

Superconducting Trigger Effect in Multilayer Hybrid Structures

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The proximity effect has been studied in an SF₁S₁F₂S superconducting spin valve comprising a massive superconducting electrode (S) and a multilayer structure constituted by thin ferromagnetic F_{1,2} and superconducting S₁ and S₂ layers. Within the framework of the Usadel equations, it has been demonstrated that rotation the mutual orientation of the magnetisation vectors serves to initiate superconductivity in the outer thin s-film [1]. The pair potential in the outer S-film was studied, and regions of parameters with a significant spin-valve effect were identified. The strongest effect was observed in the region of parameters where the 0- π transition inside the structure occurs. We discussed the possible applications of such trigger effect such as reconfigurable Josephson junctions and tunable inductance elements.

[1] A. Neilo, S. Bakurskiy, N. Klenov, I. Soloviev, M. Kupriyanov. Spin-Valve-Controlled Triggering of Superconductivity. *Nanomaterials*, 14(3), 245, (2024).

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