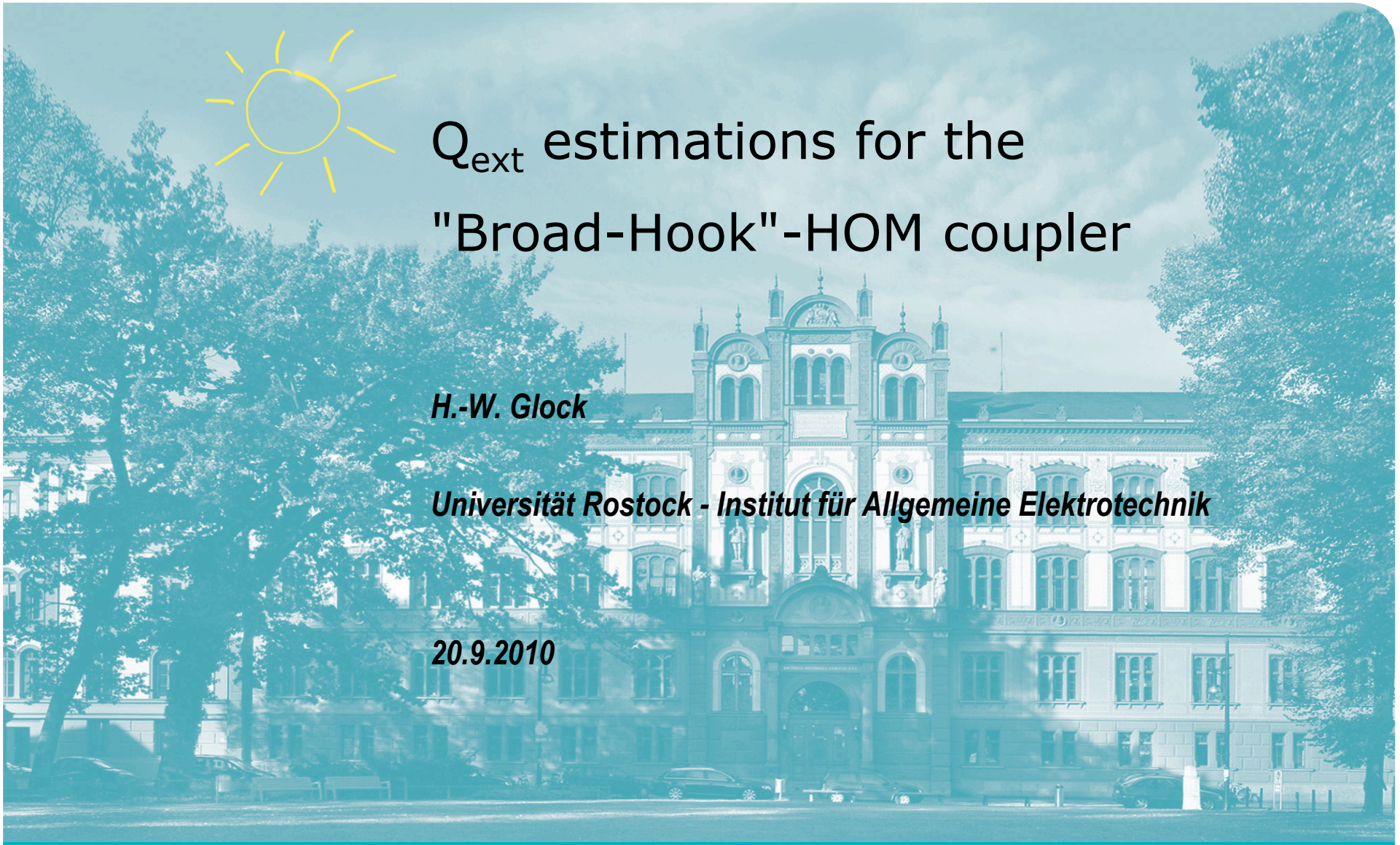
Universität Rostock

Traditio et Innovatio



Q_{ext} estimations for