

NOISE ANISOTROPY IN $YBa_2Cu_3O_{7-\delta}$ THIN FILMS

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The dependence of voltage noise on the direction of current flow with respect to c-axis of high- T_C $YBa_2Cu_3O_{7-\delta}$ (YBCO) thin films has been investigated. The experiments were performed using vicinal (103)/(013) oriented YBCO films with c-axis tilted 45° from the direction normal to the substrate. Patterning of several strips along various angles to the substrate edges enabled us to force current flow in various directions with respect to the c-axis. It has been determined that noise in the normal state is isotropic while the noise intensity and its spectral form in the superconducting state depend on the direction of current flow. The difference stems from different origins of noise in both states. The noise in normal state is due to randomness in the motion of charge carriers while in the superconducting state it arises from fluctuations of density and/or velocity of moving magnetic flux vortices.

← 13.4 cm →

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9.7 cm