
Thermospin effects in superconducting heterostructures

Alexander Bobkov^{*†1} and Irina Bobkova^{‡1}

¹Institute of Solid State Physics RAS (ISSP RAS) – Chernogolovka, Moscow District, 2 Academician Ossipyan str., 142432, Russia

Abstract

Recently the thermally created pure spin currents were predicted for Zeeman-split superconductor/normal metal heterostructures. Here it is shown that this "thermospin" current can lead to an accumulation of a pure spin imbalance in a system. The thermally induced spin imbalance can reach the value of Zeeman splitting of the superconducting DOS and strongly influences superconductivity in the heterostructure. Depending on the temperature difference between the superconductor and the normal reservoir it can enhance the critical temperature of the superconductor or additionally suppress the zero-temperature superconducting state. The last possibility gives rise to an unusual superconducting state, which starts to develop at finite temperature.

*Speaker

†Corresponding author: bobkov@issp.ac.ru

‡Corresponding author: bobkova@issp.ac.ru