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Title: Features of display the quantum dimensional effects in cylindrical semimetal bismuth antimony nanowires

Abstract
We have developed the method of preparation of the single- crystalline semimetallic bismuth antimony nano- and microwires in glass cover with diameter from 50 nm to 1000 nm, and orientation along the wire axis [1011], using the Ulitovsky- Taylor method [1].
From Shubnikov- de Haas effect (SdH) have been establish that the overlap L and T bands in $Bi_{0.98}Sb_{0.02}$ wires is in two time less, then in pure Bi.
The "quantum size effect", which manifests in self when the carrier wave length is comparable with diameter of sample, was observed in $Bi_{0.98}Sb_{0.02}$ wires at critical diameter of more then fife time greater then on wires pure Bi.
The variation of intrinsic properties estimated using SdH oscillations indicates then the subband energy shift due to quantum size effect.
At the semimetal- semiconductor transition we observed a new effects- negative magneto-resistance in transverse magnetic field (H^I) and the effect of changing the sign of the thermo-power from (-) to (+) with decreasing wires thickness d.
It is found that thermoelectric efficiency $ZT=a^2s/cT$ can be significant enhanced, if the T point holes are removed or suppressed. The effect of the T- point holes on the thermoelectric figure of merit has been discussed.

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References
[1] A. Nikolaeva, D. Gitsu, L. Konopko, M.J. Graf, and T. E. Huber. Phys. Rev. B, 2008, 77, 075332.