Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Superconductivity Proximity Effect on Bulk and Surface States of Bi2Se3 Revealed by Conductance Peak and Plateau JAMES JUN HE, HUI LI, TONG ZHOU, HUANWEN WANG, HUACHEN ZHANG, HONG-CHAO LIU, YA YI, CHANGMING WU, KAM TUEN LAW, The Hong Kong University of Science and Technology, HONGTAO HE, South University of Science and Technology of China, JIANGNONG WANG, The Hong Kong University of Science and Technology — We measured the transport properties of Bi2Se3/NbSe2 junctions. The resistance drops twice around temperatures of 7K and 2K respectively, indicating proximity-induced superconductivity in Bi2Se3. Further conductance measurements show plateaus in the superconducting gap of NbSe2, and a peak near zero bias. By numerical simulation with a tight-binding model, we found that the plateau is due to a quite transparent interface between Bi2Se3 and NbSe2 and thus the surface states of the Bi2Se3 couple with the superconductor strongly. And the zero-bias peak is from the bulk states of the conduction band with the chemical potential close to the band bottom.

James Jun He
The Hong Kong University of Science and Technology

Date submitted: 11 Nov 2016 Electronic form version 1.4