Seminar

Quantum transport in epitaxial Bi(111) thin films

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Time: 4:00 pm, March.14, 2014(Friday)
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Venue: Conference Room A (607), No. 5 Science Building
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Abstract

Quantum transport measurements including the Altshuler-Aronov-Spivak (AAS) and Aharonov-Bohm (AB) effects, universal conductance fluctuations (UCF), and weak anti-localization (WAL) have been carried out on epitaxial Bi thin films ($10-70$ bilayers) on Si(111). The results show that while the film interior is insulating the top, bottom and side surfaces of the Bi thin films are all robustly metallic. We propose that these properties are consistent with the existence of a topologically non-trivial thin film state where the boundary states on all six surfaces are topologically protected. This is in sharp contrast with the 2D topological insulating state in a single bilayer Bi where only the four side surface show topologically protected gapless states. It also differs from the bulk Bi where the in gap surface surface states are believed to be not topologically protected.

About the Speaker

Xiaofeng Jin
Degrees & Positions
July, 1983 Bachelor of Science in Physics, Fudan University
Febrary 1989 PhD in Physics, Fudan University
March, 1989 Lecturer, Fudan University
March, 1993 Associate Professor, Fudan University
March, 1995 Professor, Fudan University

Research Interest
Ultra-thin Film Magnetism
Surface and Interface of Semi-conductors and Metal
Applications of Synchrotron Radiation