

Acoustic analog of Hall effect in superconductive films

E.D. Gutliansky

The Research Institute of Physics of Southern Federal University, Rostov-on-Don, 344090, Russian Federation

Longitudinal electric field of a surface acoustic wave (SAW) drags vortex structure of a superconductive film, deposited on a piezoelectric substrate, and generates longitudinal DC component of an acoustoelectric field, which does not depend on direction of an external magnetic field. The contra-directional vortices are dragged by SAW in opposite directions. This phenomenon represents an acoustic analog of Hall effect, where vortices are an analog of current carriers, and the SAW Pointing vector acts as an impressed electric field. The calculation of the acoustoelectric field for a YBCO film with niobate lithium substrate coincides well with experimental data.