the "Broad-Hook"-HOM coupler

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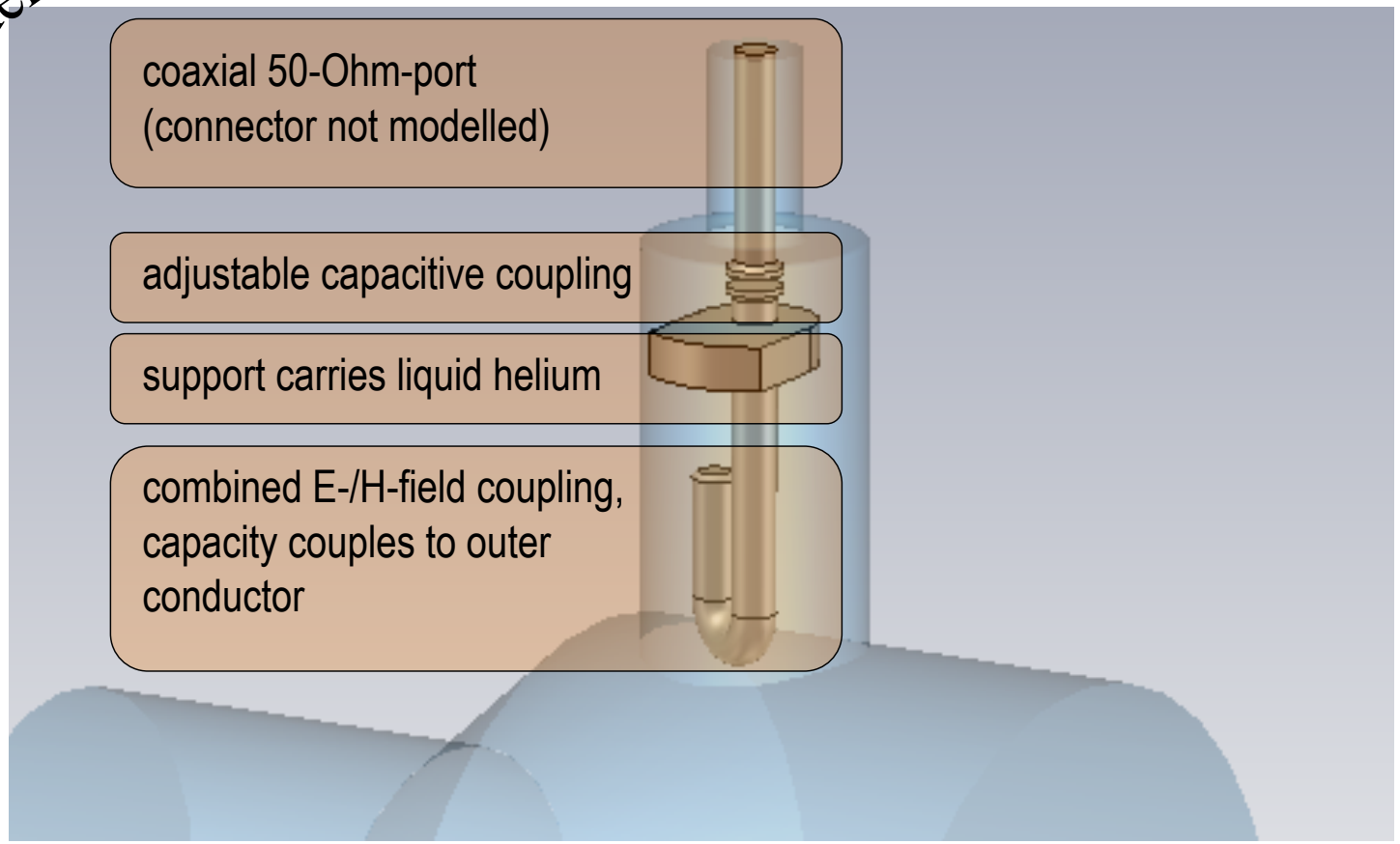
