Magnet & Related Technologies
Round Table Discussion

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AT DTTO

CERN participants:

Lucio Rossi - Leader of Magnets and Superconductors Group

Louis Walckiers - Leader of Magnet Test and Measurements Group

Wili Kalbreier - Leader of Normalconducting Magnets Section in Magnets and Electrical Systems Group

Davide Tommasini - Leader of Magnet Coordination Section in MAS Group

Stefano Sgobba - Leader of Metallurgy and Metrology Section in Mechanical and Materials Engineering Group

Walter Wuensch – Radio Frequency Group

Main subjects of the workshop

- **Information on new and ongoing projects**
- **Up to date with the latest magnet technology development at CERN and in industry**
- **TT opportunities**
- **TT networking**
- **R&D collaboration with CERN**

Trends in Magnets Technologies

Three trends of superconducting magnets for accelerators

- **fast cycled (common interest with FAIR and possibly medical applications)**
- **high field (any cost)**
- **high field low cost**

Desirable initiatives in Europe

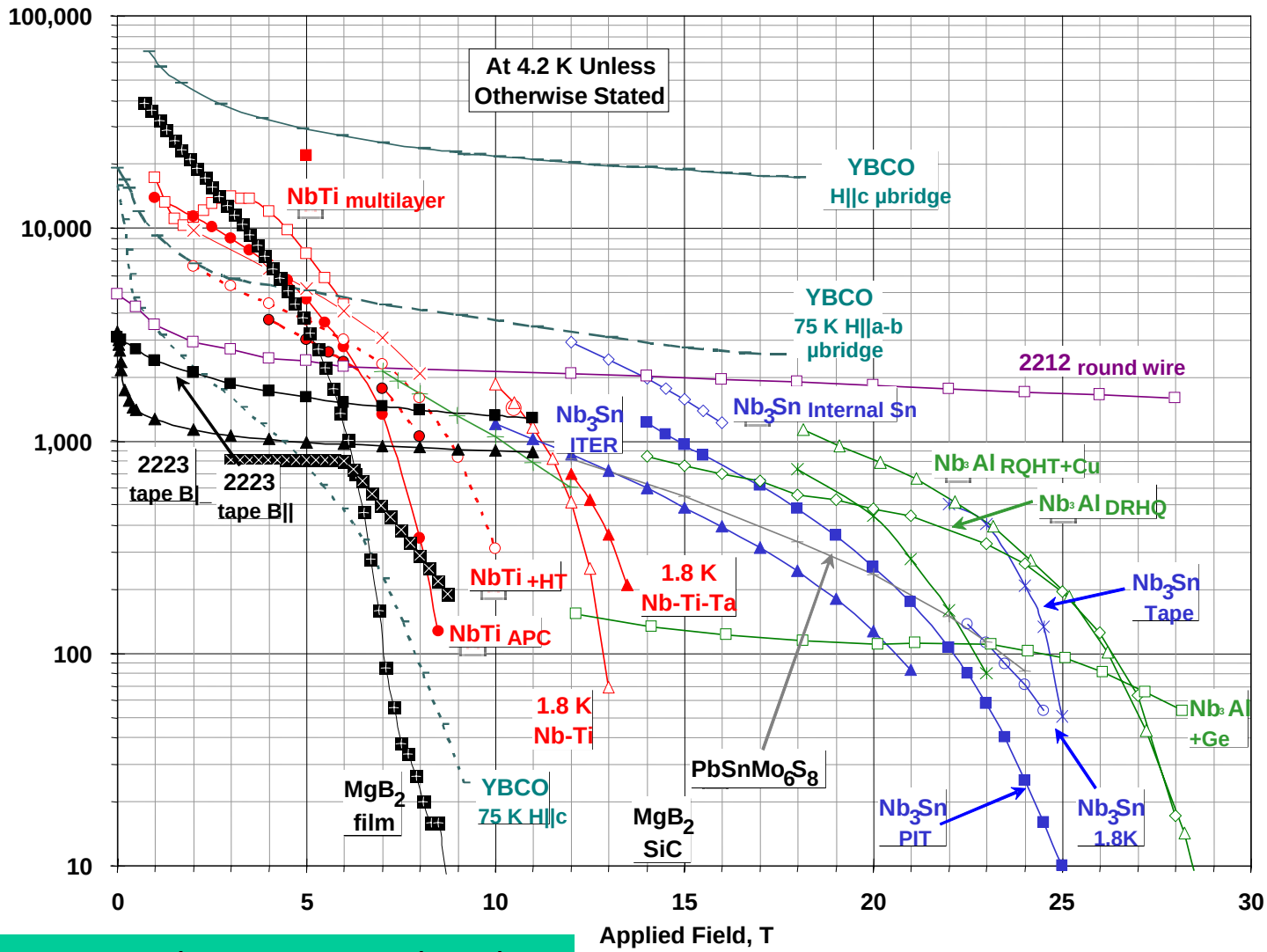
More participation and efforts into base Sc materials research

Development of wire/cable processing & industrialization

Consolidate practical experience with such magnets

Development of concepts for low cost HF magnets : design and manufacture

Energy doubler / tripler



Peter Lee master plot – www.asc.wisc.edu

LHC Upgrades

Interaction regions upgrade : xx MEuros

Luminosity Upgrade

New quadrupoles and possibly new dipoles in the interaction regions : needed in 2015

Injectors upgrade : xxx MEuros

Luminosity and Energy Upgrade

Fast cycled, low losses superconducting magnets : 5-10 years program

Energy doubler 7 TeV to 14 TeV : xxxx MEuros

Energy upgrade

New dipoles and quadrupoles in the arcs : 15-20 years program

Fast cycled magnets for injectors

Requirements

Bore diametre 80-100 mm

Peak field 3.5 T up to 5 T/s or 5 T up to 1.5 T/s

Capable to perform several millions cycles in a radiative environment

Capable to draw beam deposited energy of the order of 5-10 W/m

State of the art

Superferric magnets with internally cooled cables, 2 T peak, 4T/s, 1 Hz, based on JINR Nuclotron.

GSO001 model, based on a modified RHIC type dipole, built by BNL for the FAIR Project.