## Odd Magnetoresistive Response in Nanostructured Nb Thin Films

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The longitudinal and transverse magneto-resistive responses with regard to the current direction have been experimentally studied for non-patterned and nanostructured epitaxial Nb thin films under magnetic field reversal. Periodic stripe patterns have been fabricated on the films' surface by (i) focused ion beam (FIB) milling which induce an anisotropic washboard pinning potential (WPP) by order parameter suppression and by (ii) focused electron beam-induced deposition (FEBID) of Co, such that a WPP is provided that influences the vortex movement[1]. Two main effects appear due to the nanofabricated pinning potential landscape's anisotropy: guiding of vortices along the WPP 'channels' and anisotropy of the Hall resistivity. The former leads to the appearance of the even transverse resistivity under field reversal and influences the Hall angle, while the latter causes additional odd contributions to the longitudinal and transverse resistivities. The non-patterned films were used to distinguish the 'usual' Hall effect and these new odd resistivities arising owing to the nanostructuring. The results are analyzed on the basis of a model of competing isotropic and anisotropic pinning where the anisotropic pinning force is caused by a WPP.[2]

[1]O. V. Dobrovolskiy, M. Huth, and V. A. Shklovskij, Supercond. Sci. Technol. **23**, 125014 (2010).
[2]V. A. Shklovskij and O. V. Dobrovolskiy, Phys. Rev. B **74**, 104511 (2006).