

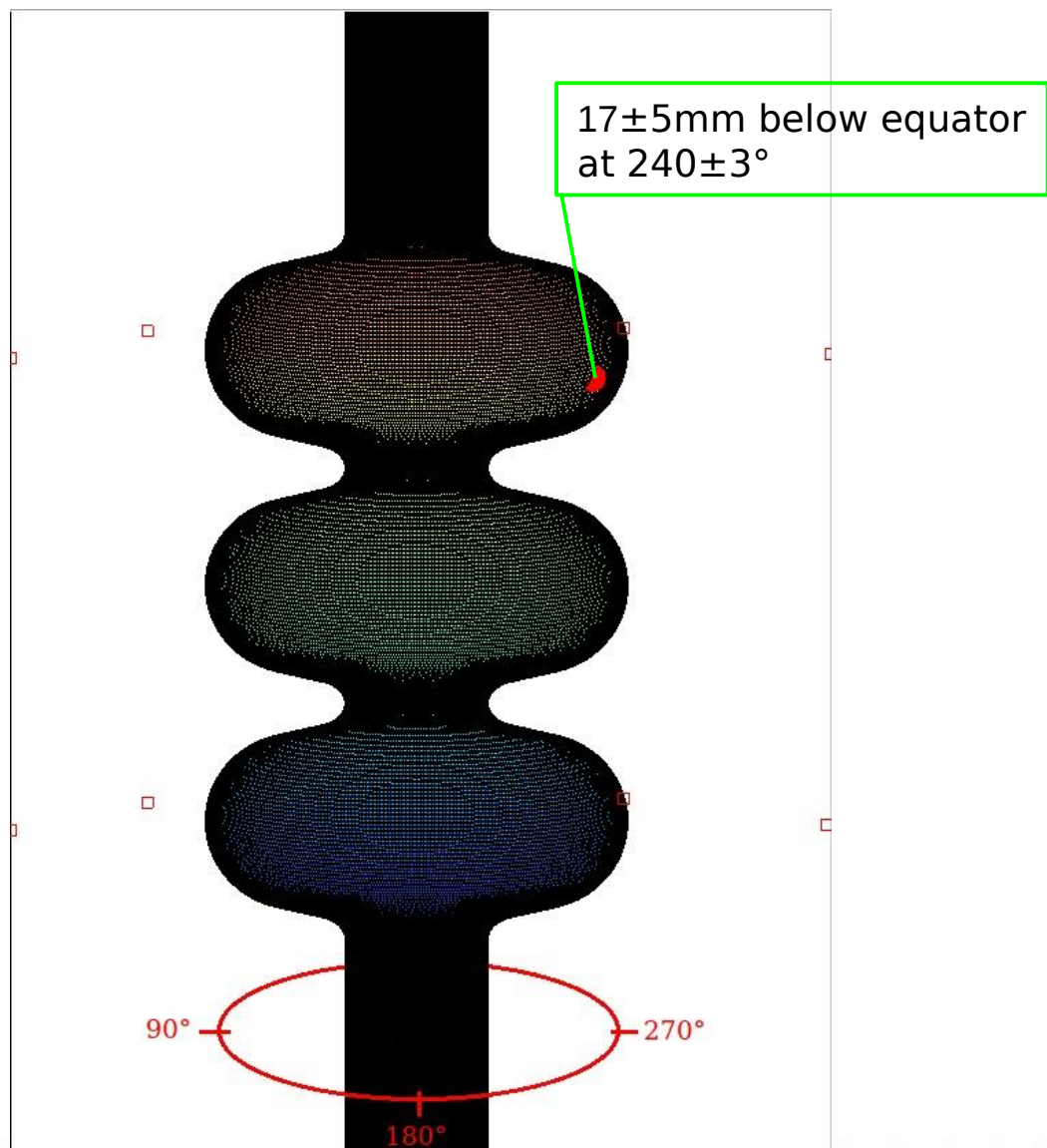
Use of 2nd Sound

Felix Schlander
DESY

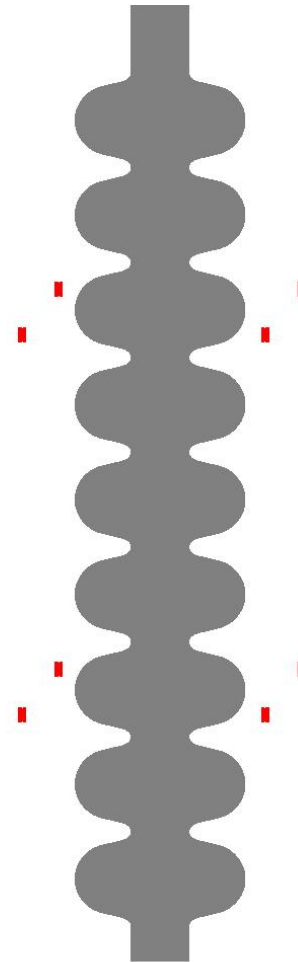
- Introduction
- 2nd Sound Setup at DESY
- Current activities
- Conclusion/Outlook

- Second Sound is a phase transition wave in superfluid helium
- Can be observed using Oscillating Superleak Transducers