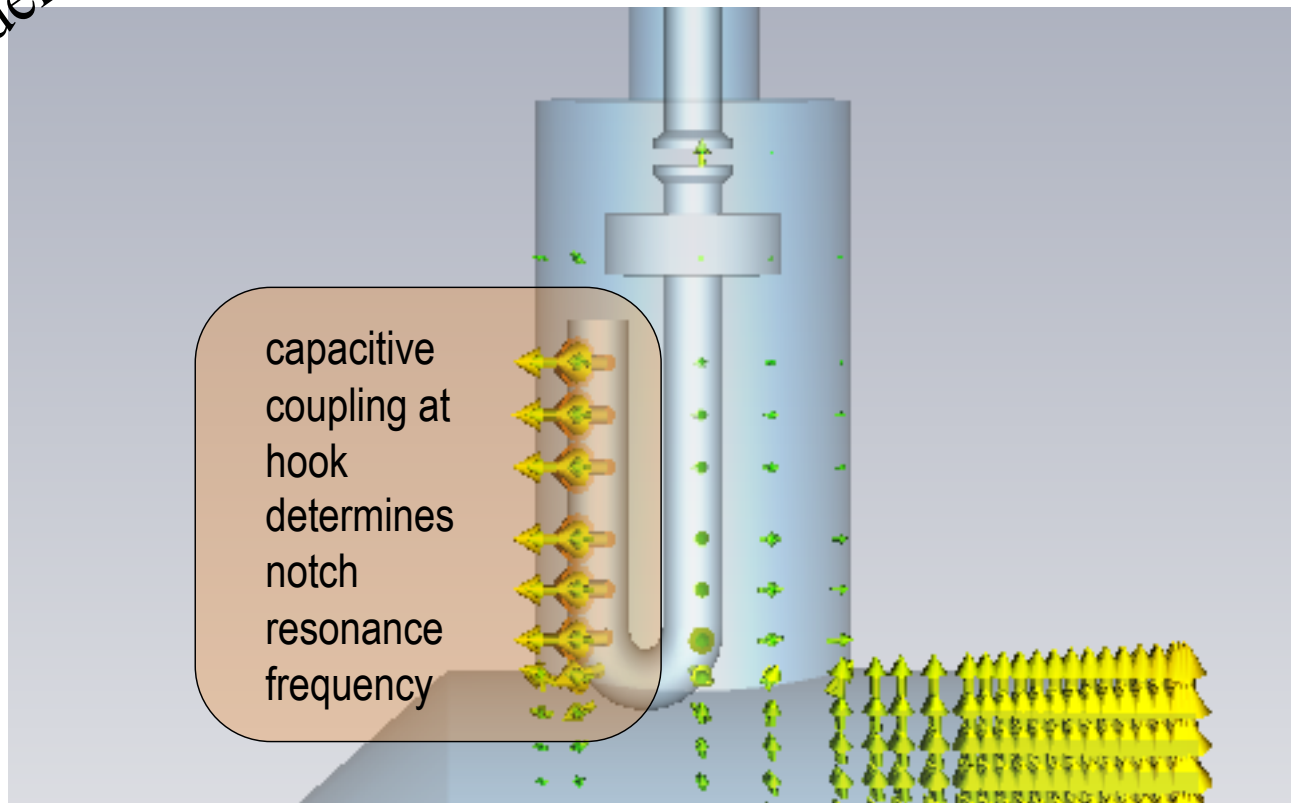
"Classical" LEP hook design as starting point (priv.com. WW)

