High Field Cavity Development at 325 MHz

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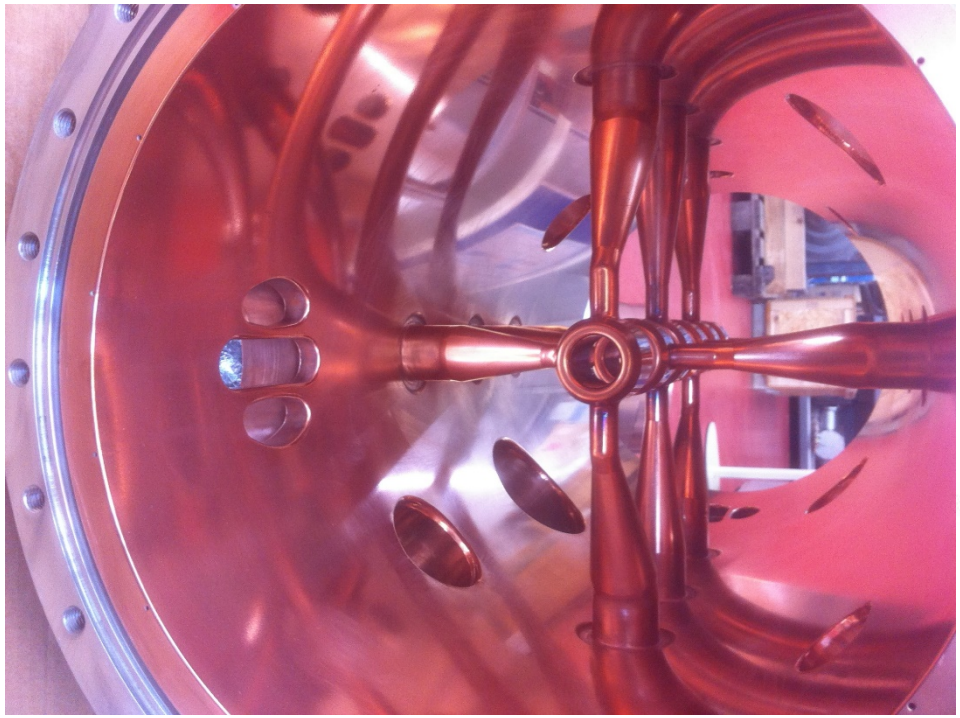
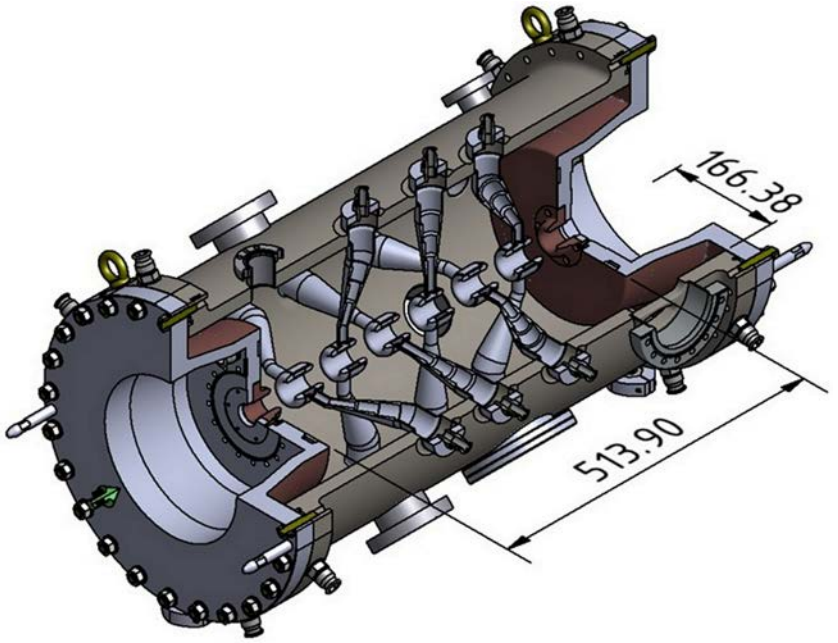
A key element for these investigations is the 325 MHz, 3 MW klystron test stand at GSI/FAIR for the FAIR Proton Linac.

- This test stand is now close to completion
- Activity at this test stand is needed to get familiar with klystron operation
- IAP can offer a compact 7 gap cavity to perform high gradient development at the front end of r.t. linac technology





High Field CH - cavity: Built from BMBF funds, fully equipped.

Still waiting for the GSI 3 MW Klystron test stand to find out:

- Performance „Hochglanz-“ against „Mattverkupferung“
- Surface preparation and UHV vacuum quality for highest fields
- Aim on $V_{eff} \geq 12 MV/m$ for heavy ion acceleration, that is a factor 3 above state of the art

Pulsed ion linac operation at 40K<T<70K

Three cavities have been built:

$108\ MHz, 220 MHz, 325 MHz$

Some components still needed for RF power tests

Expectation: Pulsed operation of copper cavities at low temperature should allow for higher shunt-impedance, lower RF amplifier power and/or higher field gains

- Long-term application: Heavy ion synchrotron injector linac directly into SIS100
- Main question: How much gain from conductivity is lost by the anomalous skin effect (At „low frequency“ ion linacs $f \leq 350\ MHz$ is the best chance for success)

Funding request: 1 doctorand position, 100 k€