- Second Sound wave is created during quench of a superconducting cavity
- With a signal observed by at least 3 Transducers the quench position can be determined/calculated

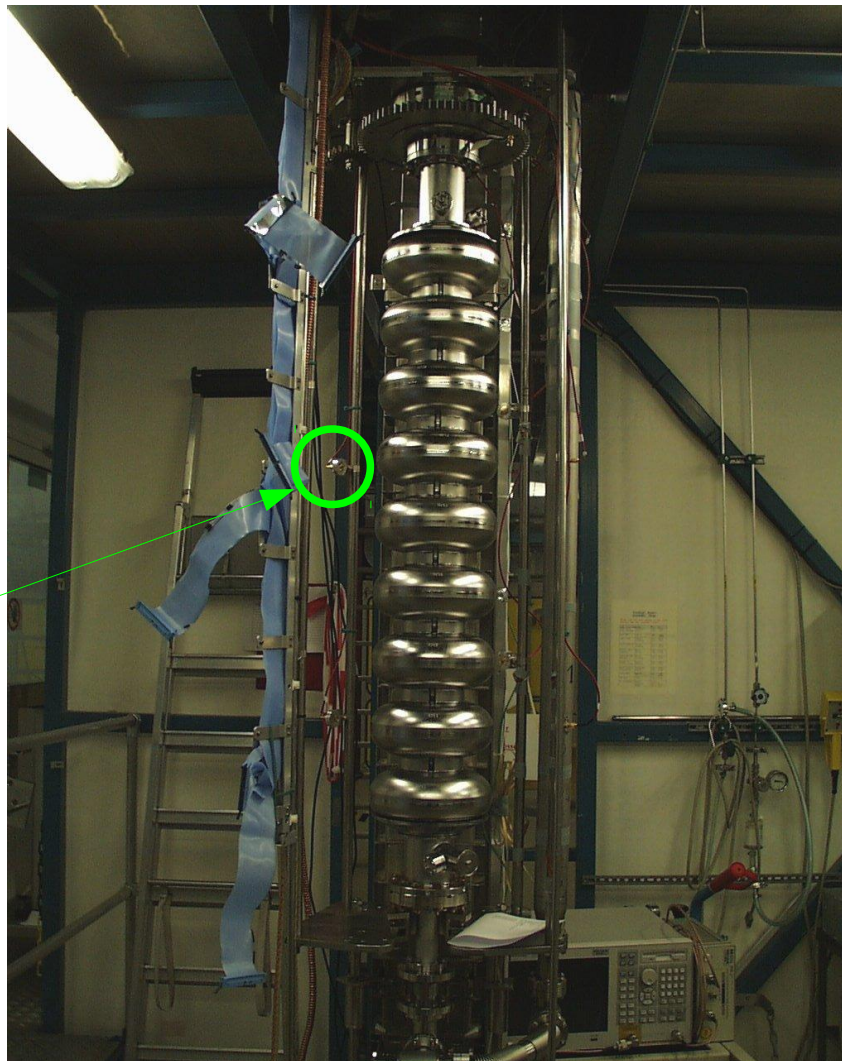
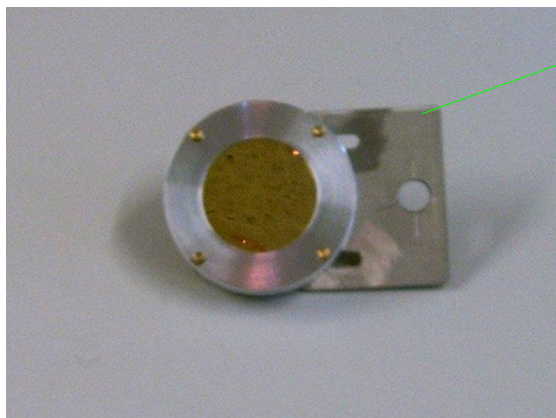
- Measurements at 3-cell cavity 3DE1, quench at 28.5 MV/m, quench position found with Second Sound



