

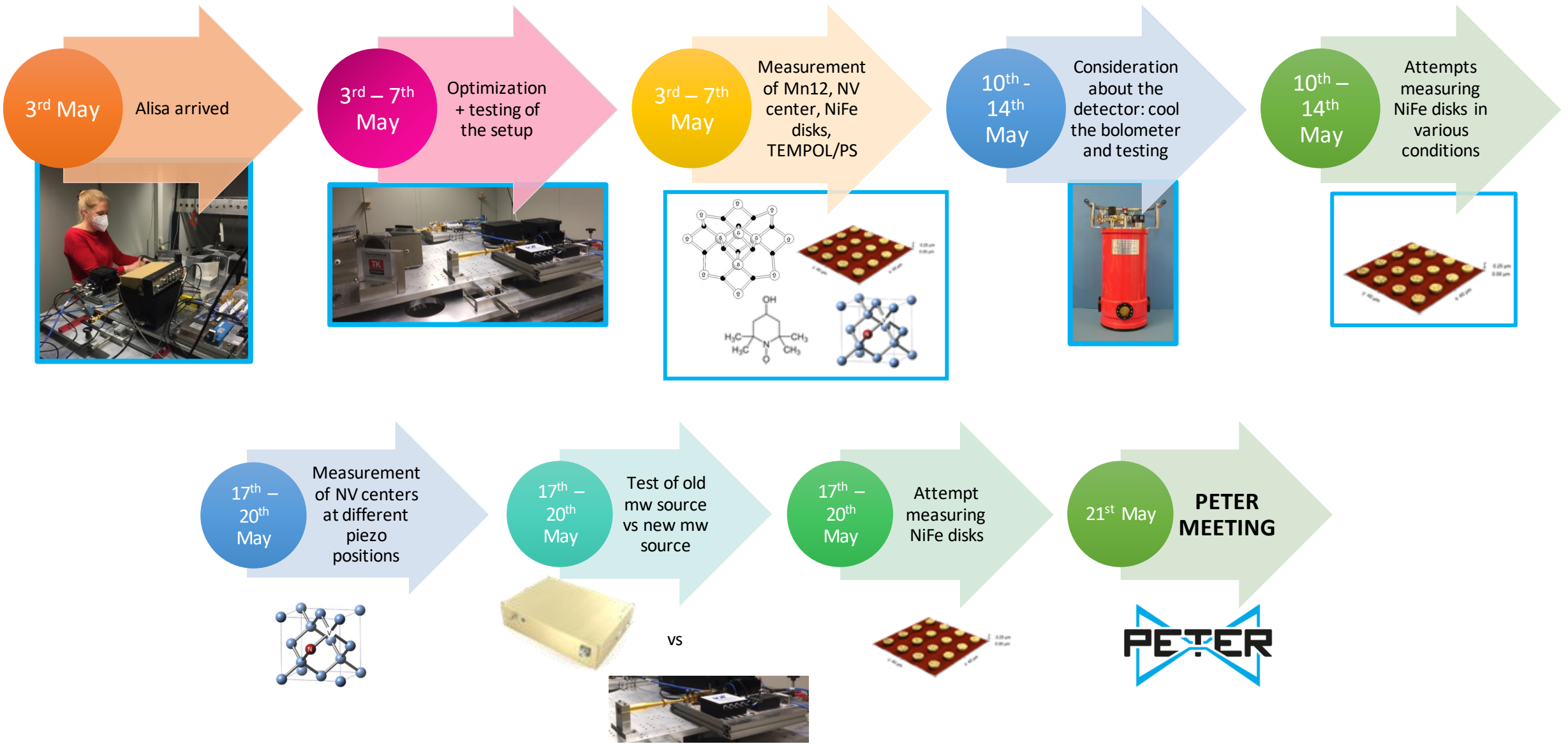
**Universität  
Stuttgart**

# Progress on **PETER** Project

**UNISTUTT**

**21<sup>th</sup> of May 2021**

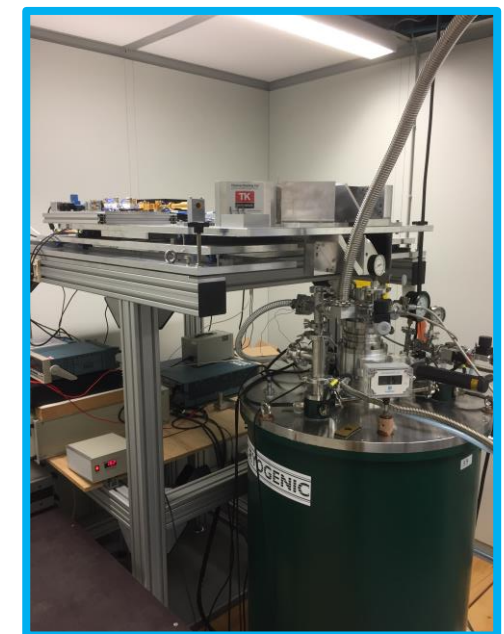
