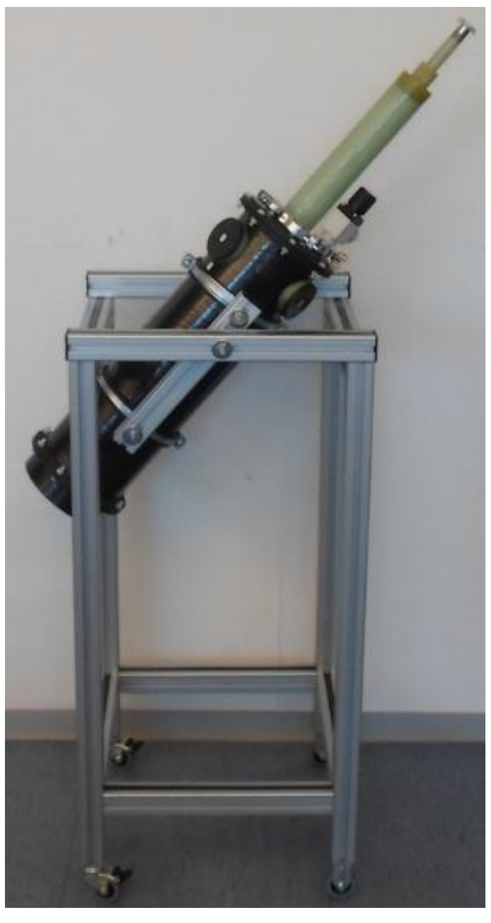
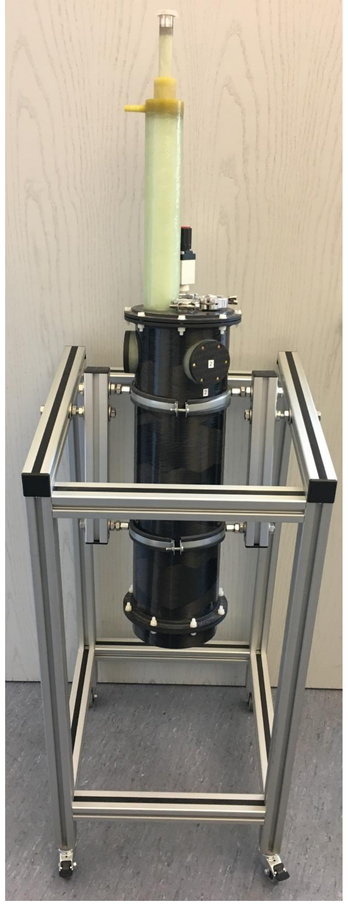
ILK Dresden

Cryostat development: Publicly funded basic research

Non-metallic cryostats for extreme requirements

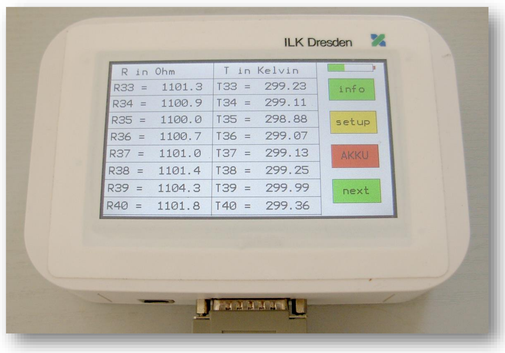




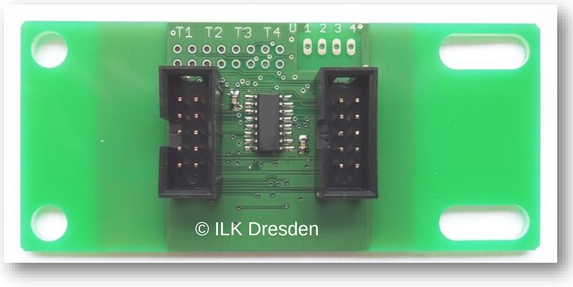
- Evaluation of new material-combinations
  - Glass and carbon fiber composites based on epoxy resins
  - Joining technology
- Stability at high temperatures
- Increased stability

