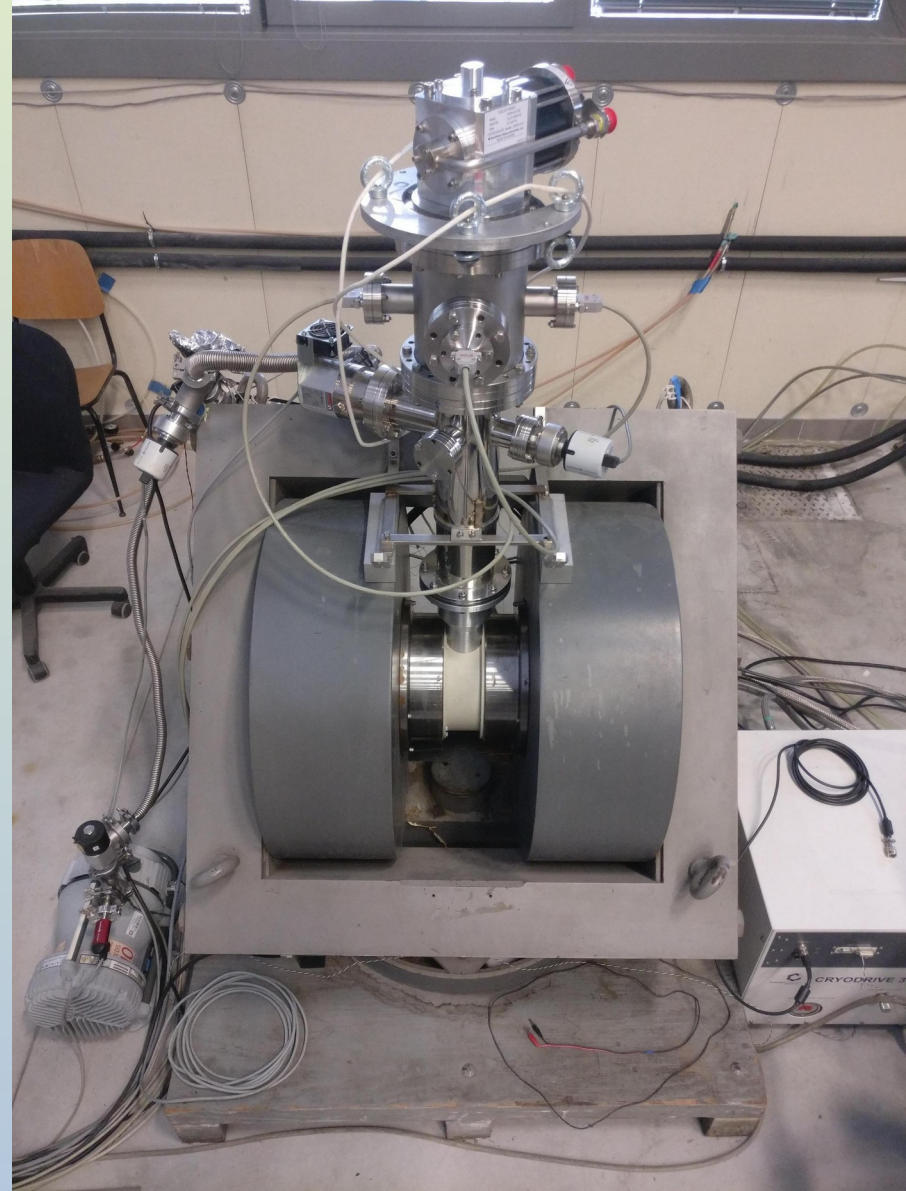


**Compact target magnets**  
MgB<sub>2</sub> bulk superconductor  
test-stand in Ferrara

*Luca Barion*

# MgB<sub>2</sub> test stand in Ferrara



# Improvements

- Acquisition system update: new cabling (vacuum, air and feed-through), sw development
- New cold-head to reach lower temperatures  
(~13K  $\rightarrow$  ~4K)
- New sensors holder  
(more sensors, easier MgB<sub>2</sub> sample exchange)



