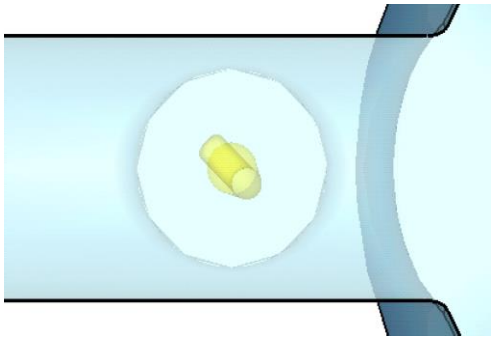
2) PICKUP COUPLER

- Inspecting three main changes (work not concluded yet):
  - ① Simplify pickup probe while extracting 400 and 1754 MHz modes
  - ② Pickup tube from horizontal to vertical orientation
  - ③ Larger tube diameter







hook shape
and orientation
to be defined