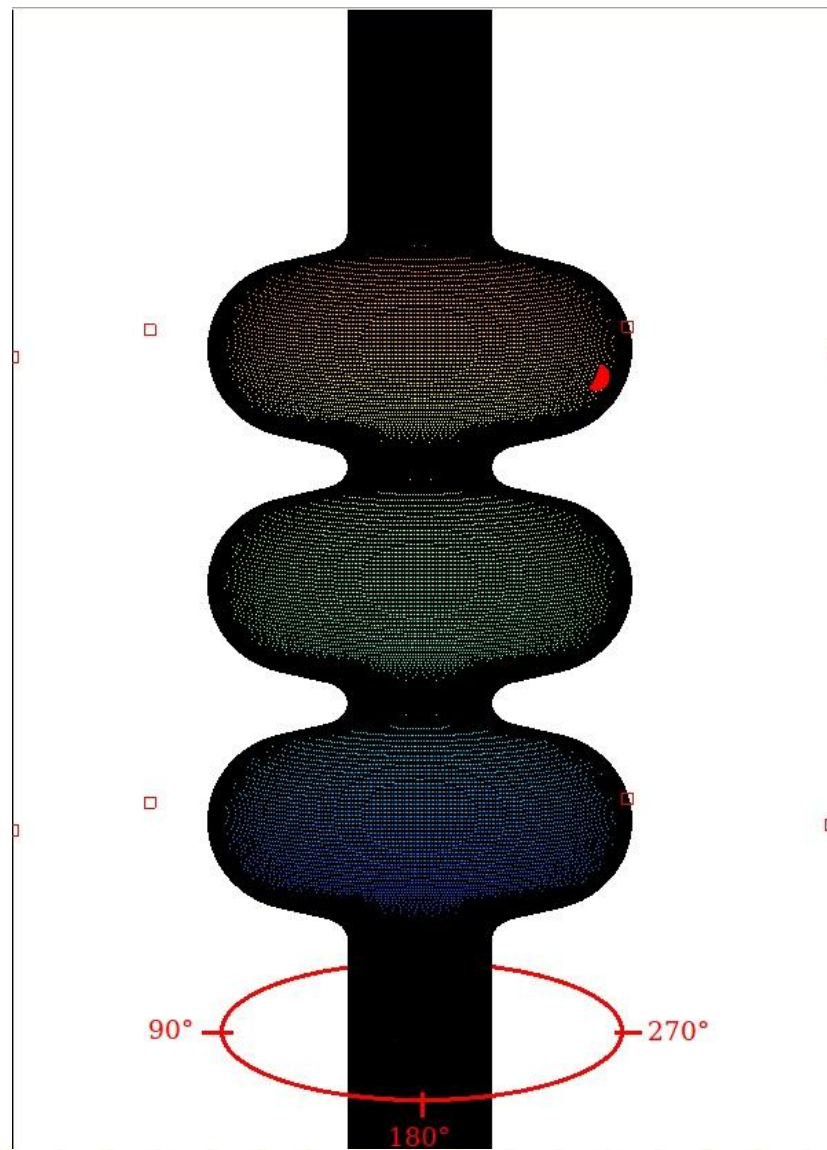
- 3 out of 4 test cryostat inserts are ready for applying OSTs
- Each insert will be equipped with 8 transducers



