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Effect of the misalignment between the applied and internal magnetic fields on the critical currents in tilted superconducting thin films B. MAIOROV, T.G. HOLESINGER, B.J. GIBBONS, S. KREISKOTT, Q.X. JIA, V. MATIAS, L. CIVALE, Los Alamos National Lab — The analysis of critical current density (J_c) as a function of the orientation of the applied magnetic field (\mathbf{H}) provides a very effective way to identify and discriminate the various pinning mechanisms in high temperature superconductors. In thin and/or anisotropic superconductors, the vortices may decrease their free energy by tilting their orientation with respect to \mathbf{H} , therefore producing a misalignment between the applied and internal magnetic fields. We present J_c angular studies in films with the crystallographic axis tilted with respect to the sample surface. This results in a rich behavior, characterized by an asymmetric angular dependence and a shift of the J_c ab -planes maxima position as function of the magnetic field. We show under which conditions the misalignment must be taken into account and quantify the magnitude of the shift.

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