

Abstract Submitted
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Field Effect Devices for Controlling the Conductivity of Ultrathin Films K.H. SARWA B. TAN, KEVIN A. PARENDO, ALLEN M. GOLDMAN, University of Minnesota, School of Physics and Astronomy — An electric-field effect device geometry that uses a mechanically-thinned strontium titanate dielectric substrate has been used to affect large charge transfer into ultrathin elemental films. A large, non-ambipolar effect of the electric field on the conductance in a 10 Å thick film of amorphous bismuth was found, as evidenced by shifting its superconducting transition temperature of 446 mK higher by as much as 56 mK with positive gate voltage, and shifting it lower by as much as 10 mK with negative gate voltage. This work is supported in part by the National Science Foundation under grant NSF/DMR-0138209.

K.H. Sarwa B. Tan
University of Minnesota, School of Physics and Astronomy

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