## Acquisition rack:

- Interlock for vacuum
- Multigauge reader for 3 pressures (chamber, turbo, prevacuum)
- Turbo 1 controller
- Turbo 2 controller
- Ambient humidity/temperature
- Hall probes reader
- Resistance (temperature) scanner
- ITC503 Temperature controller (heaters)

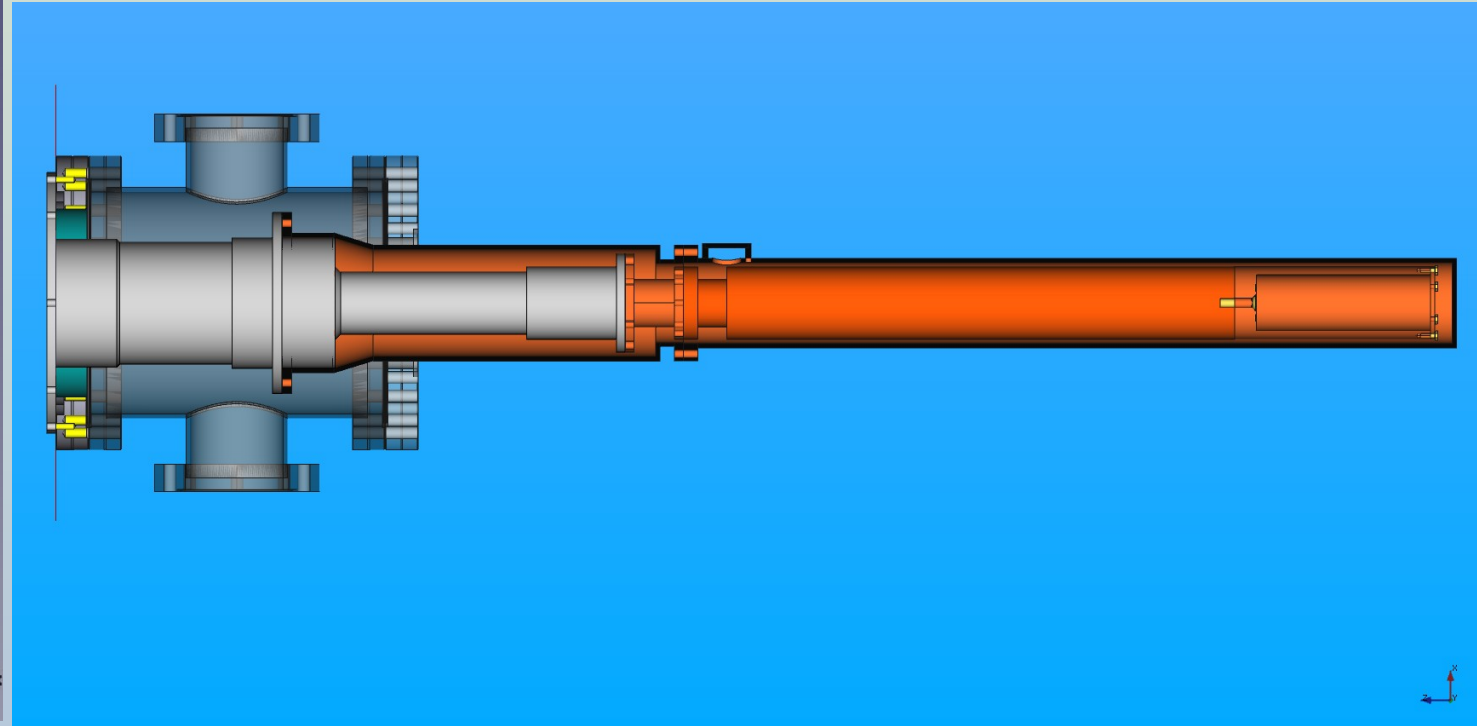
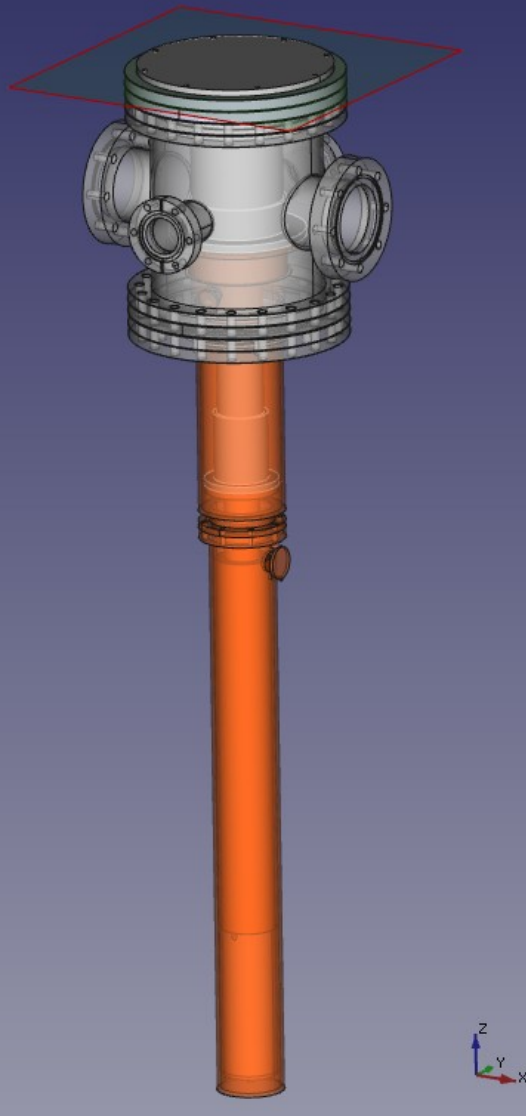




