SFB/TRR 21 - Seminar
12. November 2007, Tübingen

Dr. Roger Wördenweber
(FZ Jülich)

Vortex Matter and Vortex Manipulation in Mesoscopic Superconducting Systems

The understanding of the properties of Abrikosov vortices in mesoscopic superconducting systems that are exposed to low and high-frequencies electric fields is of interest for basic aspects of vortex matter and for potential application of superconductivity in fluxonic devices. I will report on basic aspects and new experiments on vortex matter in patterned superconducting films. The impact of various micropatterns on the vortex mobility and vortex manipulation is examined for frequencies ranging from dc to 20GHz. Conventional superconducting films (Nb and NbN) as well as HTS films (YBCO) are examined. The manipulation of the vortices in thin films is achieved either by patterning with various hole arrays (antidots of different size and geometry) or by adding magnetic nanodots. The mobility and the manipulation of the direction of vortex motion by the structures are analyzed as function of frequency. Vortex diodes are generated by asymmetric pinning or an additional vortex driving potential provided by a dc current. The diode effect is demonstrated for different frequency regimes.

12. November 2007, 15:00 Uhr (s.t.)

Universität Tübingen, Raum D4 A19
Auf der Morgenstelle 14, 72076 Tübingen

CO.CO.MAT