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Magnetothermopower Features in Bismuth Nanowires at 80 K

E. Condrea¹, F. M. Muntyanu¹ and V. Chistol²

¹ Ghitu Institute of Electronic Engineering and Nanotechnologies, Chisinau, MD 2028 Republic of Moldova

² Technical University of Moldova, Chisinau, Republic of Moldova

Measurements of the magnetothermopower in single bismuth wires are performed at 80 K. Manifestation of the asymmetry in the magnetothermopower designated as Umkehr effect is observed with the opposite direction of the transverse magnetic field. Investigations of the magnetotransport properties under directed deformation reveal a rearrangement of the electronic structure with subsequent changes in the anisotropy of the Fermi surface at high strain rates. A moderate applied strain leads to a decrease in the magnitude of the Umkehr effect in the thermopower up to the vanishing of the effect along one of the principal crystallographic axes. The observed behavior of the magnetothermopower is explained in the framework of the phenomenological theory of transport phenomena in Bi.