

SRF-cavity development

KfB-Workshop 07./08.09.20

W. Barth, Johannes Gutenberg University Mainz



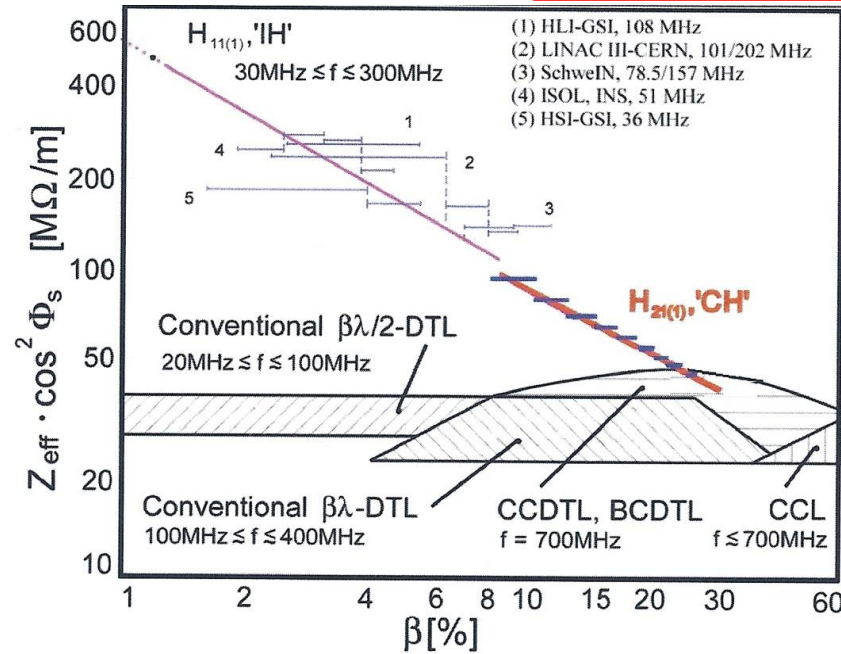
HSI 36 MHz@GSI



HLI 108 MHz@GSI



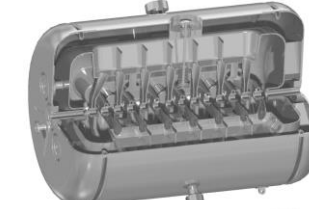
IH 216 MHz@HIT/Heidelberg



360MHz Prototype



325 MHz CH



217 MHz Demonstrator/CH0

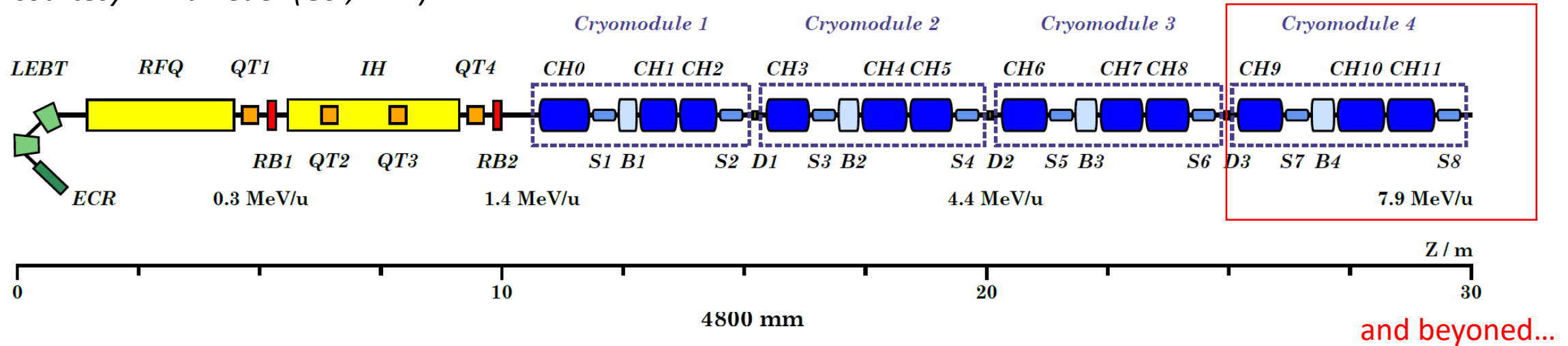


217 MHz CH1/CH2

- Room temperature IH structures have unprecedented high efficiency with real estate gradients up to 4 MV/m (HSI IH-Injector @ GSI)
- Expectation on superconducting CH-structures: Mechanical stability, high accelerating voltage per cavity

Next R&D-Phase: Advanced cavity development for beta ≥ 0.1

courtesy: T. Kürzeder (GSI, HIM)



- New cryo module layout containing demonstrator CH cavity, 2 short CH cavities, 1 re-buncher and 2 solenoids
- Simplified cavity design (easier manufacturing & surface processing)
- CH1 & CH2 are already in testing (delivery at 4th quarter of 2019)
- Re-buncher cavity is designed and Nb material is ordered
- Cryostat is ordered, expected delivery Q2 2020
- Solenoids are tendered
- 4 rf Amplifiers are tendered
- R&D on single aux. components is in advanced stadium
 - Rf-power couplers
 - Tuner mechanics
 - cold BPM
 - low level rf
 - New radiation protection shelter
- Connection to cryoplant

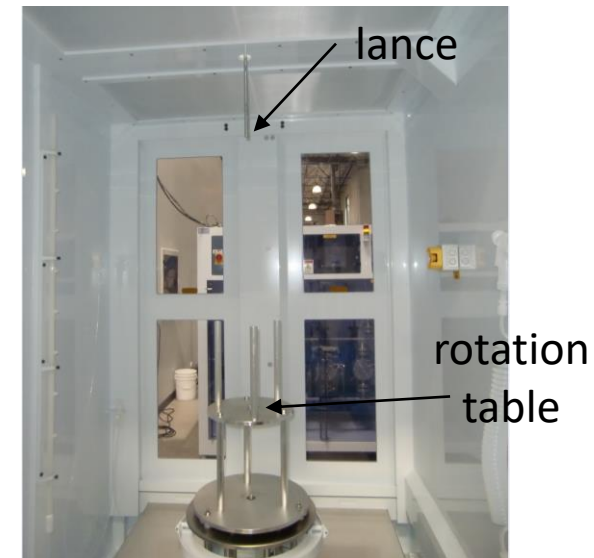
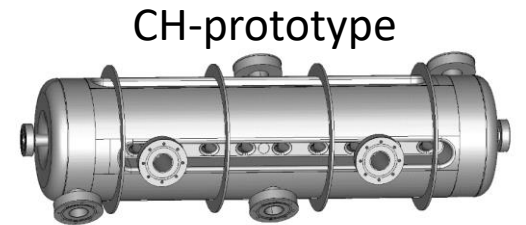
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- Cavity preparation methods (SRF-Lab at JG-U, HI-Mainz)
- Multicell CH-cavities for $\beta \geq 0.1$ (experience for low energy cavities)
- Rf/mechanical layout
 - Prototyping
 - Cavity testing (at HI-Mainz)
 - Heavy Ion Beam test at GSI-test environment)
- Cavity preparation
- Advanced high RF-power coupler (further development)

courtesy: T. Konrad (GUF)



Funding request: 1 postdoc, 1 doctorand position, 500 k€