S1-2.7

Superconductivity, Weak Magnetism, and Quantum Transport of $Bi_{1-x}Sb_x$ ($0.07 \leq x \leq 0.2$) Crystallite Structures with Nano-width Interfaces an at Increased Degree of imperfection

F. M. Muntyanu[1], A. Gilewski[2], K. Nenkov[3], A. J. Zaleski[4], V. Chistol[5]
[1] *Institute of Electronic Engineering and Nanotechnologies, Chisinau, Republic of Moldova*
[2] *Magnet, Wroclaw, Poland*
[3] *Leibniz-Institut fur Festkorper und Werkstofforschung, Dresden, Germany*
[4] *Institute of Low Temperatures and Structural Research, Polish Academy of Sciences, Wroclaw, Poland*
[5] *Technical University of Moldova, Chisinau, Republic of Moldova*

The weak magnetism, superconductivity, and quantum oscillations phenomena in Bi1-xSbx ($0 \leq x \leq 0.2$) crystallite structures with nano-width multilayer interfaces have been studied. We found that the Dirac charge carriers in interface layers are much heavier than in the bulk crystallites, the high imperfection at interfaces has a significant influence on carrier scattering, which predetermines the manifestation of various anomalies of electronic magneto-transport. One or two superconducting transitions with $Tc \leq 21$ K were detected in all structures, some of them also showed weak ferromagnetism, while others with a rather high content of imperfections and two superconducting transitions exhibit dual superimposed ferromagnetic and superconducting hysteresis loops, indicating simultaneously coexistence of superconductivity and weak ferromagnetism.