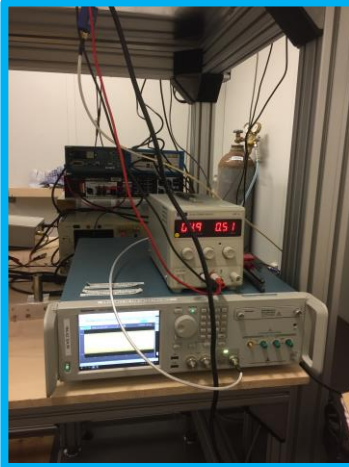
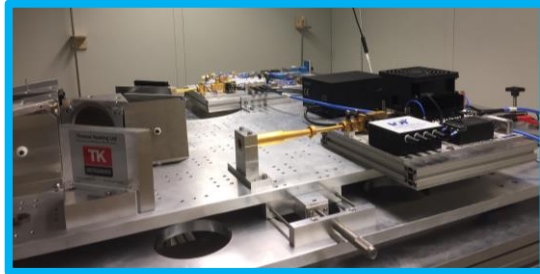
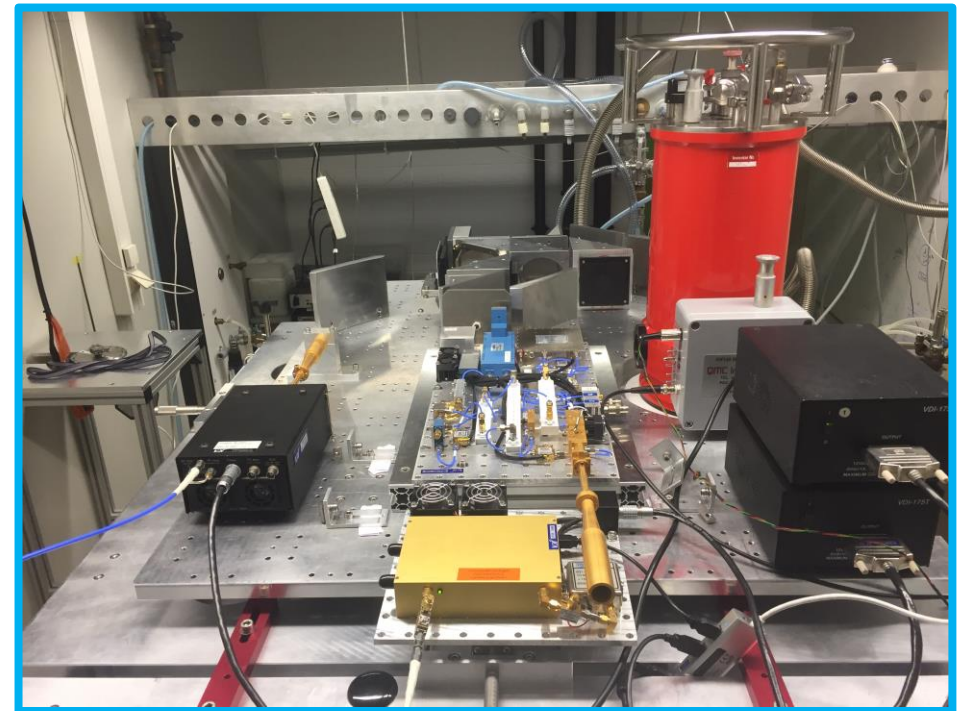
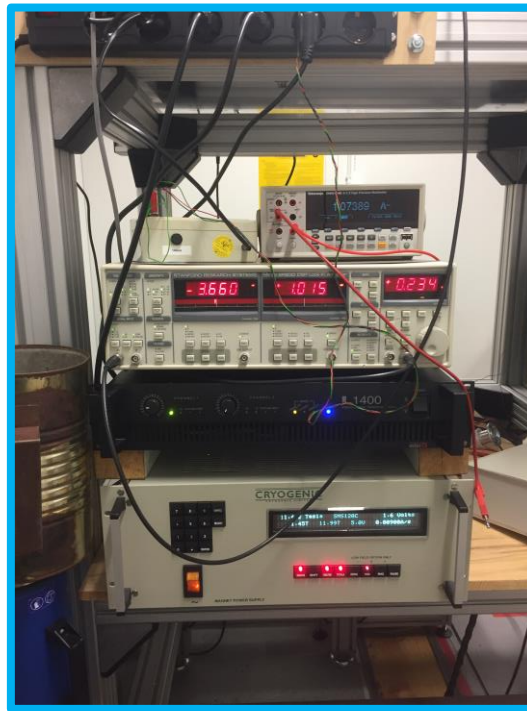
# The RoadMap



