Time-Resolved Magneto-Optical Imaging of Type II Superconductors

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Abstract

We review the physics of superconductors, introduce an advanced imaging technique – TRMOI, and discuss the experimental setup in detail. We measure and study both transport and magnetic behavior of typical type-II superconductors, including YBCO thin films, YBCO coated conductors and MgB2 thin films. We analyze quantitatively the vortex evolution of YBCO thin films in one dimension. Since YBCO coated conductors and MgB2 have their own unique physical properties, a non-uniform dendritic flux penetration is observed from the MO images and a further two dimensional magnetic field distribution mapping is under development.