reminder



E-field geometry @ 704 MHz

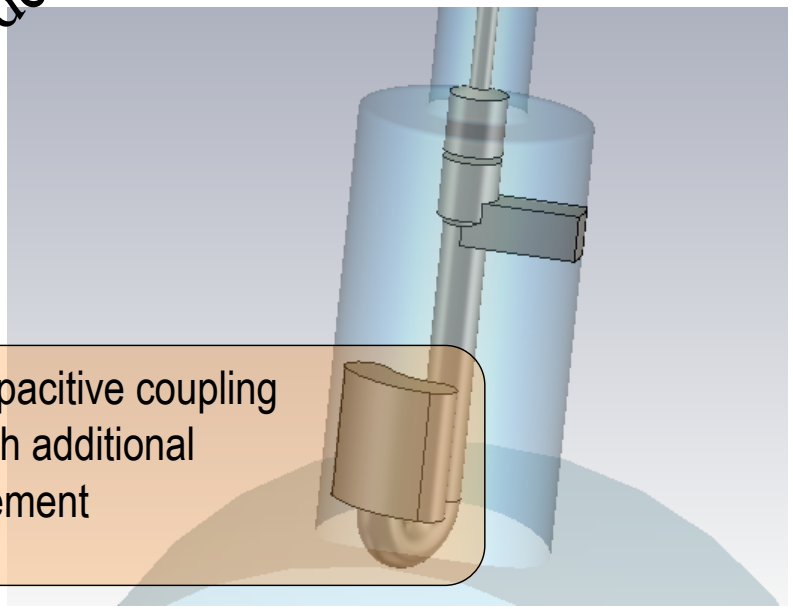
reminder

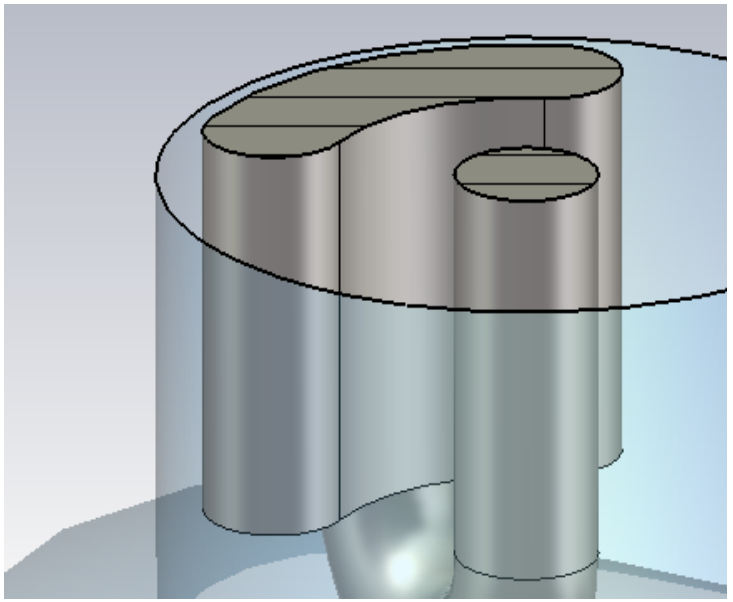


strong capacitive coupling between "hook" and outer conductor

Pure hook not tunable for 704 MHz => Modification of hook end in order to adjust fundamental mode notch filter

