



第 47 回トポロジカル物質科学セミナー Topological Materials Science Seminar (47)

Novel two-dimensional (2D) electron systems in topological and 2D materials: new playground for physics and devices

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Place: Seminar Room, 2nd floor, AIMR Main Bldg.

Date: July 18 (Tuesday), 2017

Time: 16:00-17:00

Abstract:

Two-dimensional (2D) electron systems (2DES) have enabled some of the most important developments in solid state physics (such as quantum Hall effects) and technologies (such as MOSFETs). In the last decade, new kinds of 2DESs with unusual properties have been realized in two-dimensional (2D) materials (such as graphene) as well as topological materials (such as topological insulators). In this talk, I will present some of our experimental explorations of these materials, which may enable us to engineer novel bandstructures, realize new regime of “topological” charge and spin transport, create condensed matter analogs of Dirac/Weyl/Majorana fermions and other exotic particles, and develop potential device applications in areas such as spintronics or even quantum computing. I will also discuss intriguing opportunities from applying techniques of spintronics on these materials and heterostructures that can incorporate novel (semi)metals, semiconductors, magnetic materials or even superconductors.

References

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- [8] J. Tian *et al.* Science Advances 3, e1602531 (2017)

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