Old PC

“New” PC

# Cryostat 3D CAD project



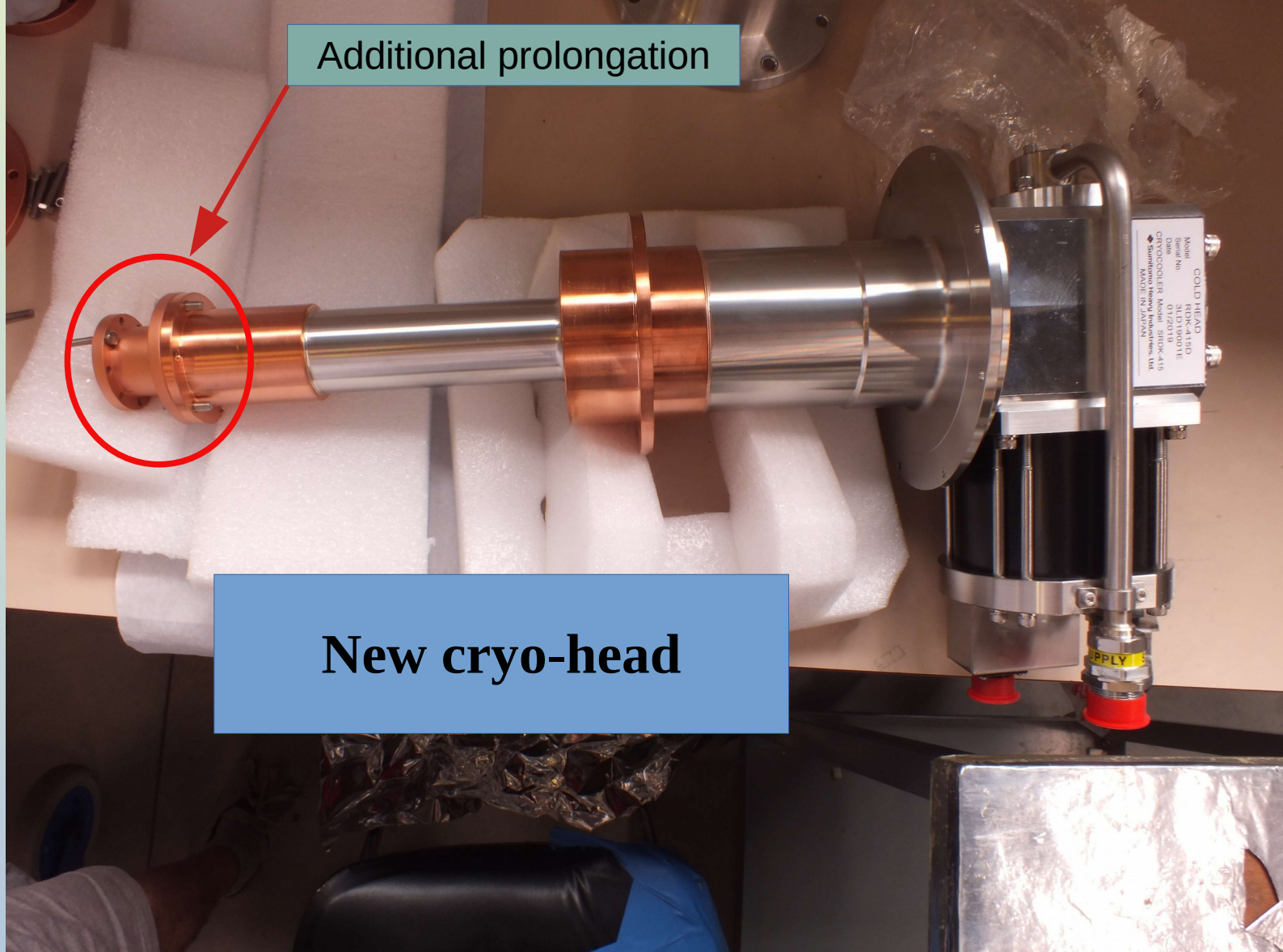
**New copper shields**





Additional prolongation

New cryo-head



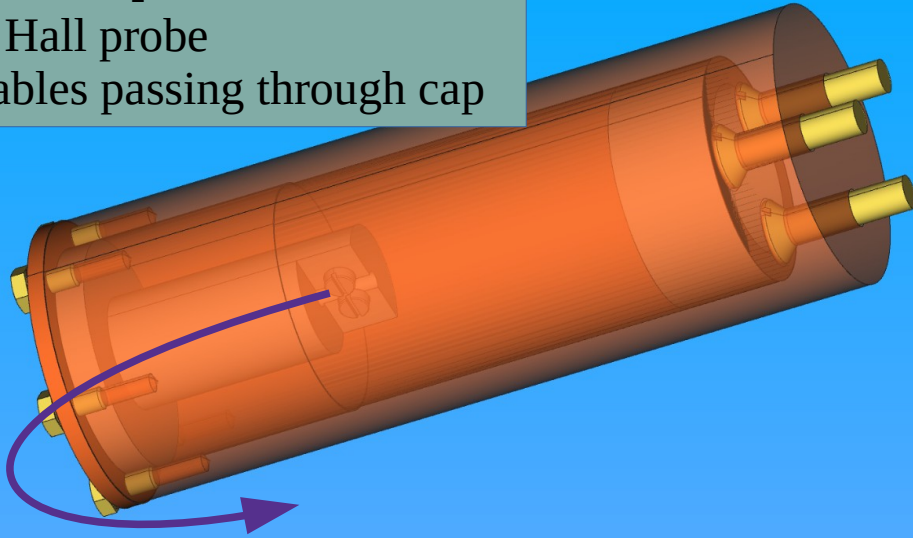


# Unexpected issue

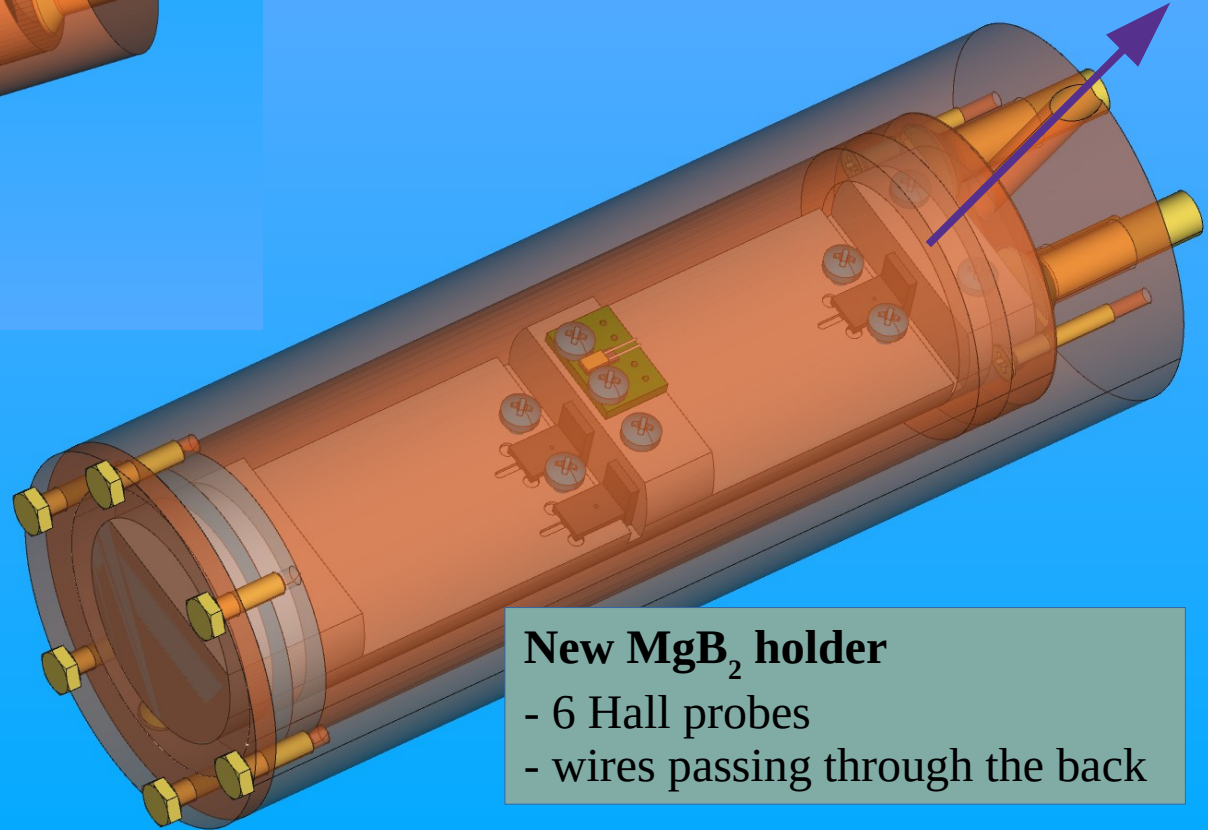
- Cryo (head) not working!
- Several attempts and diagnostics done in contact with the company => no solution
- Dismount of almost everything for exchange/repair

### Old $\text{MgB}_2$ holder

- 1 Hall probe
- cables passing through cap



**New improved sensors holder in PTFE**  
**1 Hall probe => 6 Hall probes + 1 temperature**  
**Easier  $\text{MgB}_2$  exchange**