# PETER LAB

Currently

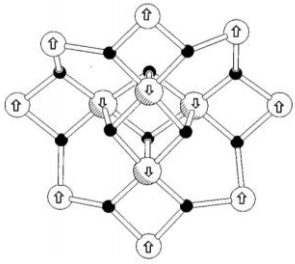
Previously



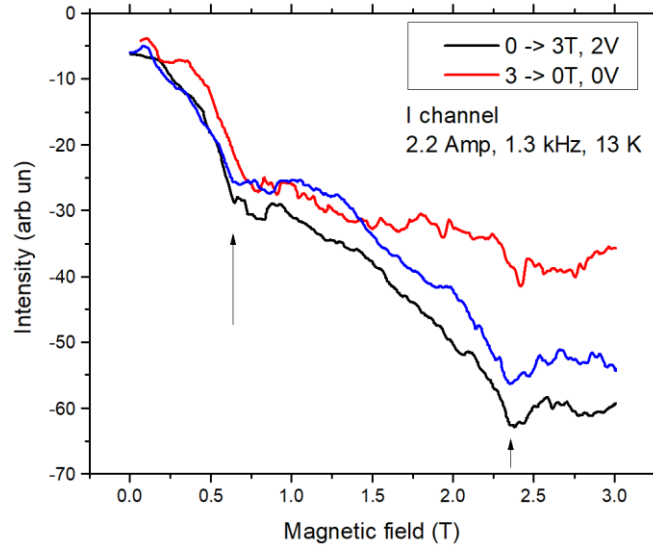
# TESTS of EPR on PETER setup



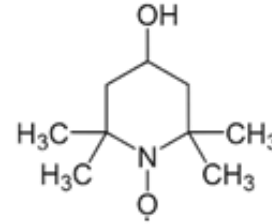
## Mn12ac



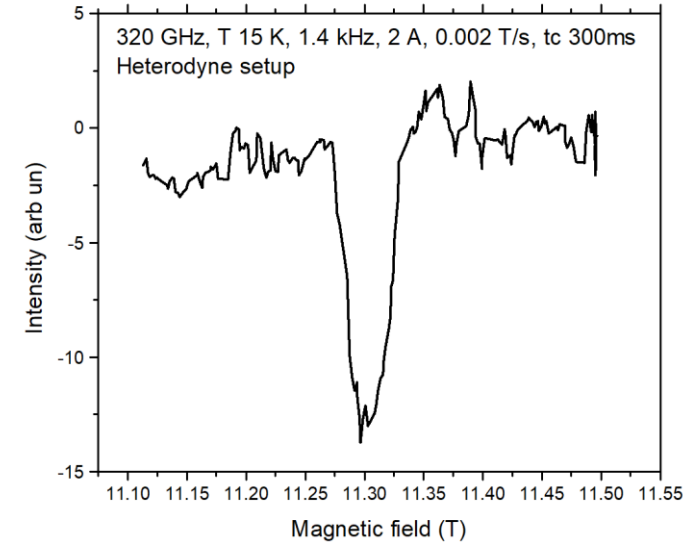
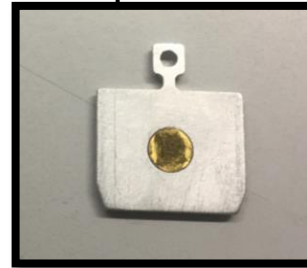
Before 2<sup>nd</sup> adjustment of the quasi optics



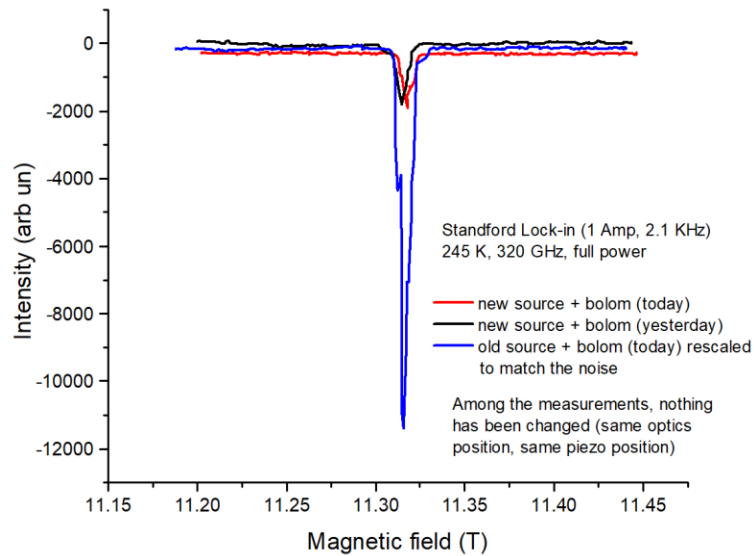
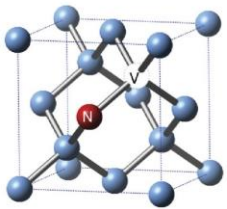
## TEMPOL in PS



