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## Functional S/F nanostructures for superconducting electronics

Last decade there is an intensive study of superconductor-ferromagnet (S/F) nanostructures all over the world, motivated by rapid increasing their applications in superconducting electronics - spintronics. Theory of S/F hybrid nanostructures with two and more ferromagnetic layers predicts generation of a non-uniform superconductivity, a long-range odd-in-frequency triplet pairing at non-collinear alignment (NCA) of the F-layers magnetizations. Using the ideas of the superconducting triplet spin-valve we have fabricated functional nanostructures Co/CoOx/$Cu_{41}Ni_{59}$/Nb/ were triplet pairing with switching from normal to superconducting state takes place. The resistance of the samples as a function of an external magnetic field shows that the system is superconducting at the collinear alignment of the $Cu_{41}Ni_{59}$ and Co layers magnetic moments, but switches to the normal conducting state at the NCA configuration. Upon cycling the in-plane magnetic field and keeping temperature close to the superconducting transition, a memory effect has been detected, The fabricated S/F functional nanostructures can serve as the rapid operating switching element of superconducting electronics and memory element MRAM for novel computers generation. Research is supported by the HORIZON-2020 Twinning project "SPINTECH".

## Biography

Anatolie Sidorenko is specialized in the field of nanotechnologies and functional superconducting nanostructures. He is director of Institute of Electronic Engineering and Nanotechnologies Academy of Sciences of Moldova, author of over 400 scientific publications, 42 patents, the editor of 4 books published in "Springer", the editor of two thematic series "Functional Nanostructures" of Beilstein Journal of Nanotechnology, associated editor of Moldavian Journal of the Physical Sciences, member of Moldavian Academy of Sciences, member of Deutsche Physikalische Gesellschaft (DPG).

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