

# Progress in Aluminium-Stabilized HTS Cable *for Future Detector Magnets*

Superconducting Detector Magnet Workshop  
Sep. 14, 2022

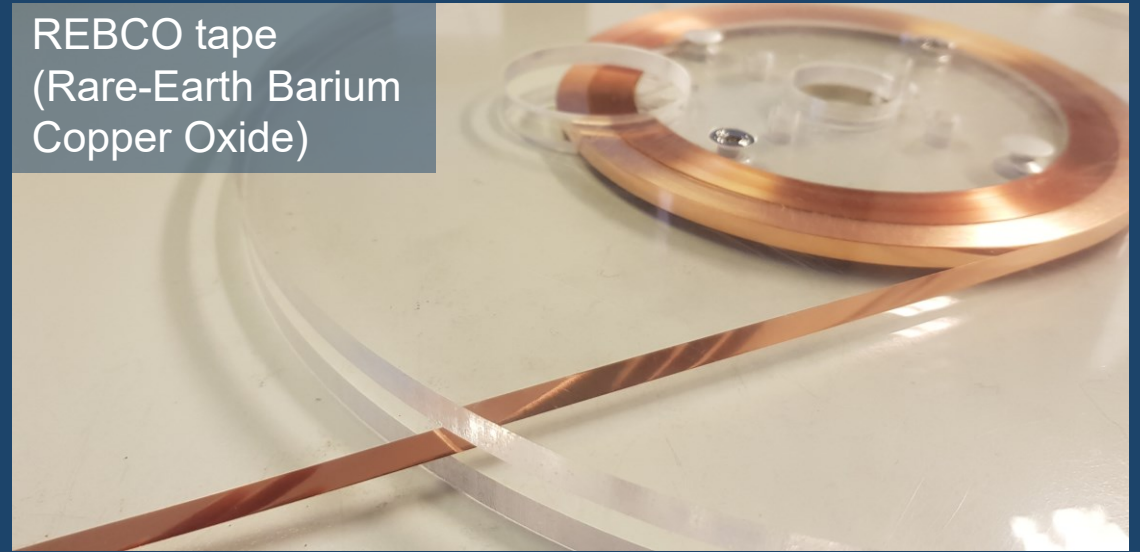
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CERN

# Aluminium-stabilized HTS cable

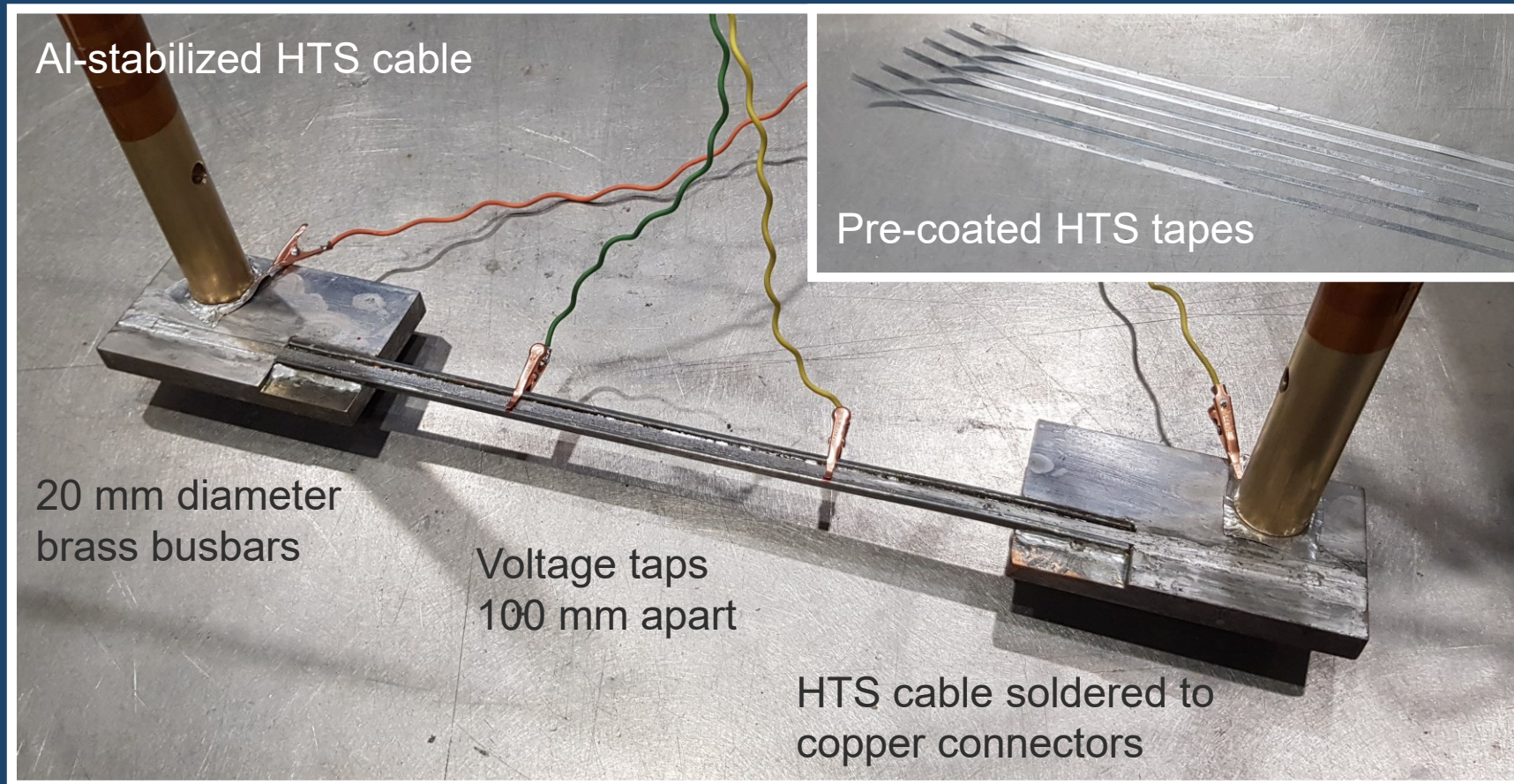
- Advantages of HTS compared to LTS
  - Higher current densities
  - Higher magnetic fields
  - Higher operating temperatures (reduced cooling costs)
- Why stabilizer? Why aluminium?
  - To protect superconductor during a quench
  - Current and stored magnetic energy is redistributed to aluminium (that heats up)
  - Aluminium has low density and therefore high transparency to particle radiation

