O 61: Invited Talk (Qikun Xue)

Time: Thursday 10:15–11:00 Location: TRE Phy

Invited Talk O 61.1 Thu 10:15 TRE Phy

Novel properties of topological insulator thin films of Bi2Te3 and Bi2Se3 prepared by molecular beam epitaxy — •Qikun Xue — Physics Department, Tsinghua University, Beijing100084, China

We have grown topological insulator thin films of Bi2Te3 and Bi2Se3 on Si(111) and 6H-SiC(0001) substrates by using state-of-art molecular beam epitaxy (MBE). We studied nontrivial surface states and their thickness-dependence of the films by in situ angle resolved photoemission spectroscopy (ARPES) and scanning tunneling microscopy/spectroscopy (STM/STS). By direct imaging standing waves associated with magnetic and nonmagnetic impurities and steps on Bi2Te3 and Bi2Se3 (111) surfaces, we show that the topological states have a surface nature and are protected by the time reversal symmetry. We demonstrated the high mobility of the Bi2Se3 films by direct observation of Landau quantization. We also studied the growth of superconducting and magnetic thin films on Bi2Te3 and Bi2Se3. Implication on probing Majorana fermions and topological magneto-electric effect will be discussed.