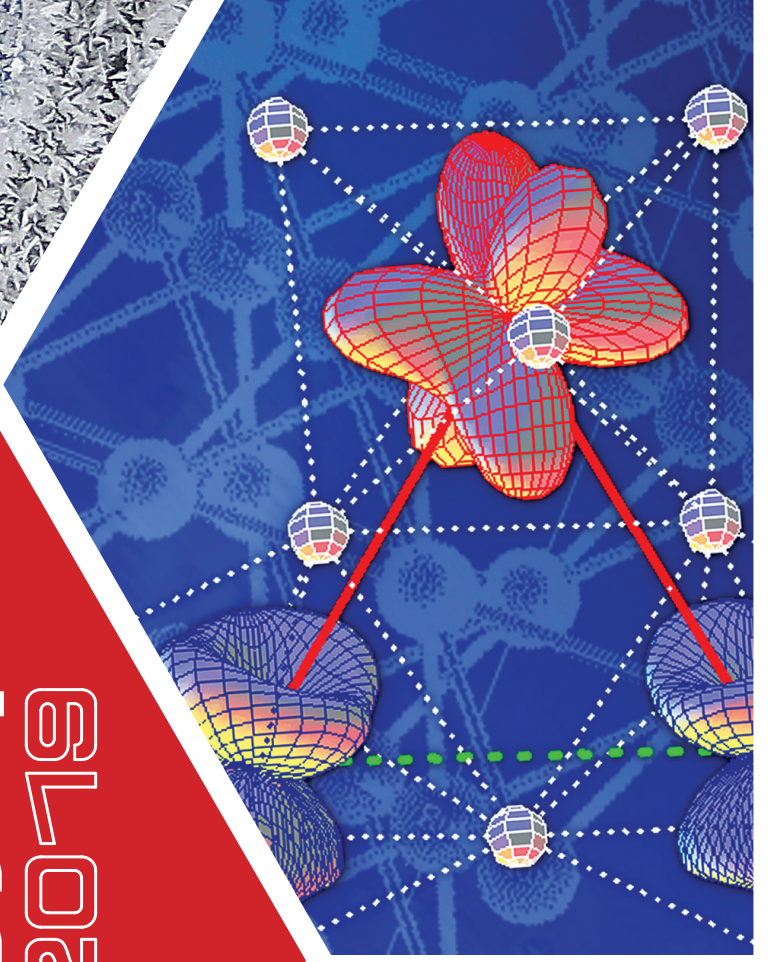

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ABSTRACTS
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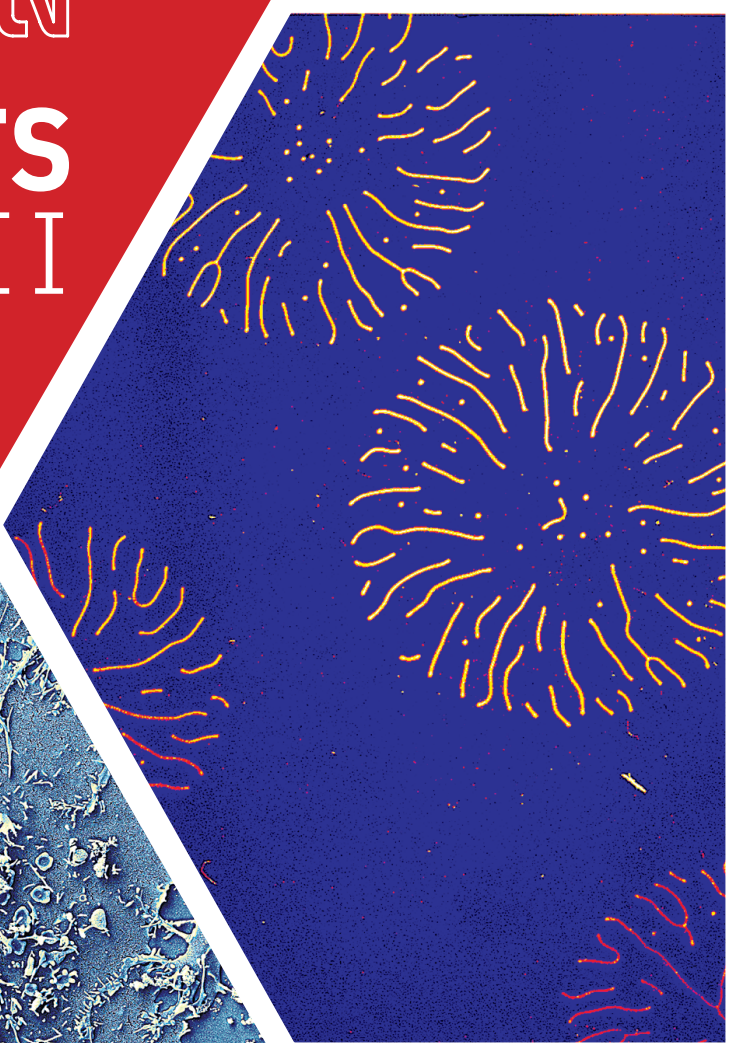

