

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Negative magneto resistance and anisotropic transport in DC biased superconducting Ta films JUNGHYUN SHIN, SUNGYU PARK, EUNSEONG KIM, Center for Supersolid Quantum Matter Research and Department of Physics, KAIST, Daejeon, 305-701, Republic of Korea — We investigated the field-tuned superconductor-insulator transition in DC biased Ta thin films. Differential resistance in direction parallel (x axis) and perpendicular (y axis) to DC bias (x axis) was measured simultaneously as functions of DC bias and magnetic field. The DC biased magneto-resistance, dV/dI , showed anisotropy; differential magneto-resistance exhibited peaks at high DC bias in the parallel measurements while monotonic increase in dV/dI was obtained in the perpendicular measurements. Besides, the critical fields determined by magneto-resistance isotherms cross-over reveal substantially different values depending on the measurement directions. Furthermore, the E-field scaling exponents show different values of 1.33 in perpendicular direction and of 0.82 in parallel direction which cannot be simply understood by the temperature scaling with electron heating.

Junghyun Shin
KAIST

Date submitted: 06 Nov 2015

Electronic form version 1.4