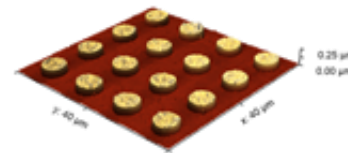
## Sample holder



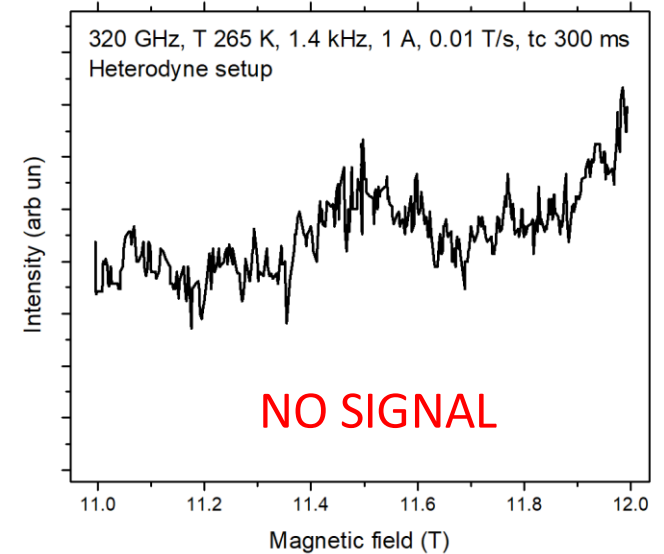
## NV center



## NiFe disks



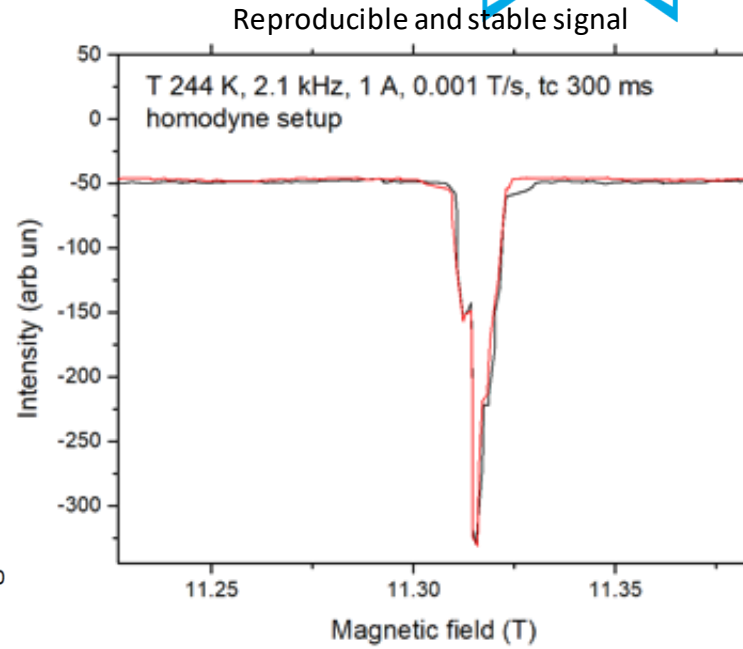
