



530th ASRC Seminar

Date: 13:30 ~ 15:00, 9 September

Location: Meeting room 302, ASRC Building

Speaker: Dr. Xuhui Wang
(King Abdullah University of Science and Technology)

Title: First Observation of Enhanced
Shubnikov-de Haas Oscillations
and Nonzero Berry Phase
in Hybridized InAs Epilayer

Enhanced Shubnikov-de Haas oscillations and non-zero Berry phase are observed in a n-doped InAs hybridized with a metal.

Such quantum oscillations are attributed to a two-dimensional surface charge accumulation formed at the free surface of InAs.

The metal shunt reduces the bulk carrier density in InAs and enables the surface state to dominate magnetotransport.

Angular dependence of the Shubnikov-de Haas oscillation provides an unambiguous evidence to the dimensionality of the surface state. Non-zero Berry phase reveals a linear energy dispersion of the underlying system.

Our findings open a venue to tune an ordinary semiconductor into a pseudo topological insulator.



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