

# Coexistence of Topological Order and Quantum Well States on Topological Insulators

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(Dated: Dec 15, 2010)

High-resolution Laser-based angle-resolved photoemission spectroscopy (Laser-ARPES) measurements have been carried out on topological insulators Bi<sub>2</sub>Se<sub>3</sub> and Bi<sub>2</sub>Te<sub>3</sub>. Intrinsic hexagonal Fermi surface was observed and topological order protected by time-reversal symmetry (TRS) persisted even the samples were cleaved in air and stay at room temperature. Moreover, quantum well states were observed in air-cleaved Bi<sub>2</sub>Te<sub>3</sub>. This conformation of topological order lays the foundation for future applications of topological insulators, and the coexistence of quantum well states and topological order inspires further research both in physical and industrial field.