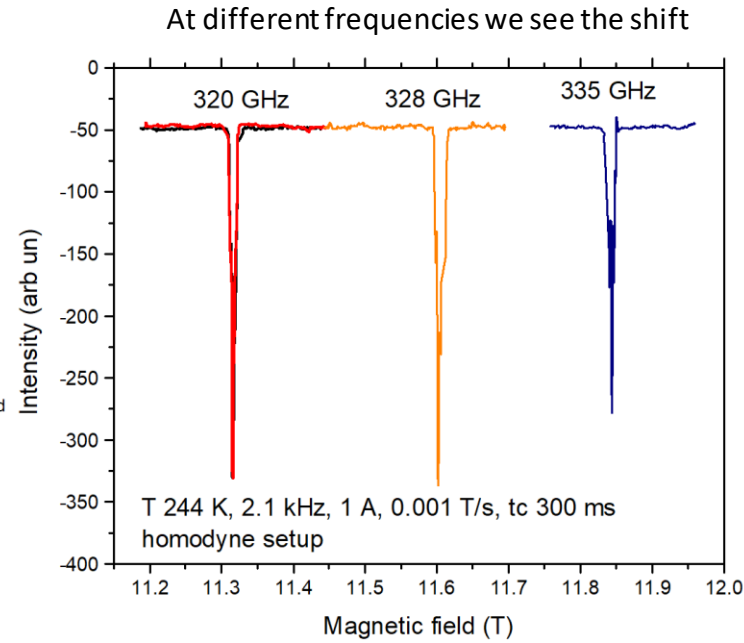
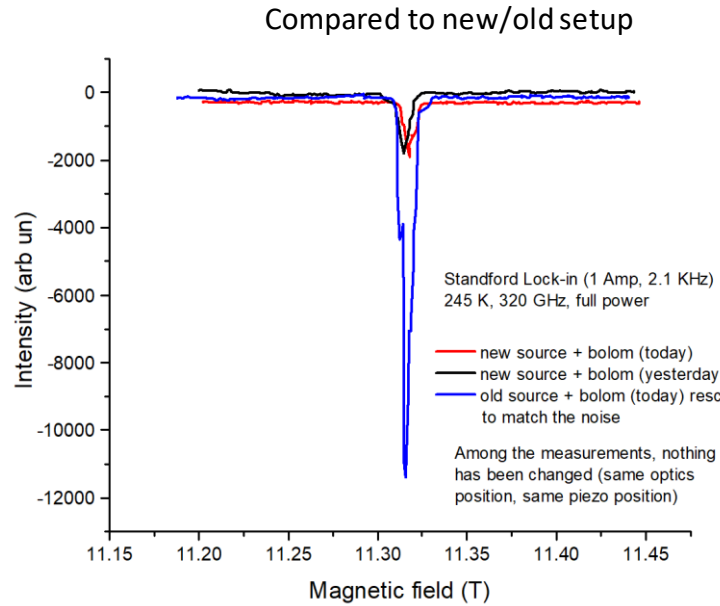
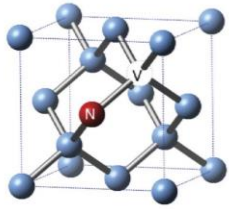
We tried also with old source and bolometer