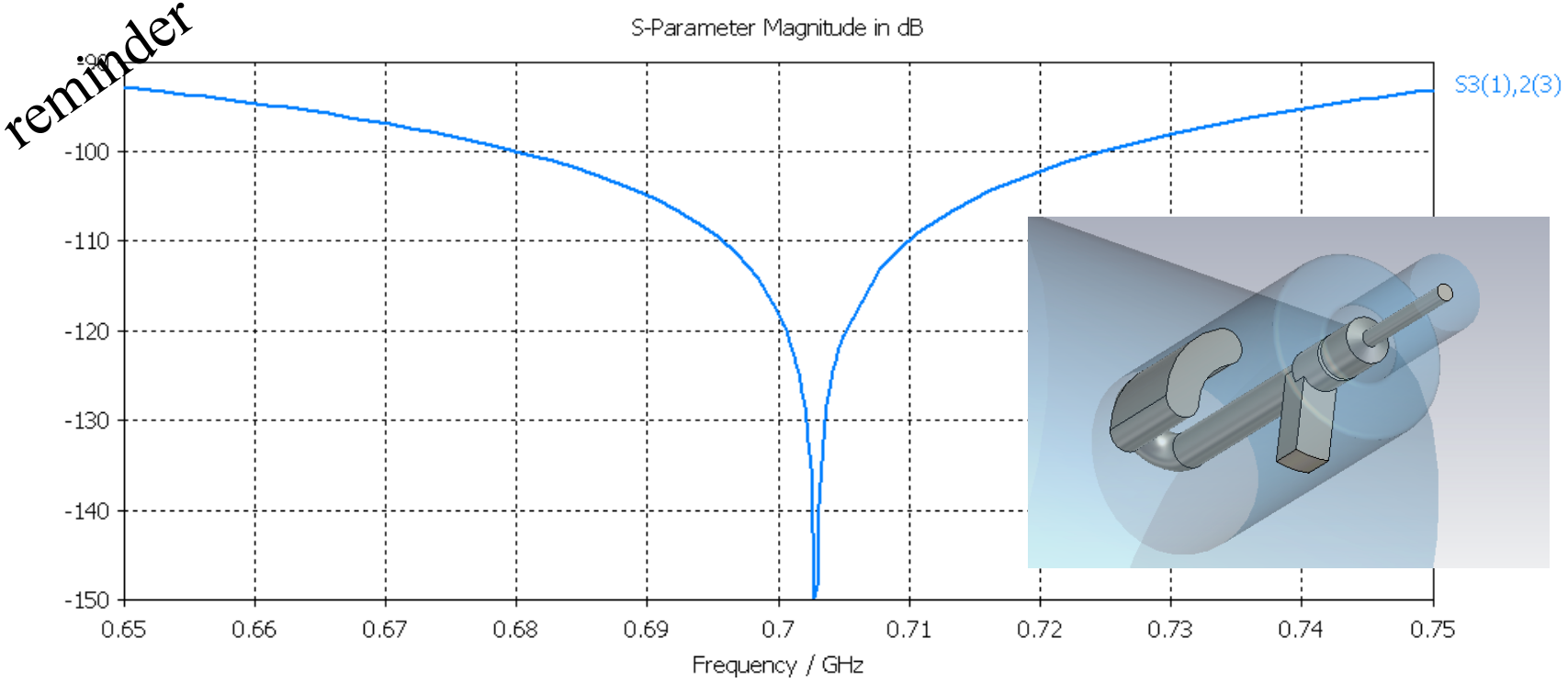
reminder



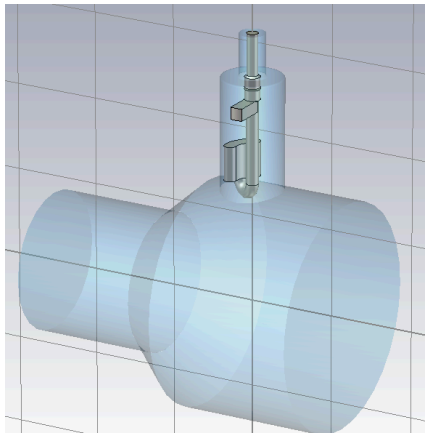


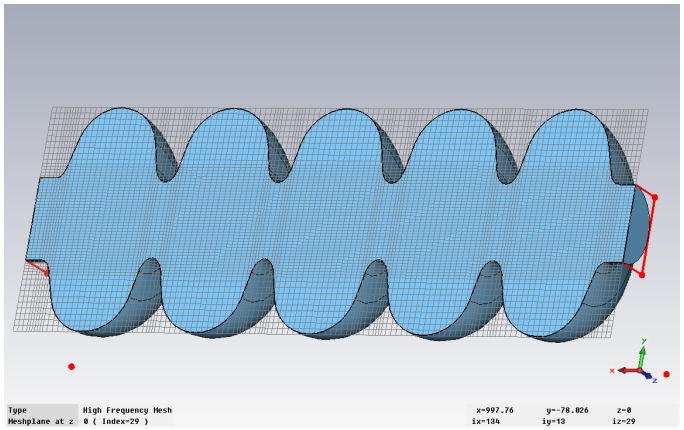
Waveguide(TM_0)–Coax–Transmission blocked @ fundamental mode frequency => Tuning ok

