

Motivation

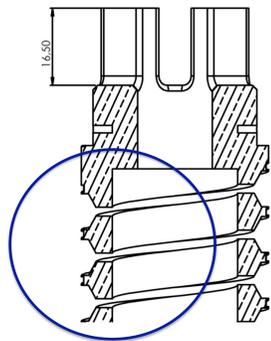
Equip the ENEA Superconductivity Laboratory with a Critical Current vs. Strain measuring system at variable Temperature and Field.

Strain probe: WASP

Starting from the Univ. of Geneva WASP Design, an **optimization** aimed to the minimization of the strain variations along the s.c. wire mounted on the Walters spring, has led to the final design.

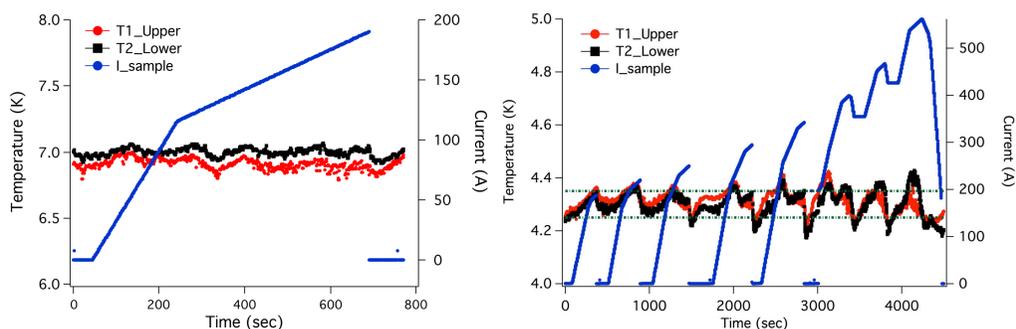
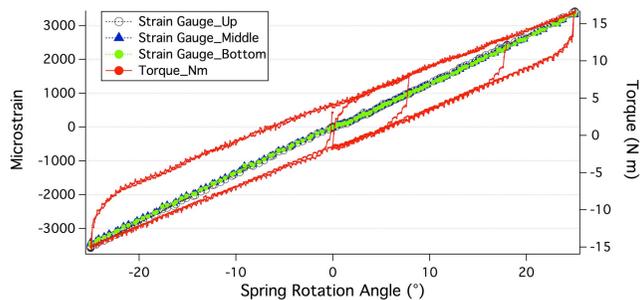


CuBe spring



Probe calibration:

Strain calibration:
uniform strain distribution



Temperature stability: within $\pm 0.05K$ up to about 300 A; to be further optimized for currents up to about 600 A.

Operating parameters

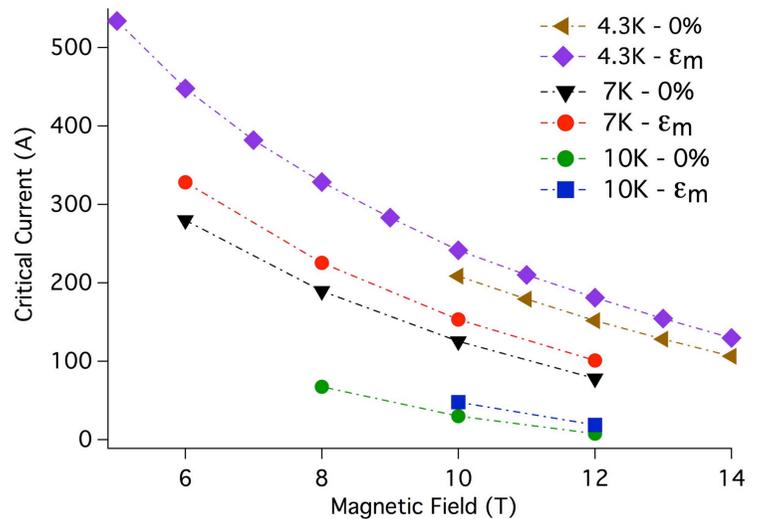
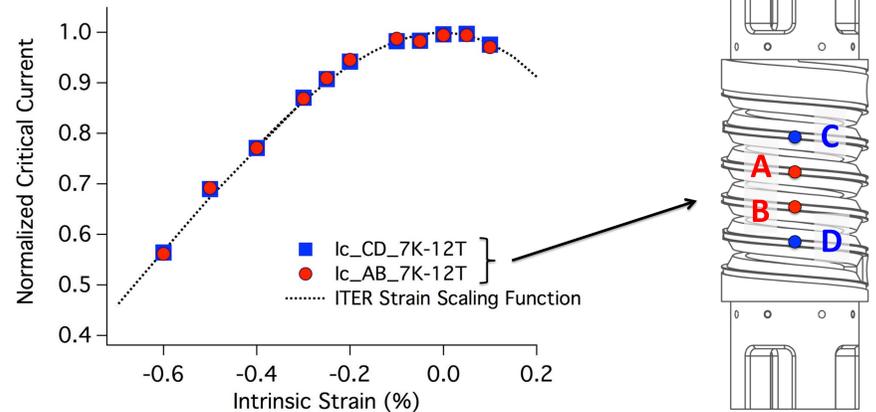
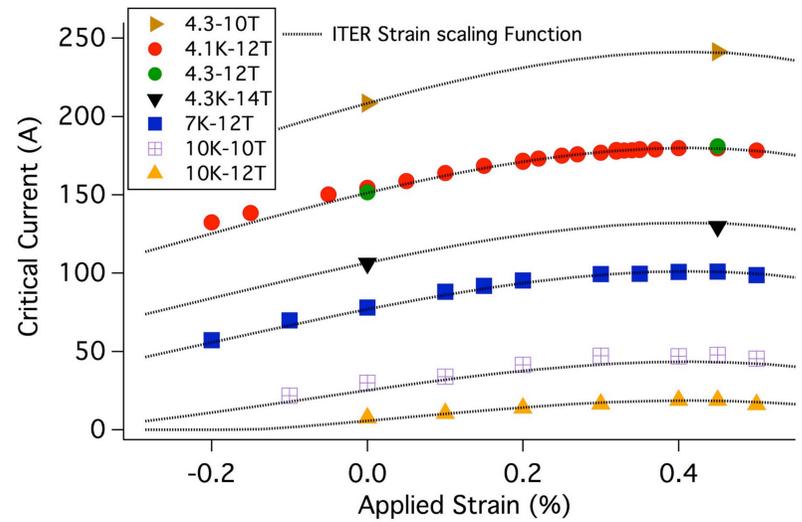
Field: ENEA "old" **14.5T** Liquid Helium Magnet for the probe.

Temperature: VTI manufactured by CRIOTEC Impianti; sample and current leads cooled by flowing He gas: **4.2 K to 100 K**.

HTS Current Leads designed and manufactured by ENEA; currents up to **600 A**.

Facility commissioning:

measurements at different B, T, ϵ on an ITER bronze-route wire.



Next steps

Measurements: **1)** benchmarking against other facilities (ref. N. Cheggour); **2)** test the Nb₃Sn wire manufactured by WST (China) for the EU-DEMO Project; **3)** test the Nb₃Sn wire that will be procured for the Italian DTT project.

Hardware: foreseen upgrade: Ti spring for LTS wires; spring for HTS tapes.