



北京大学量子材料科学中心

International Center for Quantum Materials, PKU

Weekly Seminar

Gate-Induced 2D Superconductivity

Prof. Y. Iwasa

*Department of Applied Physics and QPEC, University of Tokyo
RIKEN Center for Emergent Matter Science*



Time: 4:00pm, May 3, 2017 (Wednesday)

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4:00

Venue: Room w563, Physics building, Peking University

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In the past decade, technological advances of materials fabrication have led to discoveries of a variety of highly crystalline two-dimensional (2D) superconductors at heterogeneous interfaces and in ultrathin films [1]. These systems are offering opportunities of searching for superconductivity at higher temperatures as well as investigating the intrinsic nature of 2D superconductors, which are distinct from the conventional 2D superconductors with the amorphous or granular structure, extensively investigated in the last century. Thus the new 2D superconductors could be a new platform of physics of 2D superconductivity.

In this presentation, we report recent progress on gate-induced superconductivity of exfoliated layered materials, such as ZrNCL and MoS₂, which has become an archetypal 2D superconductor with high crystallinity [2]. Discussion is given on the quantum phase transitions at low temperatures [3] and the peculiar transport reflecting the broken inversion symmetry of the crystals [4].

References

1. Y. Saito et al., *Nat. Rev. Mater.* **2**, 16094 (2016).
2. J. T. Ye et al., *Science* **338**, 1193 (2012).
3. Y. Saito et al., *Nat. Phys.* **12**, 144 (2016).
4. Y. Saito et al., *Science* **350**, 409 (2015).

In 1981, Yoshihiro Iwasa received his Bachelor degree in Department of Applied Physics, University of Tokyo. In 1986, he received his Ph.D. degree there. He was an associate professor in Japan Advanced Institute of Science and Technology from 1994 to 2001. Afterwards, he had worked as a professor in Institute for Materials Research, Tohoku University for eight years. Since 2010, he has been a professor in Quantum Phase Electronics Center, University of Tokyo, and a team leader in RIKEN.