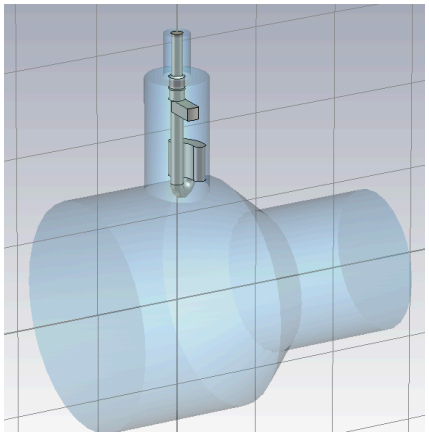
reminder



Q-ext estimations based on:

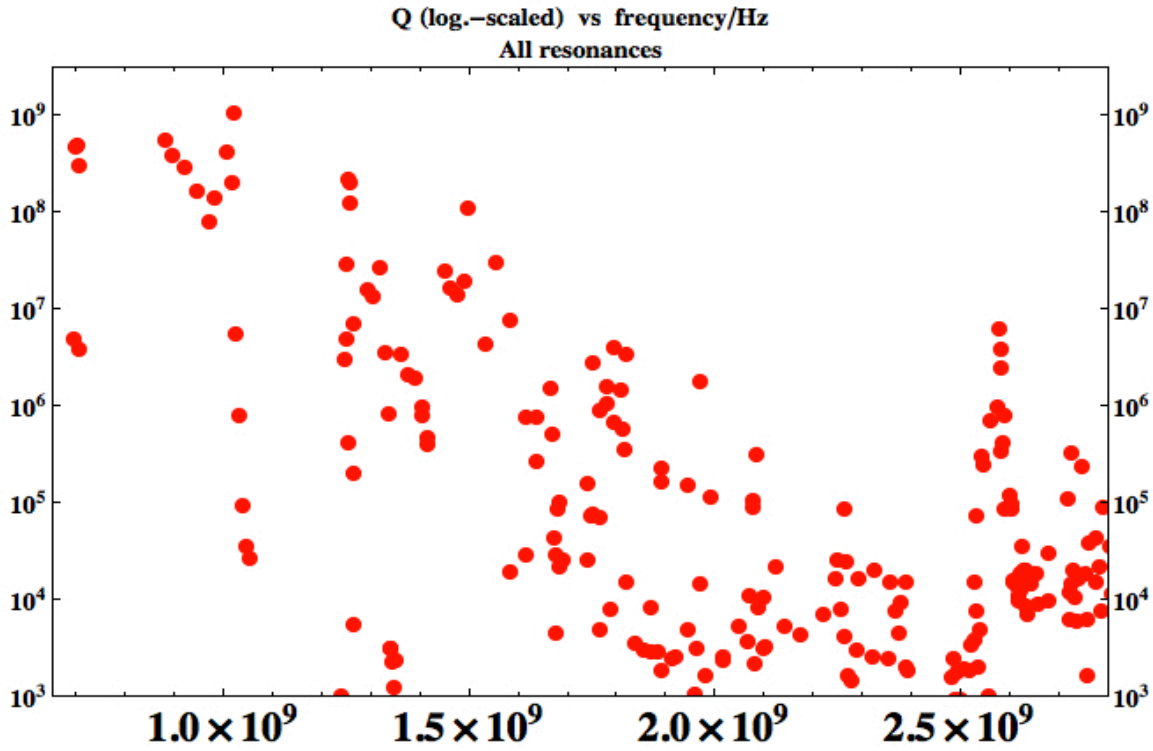






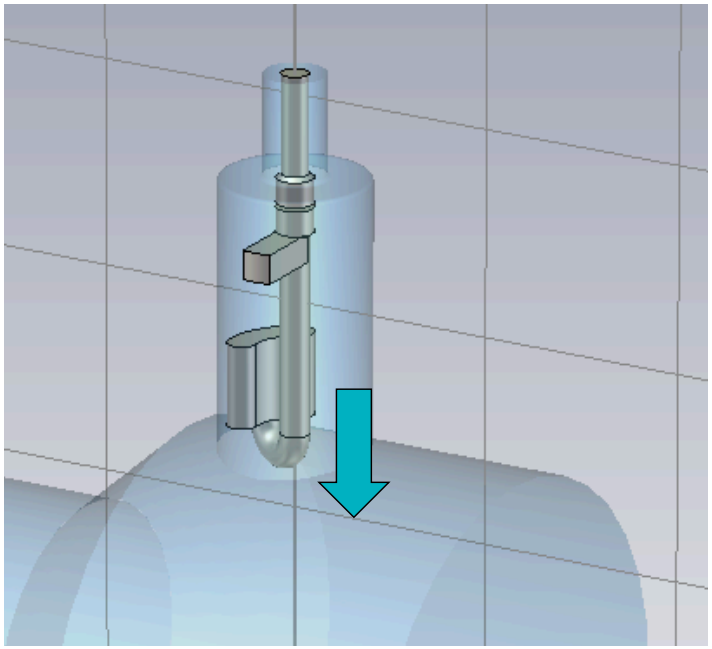
- CSC-coupling of 8 modes in D=130mm-coupler-cavity-connection (TE11,TM01, TE21,TM11,TE01)
- couplers left-right mirrored-symmetric (But: cavity asymmetric, no coupler calc for D=140mm-pipe up to now)
- D=80mm beam pipes left open (but most below cut-off)

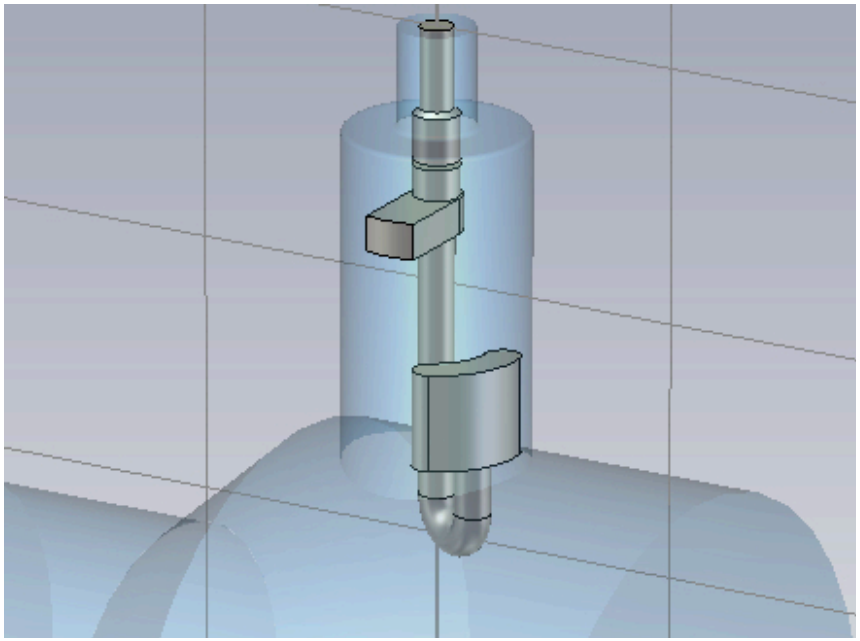
This (cst-computation, csc-concatenation, q-fit-proc.) gives:



- Q_fundamental 3.0 10^8
- much steeper Q(f) decrease than filter-free coax, BUT: still to high 1-1.5 GHz
- Is it possible to put coupler port closer to cavity waist (cav.design used from 21.7.2010)

Our attempts to improve coupling





- increase penetration depth: but poor effect, not nice for dark current
- flip hook to come closer to cavity: but total changeof filter behaviour, not tuned yet