

# Sample environment for Quantum Phenomena

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# Outline

- What we really ABSOLUTELY need?
- What we need in general!
- What would be a great thing to have!
- What we can do to contribute
- Long term plans

## What we really ABSOLUTELY need:

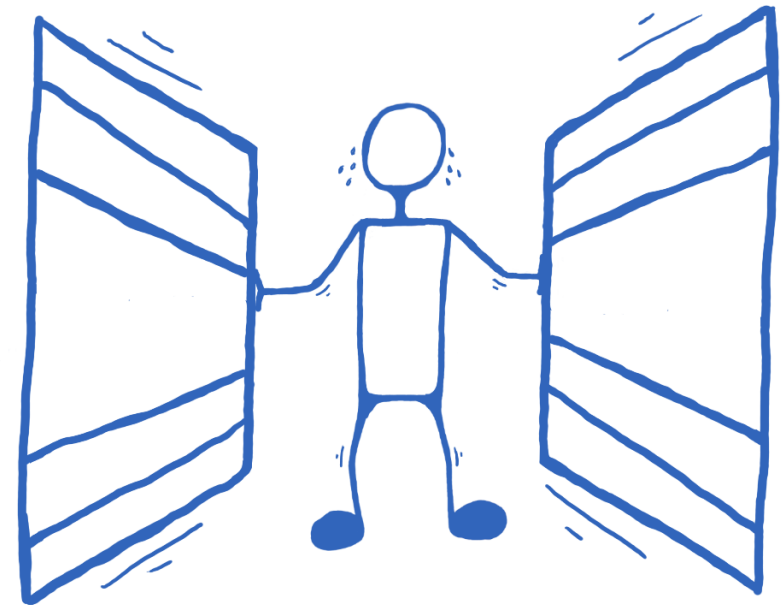
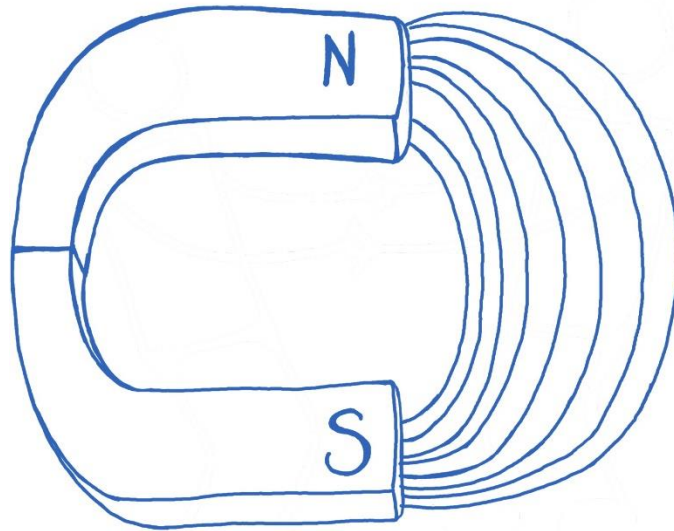
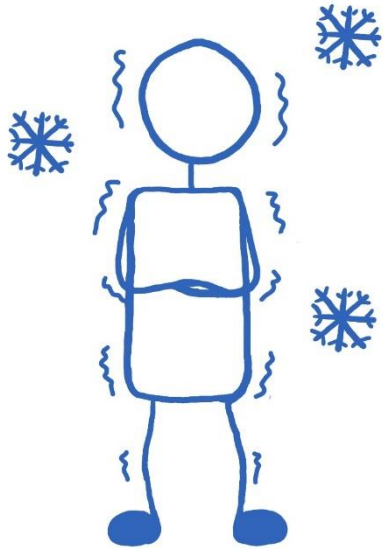
- People who can use and maintain the equipment we have!!
- One person dedicated to ultralow temperatures (dilution and  $^3\text{He}$  inserts)
- One person dedicated to high field magnets!
  
- We do have nice sample environment  
12T vertical magnet  
5T SANS magnet  
dilution inserts  
**but we need people to maintain it!!**



## What we need in general?

QP is all about “extreme conditions”!

