Modelling of bulk and metamaterials session

Navau

Superconducting-ferromagnetc metamaterials modelling

Metamaterial is a system and not a material.
- Transporting static magnetic field
- Cloaking static field
- Design and test of a magnetic wormhole

SC-FM hybrids are the best candidate for DC magnetic materials (system permeability design – wide range permeability values available)
- Assumption of permeability value ? Effects on the results?

Modelling of bulk and metamaterials session

Gozzelino

Passive magnetic shielding by SC and SC/FM superimposed systems
- Shielding effect in systems with reduced aspect-ratio of height/radius
- Not trivial effect of FM layer addition
- Key factor to design efficient hybrid sytems: height difference in cup edge/multilayer arrangements

Effect of magnetic hysteresis ?

Ainslie

Modelling of bulk superconductor magnetization
ReBCO and MgB2
- Field cooling magnetization
- Pulse field magnetization (using a ferromagnetic yoke)
- Comparison between experiment and model taking into account Jc dependence on magnetic field/temperature, including also thermal effect

Flux avalanches effect in MgB2 ?

What is it expected with FM addition (drilled holes in the SC disk filled with FM) ?