Joint CQSE and CASTS Seminar

Weekly Seminar
Nov. 27, 2015 (Friday)

TIME Nov. 27, 2015, 14:30 ~ 15:30
TITLE Spin transport in two-dimensional topological insulators
SPEAKER Dr. Yu-Hsin Su
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Abstract

Recently, a new quantum materials simultaneously having topologically protected metallic boundaries and an insulating bulk is called topological insulator (TI). An important band structure of TI shows that there exists spin helical massless Dirac states. Such edge spin channels play an important role in the field of spintronics. To investigate the behavior of these edge spin channels and their response to the embedded impurities including non-magnetic and magnetic effect is helpful to understand the underlying physical mechanism. Moreover, due to the improvement of technology in the fabrication of low-dimensional materials, several kinds of two-dimensional topological insulators have been found and investigated. Among of these materials, the well-known HgTe/CdTe quantum wells and the two-dimensional honeycomb lattices with spin-orbit interaction are the main investigated systems. As the result, the discovery of the spin transport behavior in the above materials will reveal an interesting and attractive phenomena, including spin filter and spin-valley polarized metal in our recent research.