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Vortex pinning by $BaSnO_3$–based correlated disorder in thick $YBa_2Cu_3O_{\sim 7}$ films: angular dependence of J_c via contact-free methods
J.R. THOMPSON[1], J.W. SINCLAIR, Univ. of Tennessee, D.K. CHRISTEN, Oak Ridge National Lab, C.V. VARANASI, Univ. of Dayton Research Institute — Pinning of vortices by second phase $BaSnO_3$ "columnar defects" has been studied in thick, c-axis oriented films of $YBa_2Cu_3O_{\sim 7}$, deposited epitaxially on (100) $LaAlO_3$. The dependence of the critical current density J_c on orientation of the magnetic field was determined for temperatures T = 77-5 K in applied magnetic fields $\mu_0 H$ = 0-6 T. The contact-free inductive methods insured measurements at very low dissipation levels, with electric field $E \sim 10^{-10}$ V/cm. Results of this study will be compared and contrasted with findings for YBCO materials with a more complex pinning landscape from multiple defect types. Research at ORNL sponsored by Div. Materials Sciences and Engineering, USDOE. Work by CVV supported by AFOSR and Air Force Research Lab.

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