Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, 01.02.2011

(16:00 in Room 459/30b)

3 Talks on Experimental Methods Employing Superconductivity

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Implementation of high sensitive VSM system based on SQUID sensor:

A Vibrating Sample Magnetometer (VSM) system based on a SQUID sensor (Superconductor Quantum Interface Device) has been implemented to measure the magnetic properties of materials as a function of the magnetic field and the magnetic momentum of the material. Powders, solids, liquids, single crystals and thin films are all readily accommodated in this VSM system. By using a SQUID sensor this project involves magnetic characterization of large variety of materials.

A new method for measuring the critical current density in high temperature superconductors:

In this work a new method to measure the critical current density of a YBCO pellet will be presented. For this method current has applied in a localized zone in the absence of an external magnetic field. Theoretical approximations predict a semi–spherical current distribution which is consistent with the experimental results. By fitting the experimental data with theoretical results, the critical current density of the superconductor could be obtained.

The SQUID based non destructive evaluation system (NDE):

The experimental SQUID NDE system is based on a High-Tc YBCO gradiometer RF SQUID sensor with a flux noise level down to $100\mu\Phi_0/\sqrt{\mathrm{Hz}}$ at 100Hz in an unshielded environment. Using this system which also incorporates an automated two dimensional non–magnetic scanning robot, samples with different intentional defects have been tested and their scanning results have processed by the defect detection algorithm.

J.Roßbach (Univ. HH) and M.Vogt (MFL).