Supported by:
Federal Ministry for Economic Affairs and Energy
on the basis of a decision by the German Bundestag

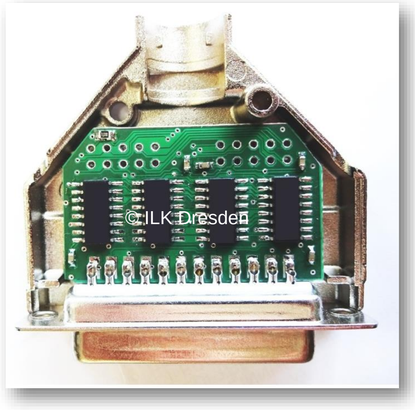
Universal measuring bridge



Resistance – Temperature Bridge



HTS-interception multiplexer with 4× temperature and 4× voltage taps

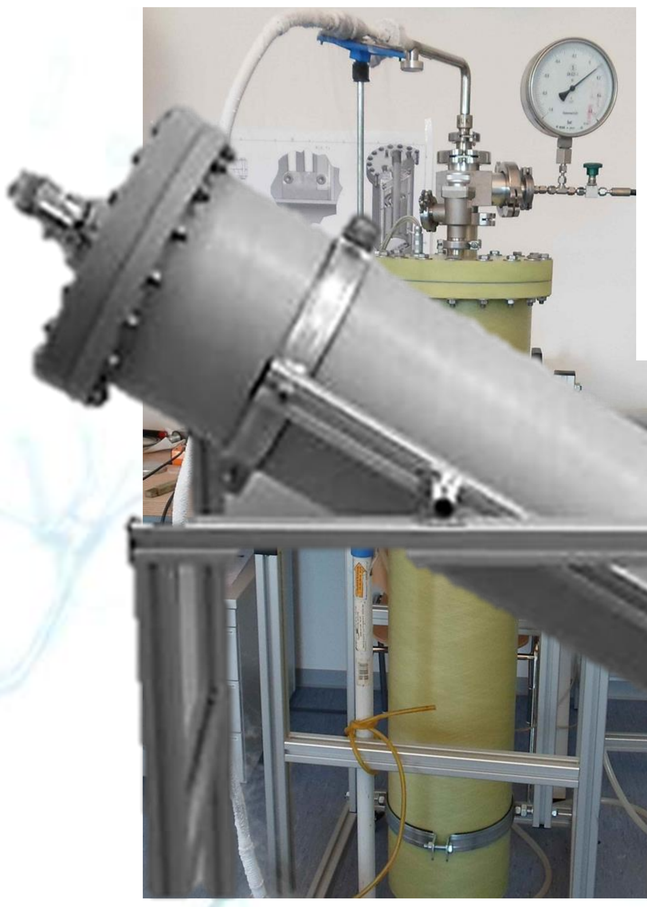


Multiplexer inside a SubD25 plug

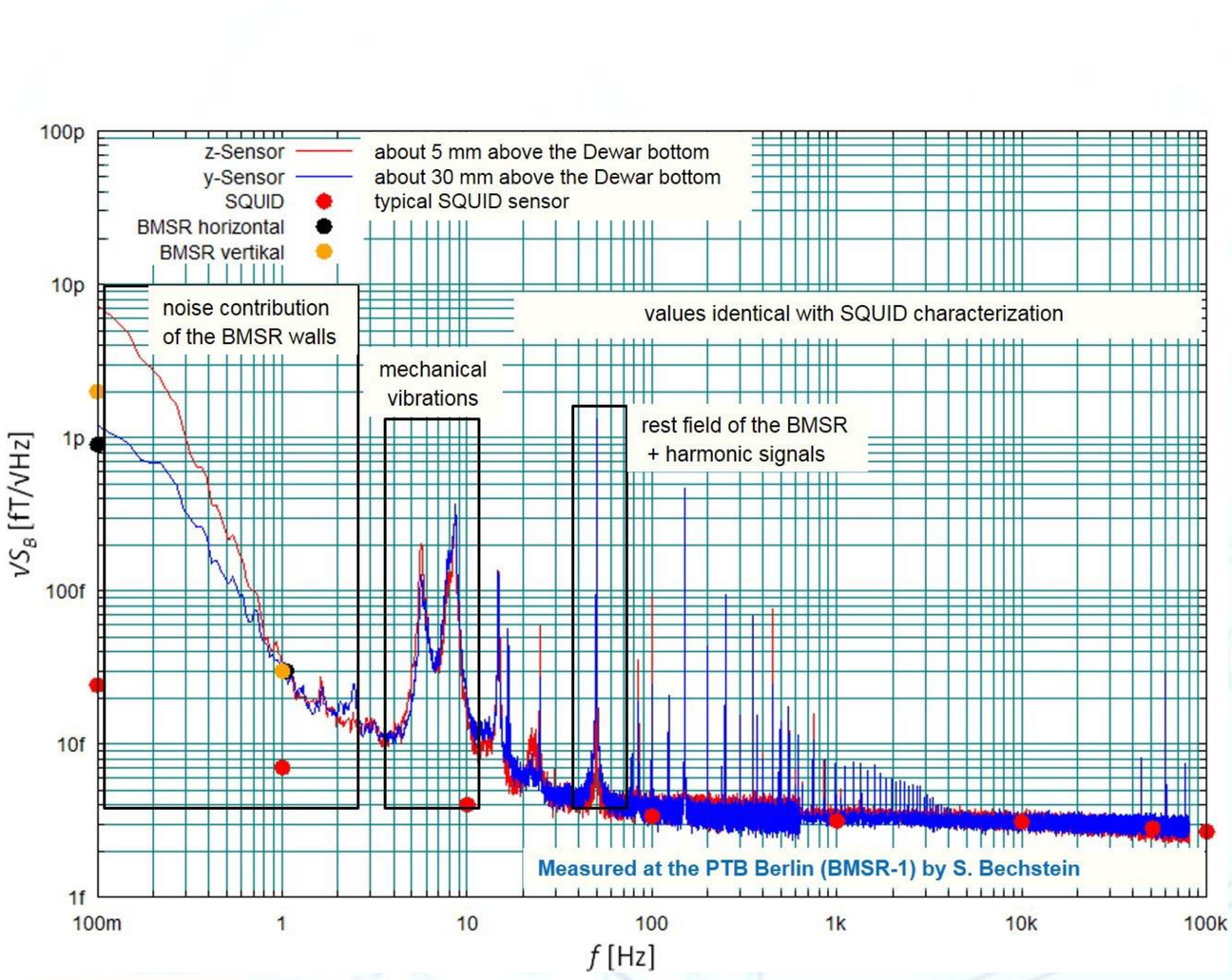
- Sensor AC excitation < 1 nW possible
- Direct resistance comparison to reference resistor or voltage (0.01 %)
- Multiplexers for the connection of up to 80 sensors with ext. interface
- Calibration data for each sensor (3×8 poly)
- Data connection via USB / RS485 bus / SD-card
- Display: LC or TFT with touchscreen
- Housing: Hand held, industry PS or metal, integratable, size: 150 × 100 × 45 mm³

Development of innovative magnetic low-noise helium cryostats

- No LN_2 – Reservoir necessary!
- Liquid He volume: 12 liters; Operation time 4 days without refill
- Evaporation rate ≤ 3 liter LHe per day
- 0.1 W standby heat load; Helium leakage rate 4×10^{-9} mbar l/s



- Minimized electromagnetic interaction
  e.g. use of non-conductive MLI
- Extremely low magnetic noise
- Fast charge with thermo-syphon



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Magnetic noise measurements (at PTB Berlin)

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