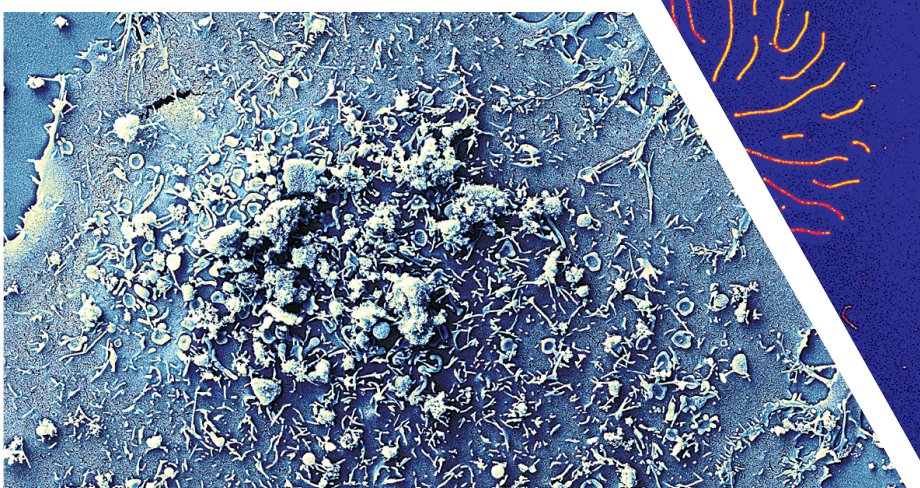

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BOOK OF ABSTRACTS. VOLUME II

I.P11

THE ROLE OF ADDITIONAL LAYER N OR S2 IN SUPERCONDUCTING TRIPLET SPIN-VALVE S1/F1/N(S2)/F2

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We investigate the critical temperature T_c of S1/F1/S2/F2 structure (Si is a singlet superconductor, Fi is a ferromagnetic metal), where the long-range triplet superconducting pairing is generated at non-collinear magnetizations of the F layers [1]. Previously it was shown that transition temperature T_C in S/F1/F2 [2] and S/F1/N/F2 [3] structures (N is a normal metal) can be a non-monotonic function of the angle α between magnetizations of the two F layers, against the monotonic $T_c(\alpha)$ behavior obtained for the F1/S/F2 trilayers [4].

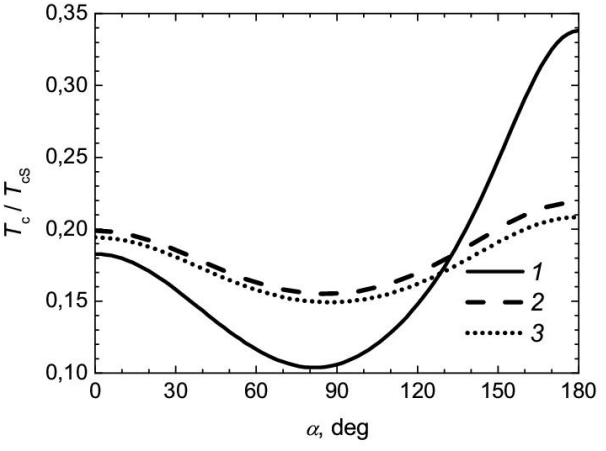

Figure 1. Critical temperature T_c as a function of the angle α for S1/F1/F2 (1), S1/F1/S2/F2 (2) and S1/F1/N/F2 (3) structures. Thickness of the other layers: $d_{S1}/\xi_{S1} = 2.76$, $d_{F1}/\xi_{F1} = 0.4$, $d_{F2}/\xi_{F2} = 0.6$, $d_{S2}/\xi_{S2} = d_N/\xi_N = 1$, the triplet spin-valve effect

Using the matrix method [5] for solving linearized Usadel equations, the critical temperatures of the multilayer structures of Superconductor/Ferromagnet/Ferromagnet (S/F/F) type is obtained. We study the influence of an additional superconductor layer S2 on different spin-valve effect modes of the three-layer spin valve — the standard switching effect, the triplet spin-valve effect (Fig. 1), the inverse switching effect — by variation of the interfaces transparencies, the exchange splitting energies, and the layers thicknesses. We study conditions under which superconductivity in an additional S2 layer

is suppressed and it plays a role of a normal layer, and conditions under which the superconductivity is conserved and affects on the superconducting T_c. Compared with the additional normal layer in an S1/F1/N/F2 structure (Fig. 2), the possibility of increasing the efficiency of the spin valve modes in the structure with the additional superconducting layer S2 instead of N is discussed.

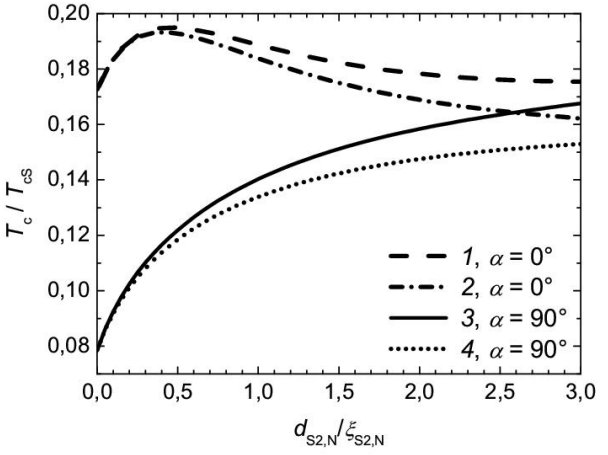

Figure 2. Dependence of the critical temperature T_c on the thickness dS2 in the S1/F1/S2/F2 structure (1,3) and on the thickness d_N in the S1/F1/N/F2 structure (2,4) for the triplet spin-valve effect. Thickness of the other layers: $d_{S1}/\xi_{S1} = 2.75$, $d_{F1}/\xi_{F1} = 0.4$, $d_{F2}/\xi_{F2} = 0.6$

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