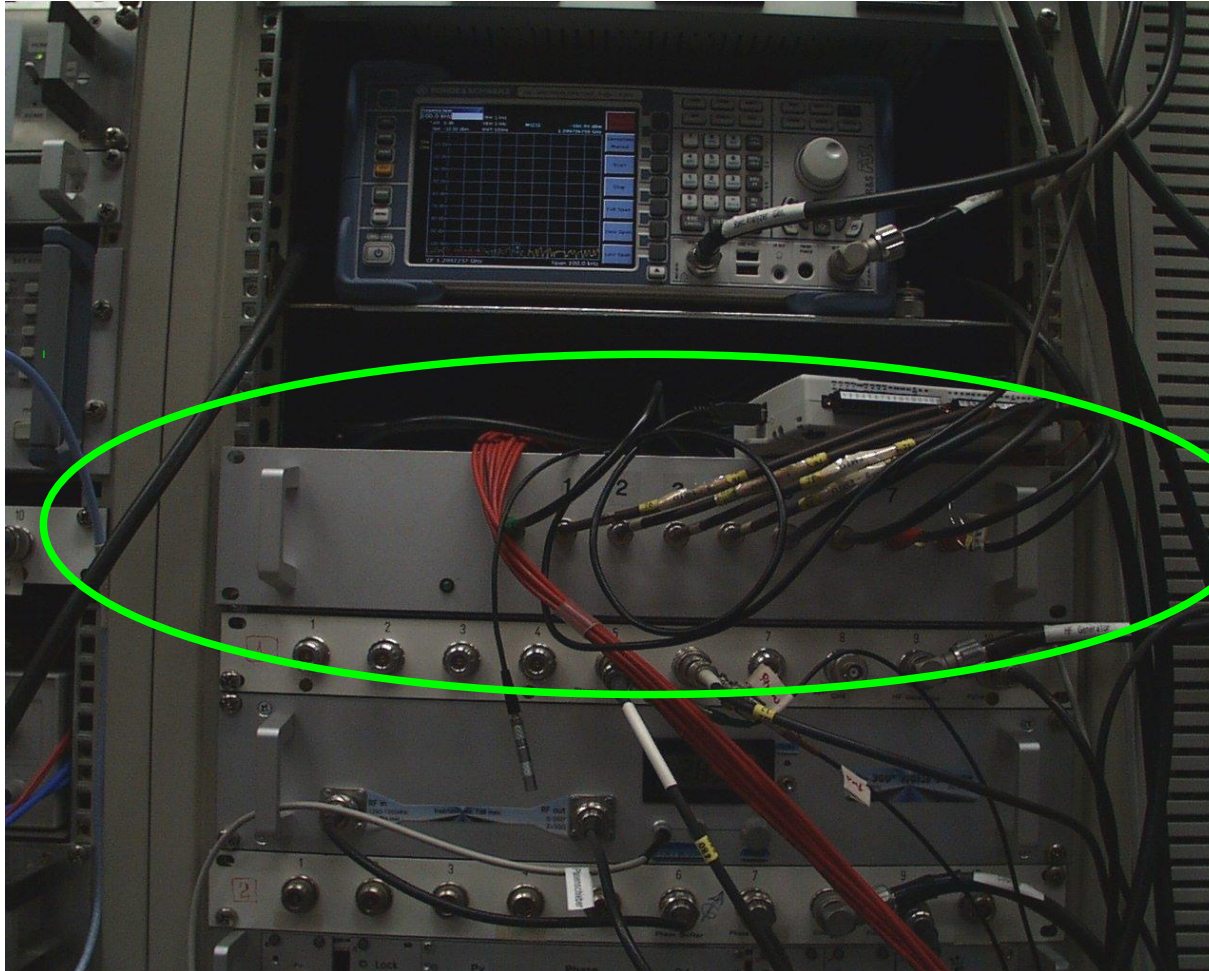
- OSTs are fixed at the inserts
- No need for disassembly while exchanging cavity
- Easy mounting



