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Title: Peculiarities of Seebeck coefficient of semi-metallic bismuth wires in high magnetic field

Abstract
The effect of high magnetic field on the transport properties of semi-metallic bismuth has been a subject of increasing interest in the last years because a lot of unexpected findings detected far above the quantum limit of the electrons[1-3].
The presented investigations of the magnetotransport measurements of Bi wires complement the series of recently published experimental results on bulk Bi in high magnetic field. The design of measurements in magnetic field was diversified by using uniaxial deformation directed along the wire axis. By combining high magnetic field and uniaxial strain, the electronic structure of the bismuth wires was modified; as a result, the quantum limit for light and heavy electrons could be changed in different ways.
Measurements of the thermoelectric response (Seebeck coefficient) in quantizing magnetic field have revealed some oscillating instabilities in the magnetothermopower dependence in a magnetic field of 15 - 20 T. Observed correlation between a simultaneous shift in a magnetic field of the position of the anomalies and of the quantum limit of electrons, when modifying of the electronic structure under strain, allows us to attribute of unidentified peaks to the complex structure of the lowest Landau level of electrons when one of the lowest spin-polarized Landau sublevel of heavy electrons approaches and crosses the Fermi energy level.
It should also be noted that a decrease in the resistance in higher fields with the apparent metallization of bismuth indicates possible changes in the mechanism of carrier scattering associated also with the Lifshitz Transition and with the substructure of the last Landau level of electrons.
Key words: bismuth wires, Seebeck effect, quantum limit, high magnetic field

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