



565th ASRC Seminar

Date: 13:30 ~15:00, 16 September

Location: Meeting room 103, ASRC Building

Speaker: Dr. Xuhui Wang

(King Abdullah University of Science and Technology)

Title: Nonzero Berry Phase on Indium

Arsenide Surface: Sign of a Possible Pseudo
Topological Insulator?

Berry phase, a geometric quantum phase acquired by a system evolving adiabatically in a closed path in parameter space, stems from the wave nature of particles. But it was rarely observed in ordinary semiconductors like indium arsenide. We report a direct observation of nonzero Berry phase on indium arsenide surface. To achieve it, we design a metal-InAs hybrid to distribute current inhomogeneously and thus enhance the signal ratio of Shubnikov-de Haas oscillation to the background. A two-dimensional surface state is revealed by analyzing the angular dependence of the SdH oscillation. We uncovered a large Rashba coupling constant of order 1.0 eV \AA in the surface state, explaining the origin of the nontrivial Berry phase.



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