

Abstract Submitted
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Optimization of the design of superconducting hybrid wires ILYA GRIGORENKO, T-11, CNLS, CINT, Los Alamos National Laboratory, ALEXANDER BALATSKY, CINT, T-11, Los Alamos National Laboratory, LOS ALAMOS NATIONAL LABORATORY TEAM — We study the transition temperature and critical current in inhomogeneous superconducting nanowires using a numerical solution of the Bogolubov-de Gennes equations. Optimized geometry that allows one to maximize the critical current and transition temperature from these solutions is determined for axially symmetric design of nanowires. Specific geometry we focus on is composed of N-S-N-S-...-N-S material layered along the radial axis with a variable thickness of each individual layer. We found critical currents and transition temperatures of these composite objects to be sensitive to the wires' radius and to the individual thickness of layers. Critical currents and transition temperatures exceeding the corresponding bulk values for optimally designed configurations. Possible experimental realizations of the proposed structures are discussed.

Ilya Grigorenko
T-11, CNLS, CINT, Los Alamos National Laboratory

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