

Abstract Submitted
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Zero bias conductance peak anomaly in topological insulator - superconductor junctions WENQING DAI, ANTHONY RICHARDELLA, Department of Physics, Pennsylvania State University, University Park, PA 16802, USA, JOSEPH BROM, JOAN REDWING, Materials Science and Engineering, Pennsylvania State University, University Park, PA 16802, USA, NITIN SAMARTH, C.X. LIU, QI LI, Department of Physics, Pennsylvania State University, University Park, PA 16802, USA — We have fabricated planar junctions between topological insulator Bi_2Se_3 and superconducting Pb with MgO barrier and studied the conductance spectra of the junctions under different temperatures and magnetic fields. Two types of Bi_2Se_3 thin films, grown by hybrid physical-chemical vapor deposition (HPCVD) and molecular beam epitaxy (MBE), were used. A few nanometers thick MgO layer made by RF sputtering was used as the barrier. We observed a zero bias conductance peak (ZBCP) anomaly in the spectra. The peak width ranges from 1 mV to 17 mV in different samples. The ZBCP height decreases with increasing temperature and disappears when the temperature is above the T_c of Pb. The ZBCP is also suppressed by both perpendicular and parallel magnetic fields and vanishes above the critical field of Pb. We will discuss the possible origins of the ZBCP in the junctions.

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