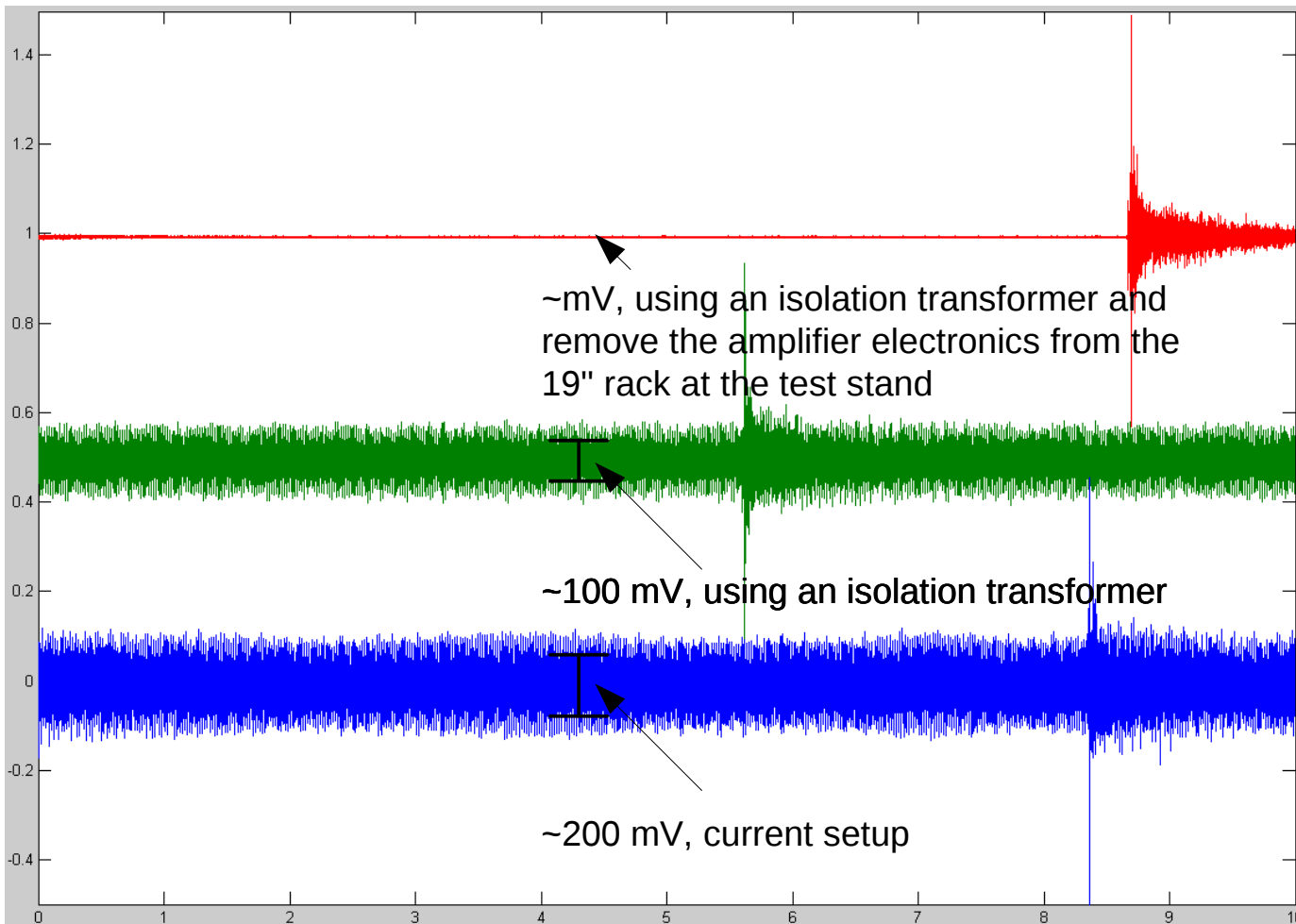
- Increase calculation accuracy of the quench position
 - Be able to calculate the quench position even if the quench is not in line-of-sight of the signal-detecting OST



- Noise reduction



- Noise reduction



- Most of the vertical tests can be accompanied by quench localisation using 2nd Sound from now on
- Need improvement of the accuracy
 - Noise reduction
 - Higher sampling rates
 - More precise calculation of the quench position

- Automation of the measurement
- Full implementation of the data acquisition in the DOOCS control system
- Further development of the OSTs

Is there any possibility to do reliable measurements at a dressed cavity?