REBCO tape  
(Rare-Earth Barium  
Copper Oxide)

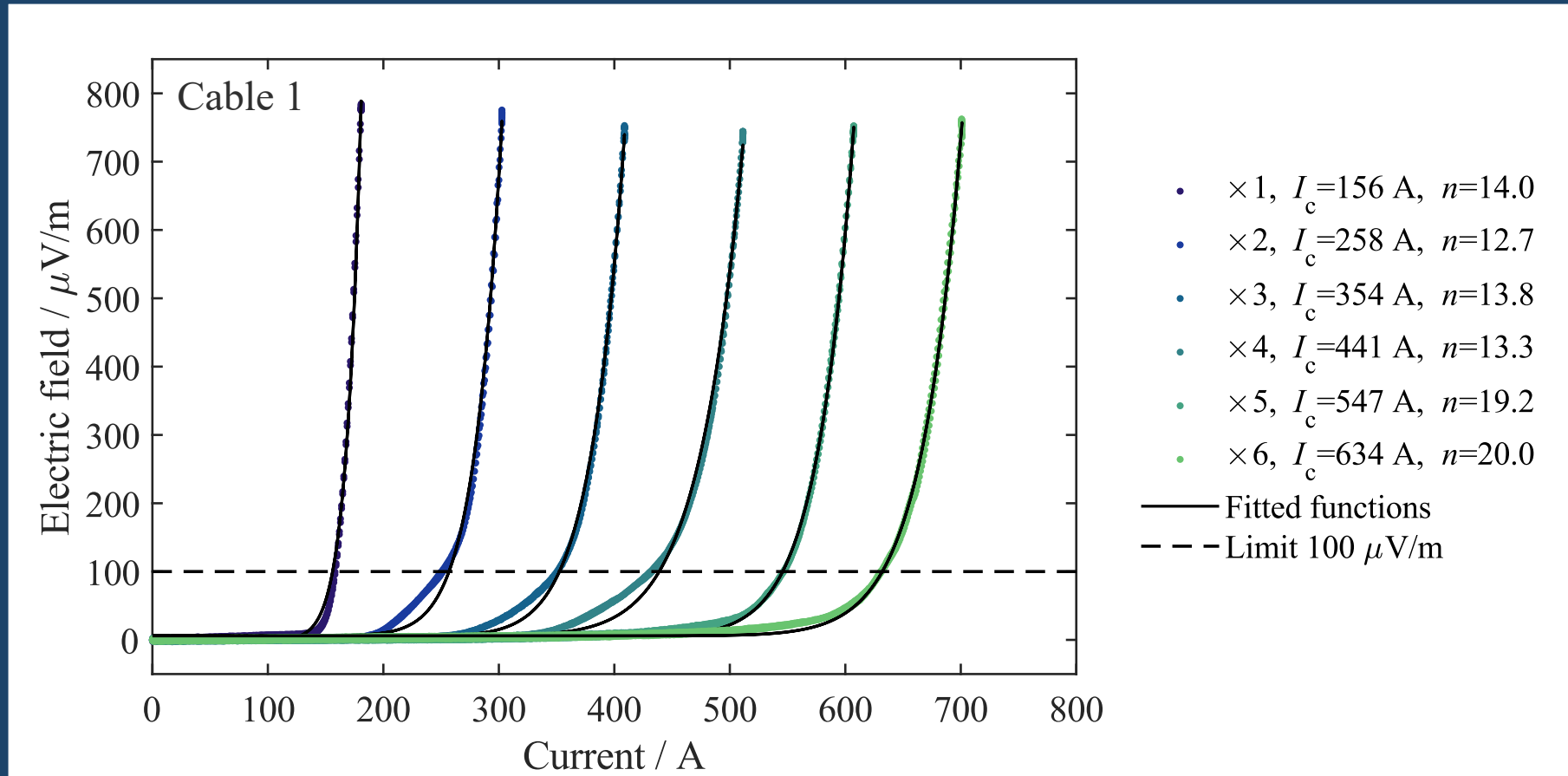


HTS cable sample where  
HTS tapes have been soldered  
to copper coated aluminium profile

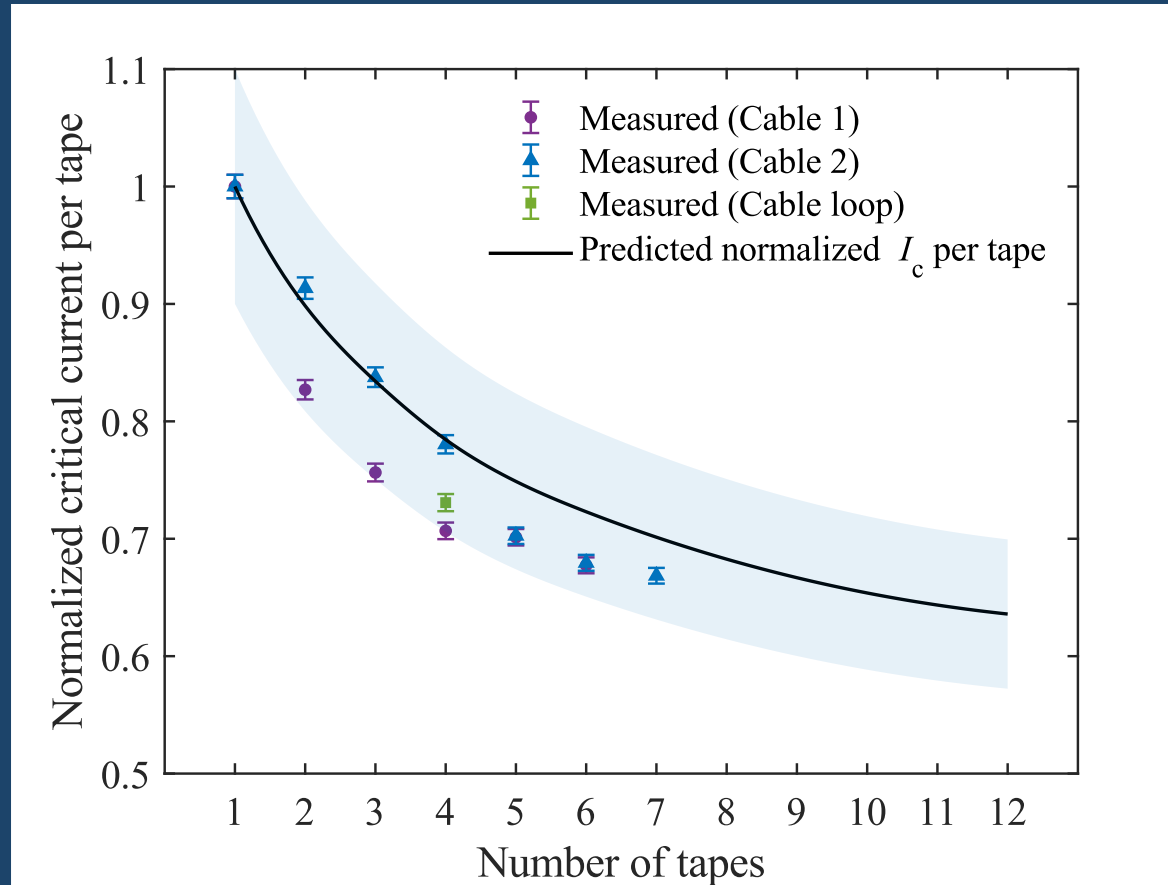
# First sample that was measured in LN<sub>2</sub> at 77 K



# Current-to-electric field measurements at 77 K



# Normalized $I_c$ per HTS tape



HTS tapes can be soldered to copper-coated aluminium without degradation in  $I_c$

We are able to prepare short HTS cable samples with repeatable quality

Vaskuri *et al.*, “Aluminium-Stabilized High-Temperature Superconducting Cable for Large-Scale Detector Magnets,” (in preparation).

