Practical day at CERN for JUAS 2012 students

Friday 24th February

Superconductivity and related cryogenics

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Superconductivity & Associated Cryogenics

1. Meeting point: CERN,building 288.
2. Introduction: review of properties of superconductors important for the understanding of experiments. Safety aspects.
3. Levitation experiments in field cooled and zero field-cooled conditions. Measurement of levitation force.
4. Flywheel demonstration.
5. Critical temperature measurement.
5. Zero resistance experiment.
6. Measurement of critical current and of V-I curve.
7. Resistive transition experiment.
8. Visit of laboratory 163: facilities for testing advanced superconductors at liquid helium temperatures

HTS → **Liquid nitrogen**

Superconductivity Cryogenics

Superconductors you will use for the experiments at CERN:

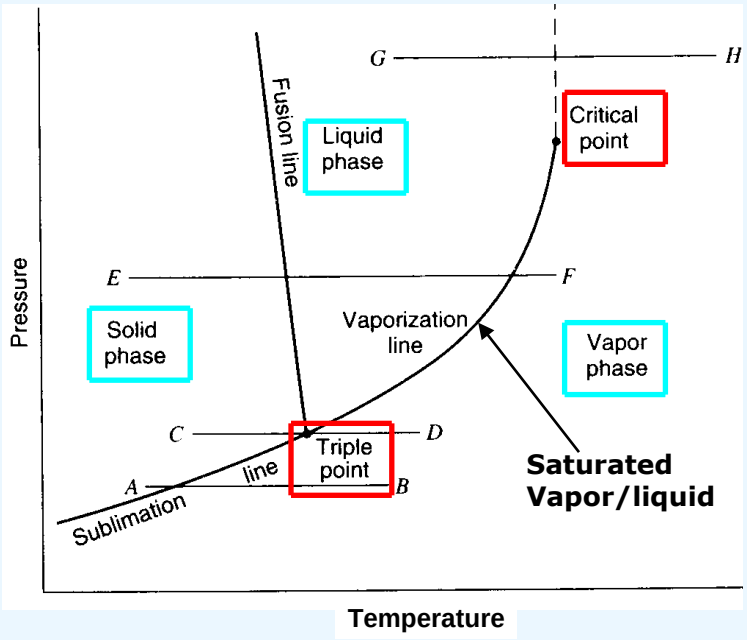
- YBCO 123 Melt Textured Bulk and YBCO coated tape.
  YBCO: Y Ba Cu O.
  123 (Y Ba Cu).
  Tc= 92 K.

- BSCCO 2223 PIT (Powder in Tube) Multi-Filamentary tape.
  BSCCO: Bi Pb Sr Ca Cu O.
  2223 (Bi Sr Ca Cu).
  Tc= 110 K.

During the visit of building 163 you will also learn about Nb-Ti and Nb_3Sn

Cryogens

	Triple point (K)	Boiling point (1 atm) (K)	Critical Point (K)
Methane	90.7	111.6	190.5
Oxygen	54.4	90.2	154.6
Argon	83.8	87.3	150.9
Nitrogen	63.1	77.3	126.2
Neon	24.6	27.1	44.4
Hydrogen	13.8	20.4	33.2
Helium	λ-point	4.2	5.2



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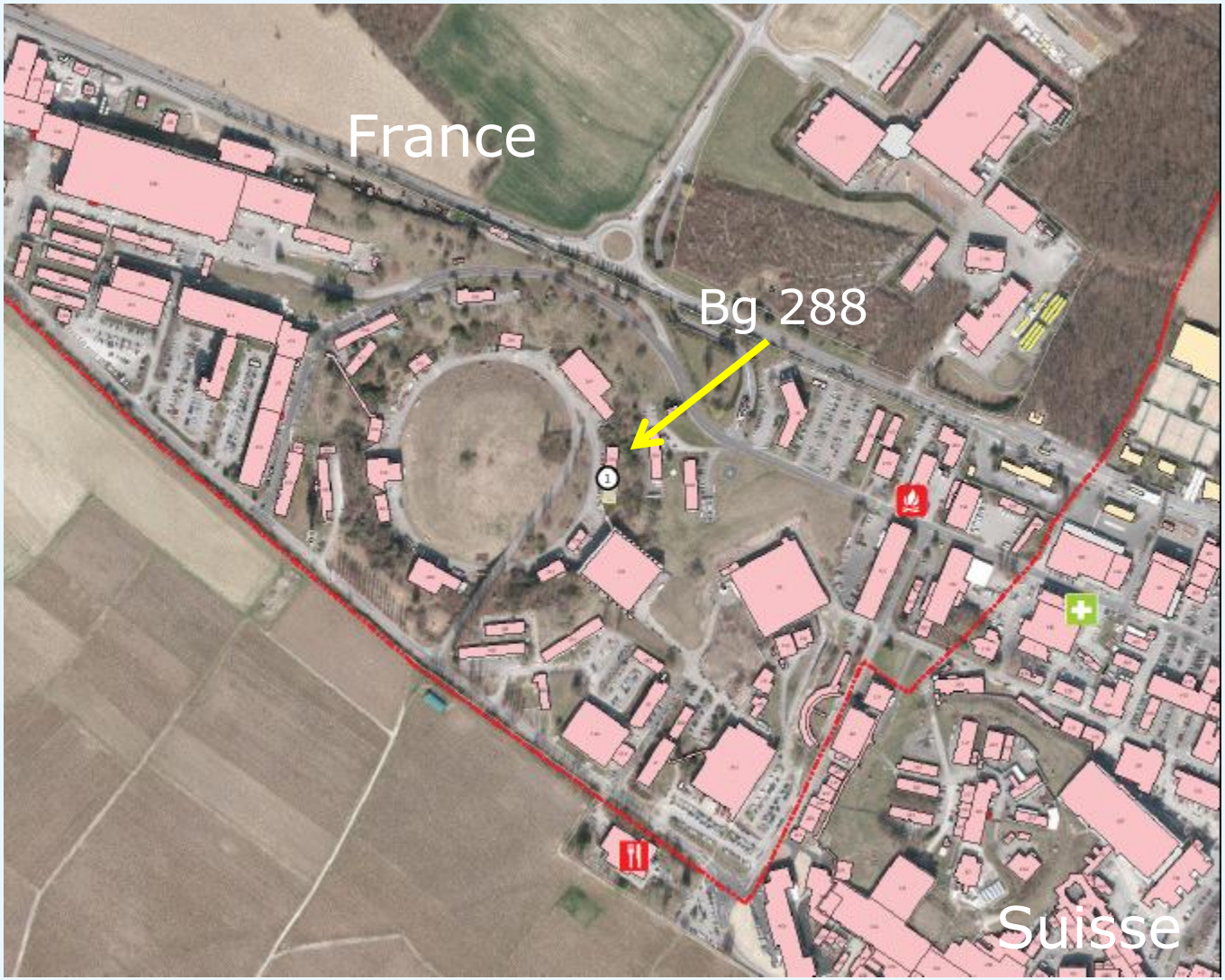

We are looking forward to

working with you at CERN !