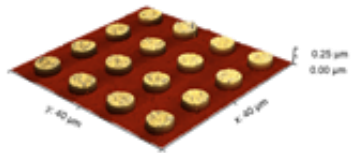
# TESTS of EPR on PETER setup



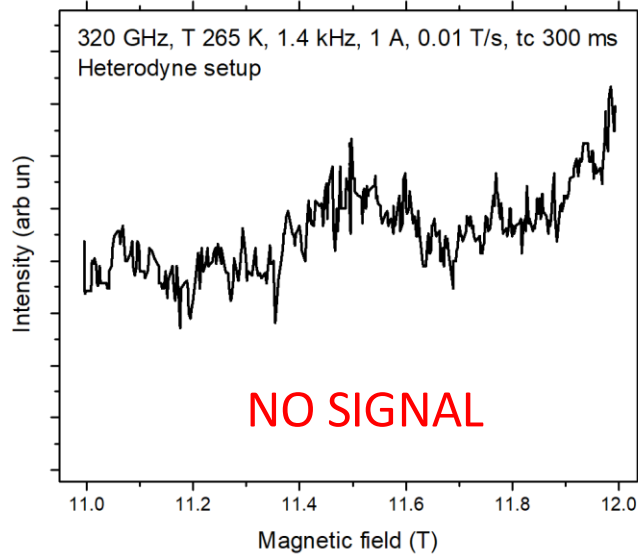
NV center



NiFe disks



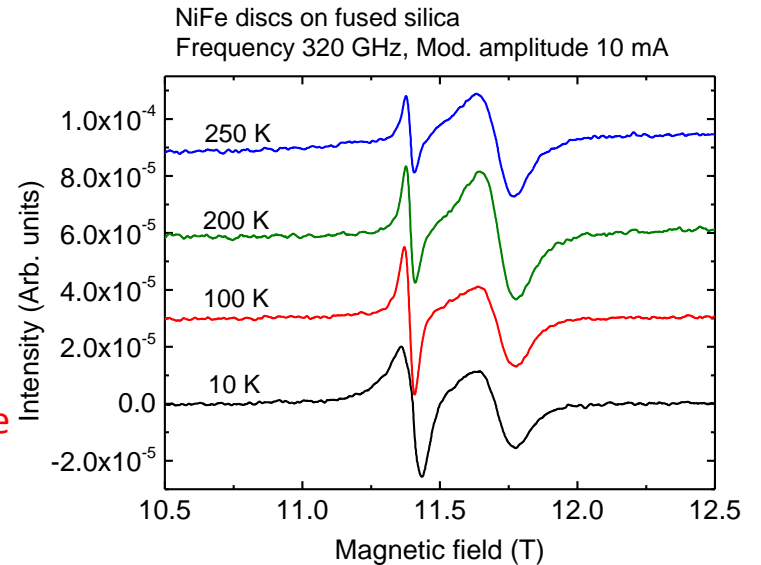
We also tried with homodyne setup



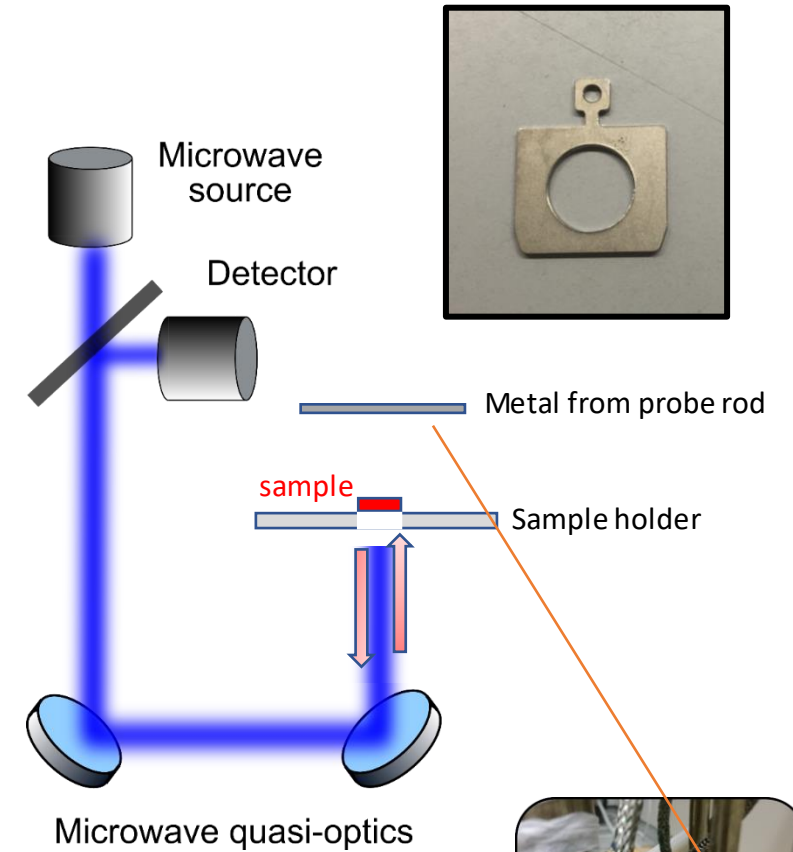
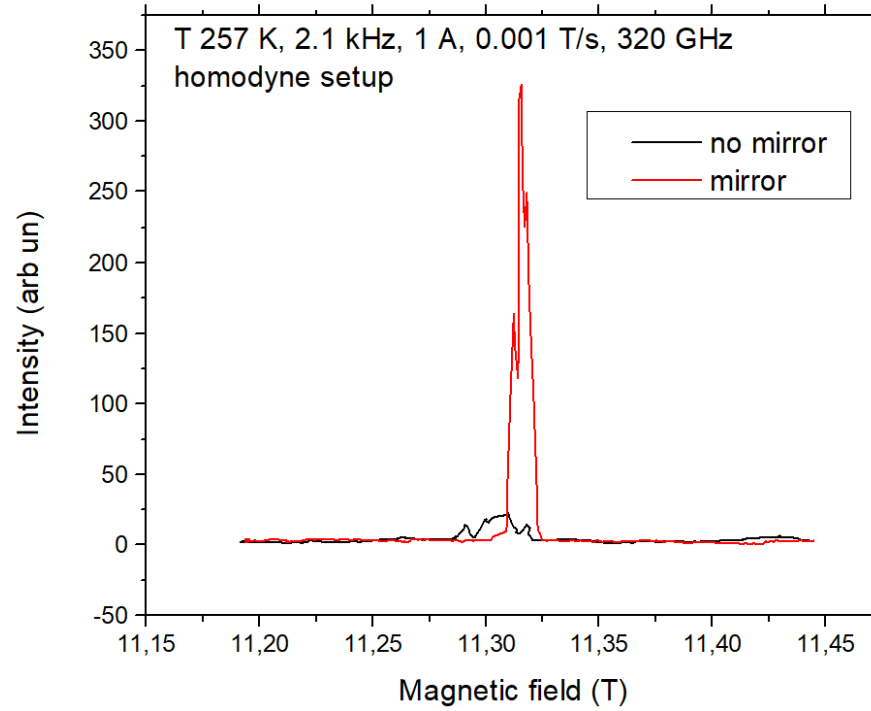
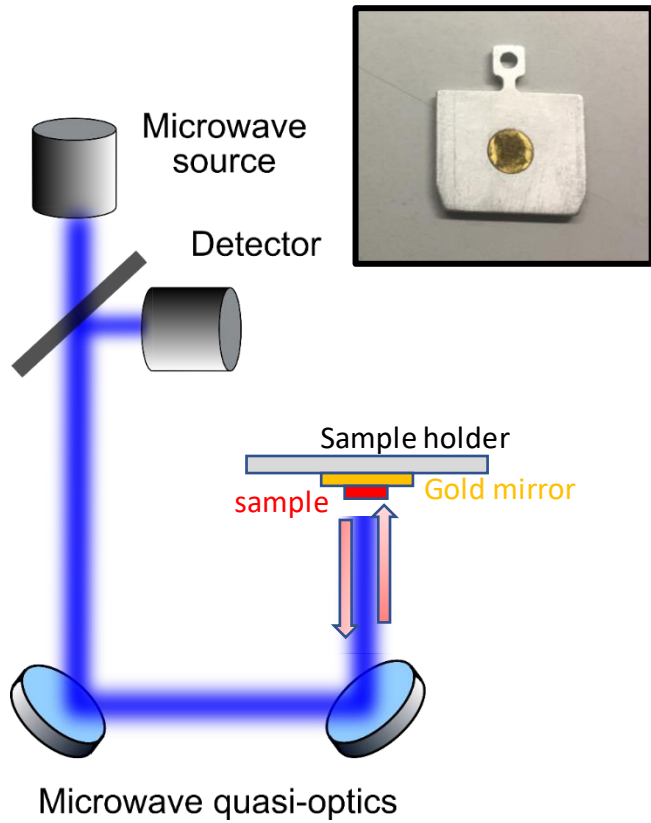
- **Not enough modulation field?**  
1 A = 3 G, 2 A = 7 G
- **Modulation coil unstable?**
- **Not enough power of the source?**



From HFEP: how it should be



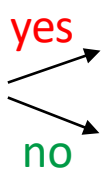
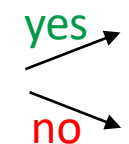
# Considerations about the polarization of the EPR signal

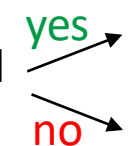


## To-do-list

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### MAIN

- Check if there is a signal on NV center, without gold mirror, both in cross and co-polar components; 
  - yes → Cover reflecting surfaces
  - no → Continue with next points
- Solve the problems with the modulation coil. 
  - yes → Measure NiFe disks once more
  - no → Continue with NV centers

New modulation coil from TK?
- Measure AFM with the antenna-tip at 10 K, 12 T and including also high modulation field;
- Look for an EPR signal when the tip is approached, compared with not approached and both in co- and cross-polar position. 
  - yes → Party!
  - no → Try more.

### SECONDARY

- Figure out why the AMC multiplier is not working;  
Try to drive it with old synthesizer;
- Power test of AWG;
- Lock-in to repair.