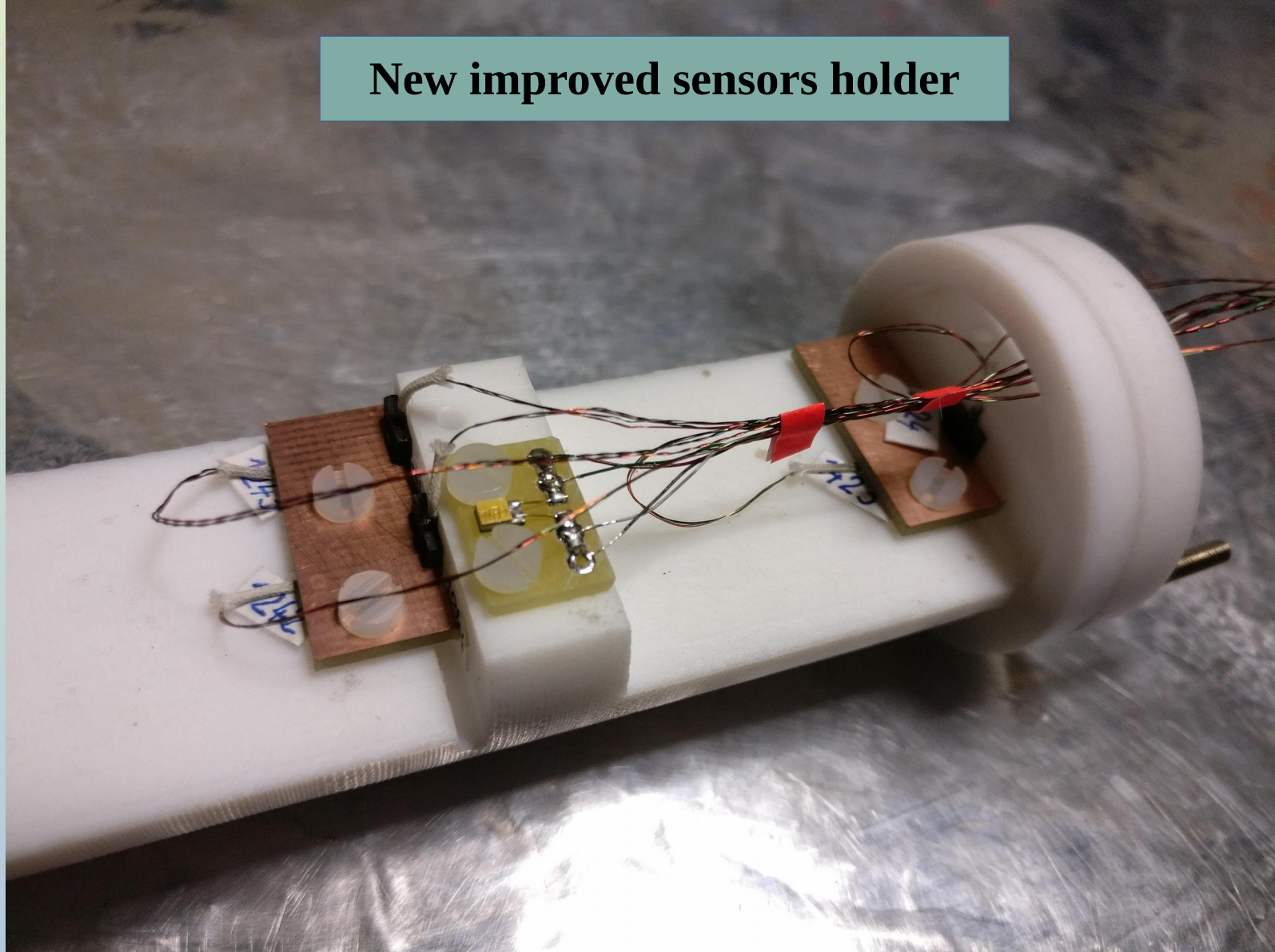


### New $\text{MgB}_2$ holder

- 6 Hall probes
- wires passing through the back



## New improved sensors holder





# Magnetic field mapping

- @room temp
- 10 A
- Upwards

