

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Electroresistance in superconductor-ferroelectric-superconductor junctions¹ VICTOR ROUCO, ANKE SANDER, LAURA BEGON-LOURS, SOPHIE COLLIN, STEPHAN FUSIL, JACOBO SANTAMARIA, VINCENT GARCIA, JAVIER E VILLEGAS, Unit Mixte de Physique, CNRS/Thales — In tunnel junctions with a ferroelectric barrier, a large resistance variation is observed upon ferroelectric switching, which can be induced by a short voltage pulse. Known as electro-resistance, this phenomenon is connected to the interfacial screening of the electric field generated by the ferroelectric in the junction's electrodes. Usually realized in junctions with normal-metal electrodes, here we experimentally investigate these effects in junctions that combine the ferroelectric BiFeO₃ and different types of superconducting electrodes. Using piezo-response force microscopy and electrical measurements, we find an unusual temperature dependence of the electroresistance, which reaches up to 10⁴%. The effects are discussed in terms of the interface charge-carrier depletion produced in the superconducting electrodes...

¹Work supported by the ERC grant N 64710 and French ANR grant ANR-15-CE24-0008-01

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Date submitted: 10 Nov 2016

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