- **Low T** (Dilution and  $^3\text{He}$  inserts, ADR cooling units)
- **High B** → Talk by Sebastian, small caveat: FRM2 stray field policy
- **High pressures** → Talk by Andrzej



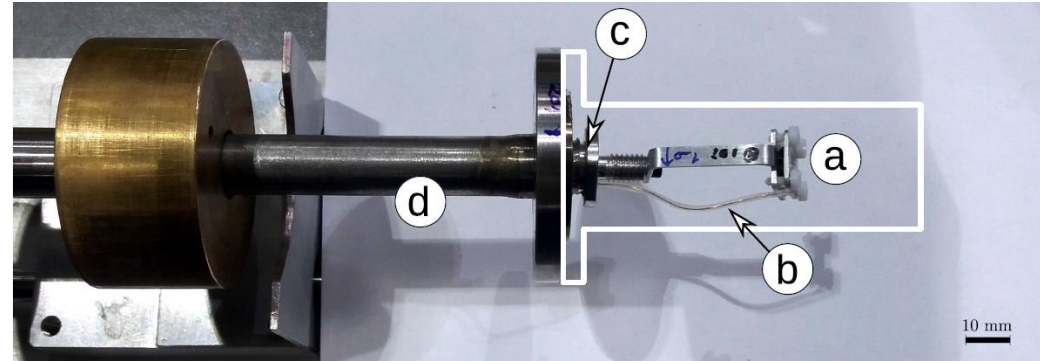
## What would be great to have?

- Organization of “small sample environment”!
- What do we mean by “small sample environment”?

## For example:

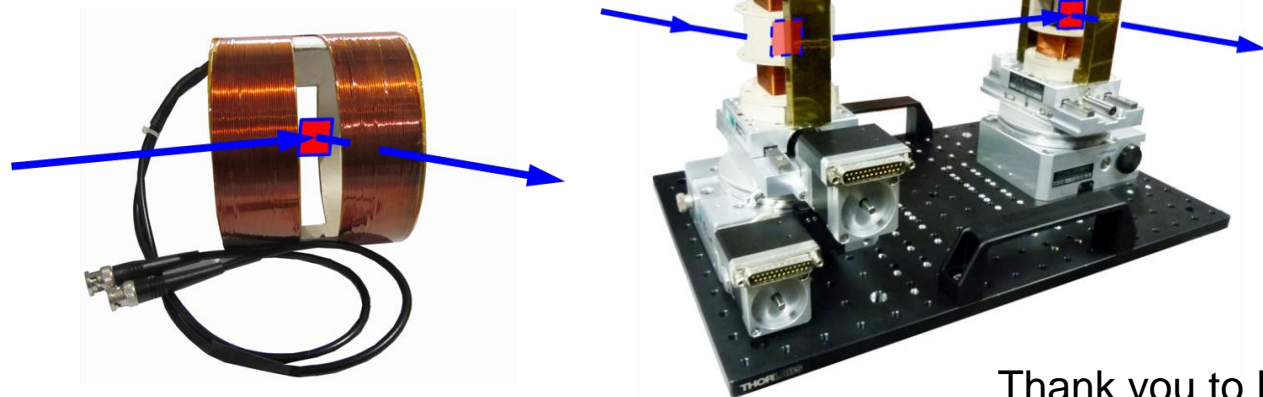
- Stroboscopic **High-Voltage ac-E-Field Setup** for time-resolved investigation of the **multiferroic** domain relaxation

- $|U|$  up to 4kV
- $U_{pp} = 8kV$
- Polarity switching with  $50\mu s$



- **ac-H-Field Setup** for time-averaged and time-resolved investigation of the **magnetization reversal in thin films and Hyperthermia applications**

- freq. from 35 kHz to 1 MHz
- AC-amplitudes up to 120 Oe
- DC-bias field up to 80 Oe



Thank you to Dima Gorkov!

## What would be great to have?

- Organization of “small sample environment”!

Internal WIKI?

DOI?

Consistent/uniform structure

- Who has what?
- Is it working? Who knows how it works?
- Can it be used by others?
- Is it integrated into NICOS?  
Can/Should it be?

## What can we do to help?

- Systematic Tests!

Many instruments have their “standard” SE that the scientists can use autonomously

However, it needs to be maintained

- Suggestion:

Starting from January: Test the equipment systematically whether or not it works!

SE with support from the instrument scientists

so everything will be ready for the reactor restart, and the work is spread out (in time and over people)



## Long term Plans

- Alleinstellungsmerkmal
- Stray field policy → won't be competitive as far as magnetic fields are concerned
- → Unique feature to make our SE attractive for users!

E.g.: Pressure, E-field