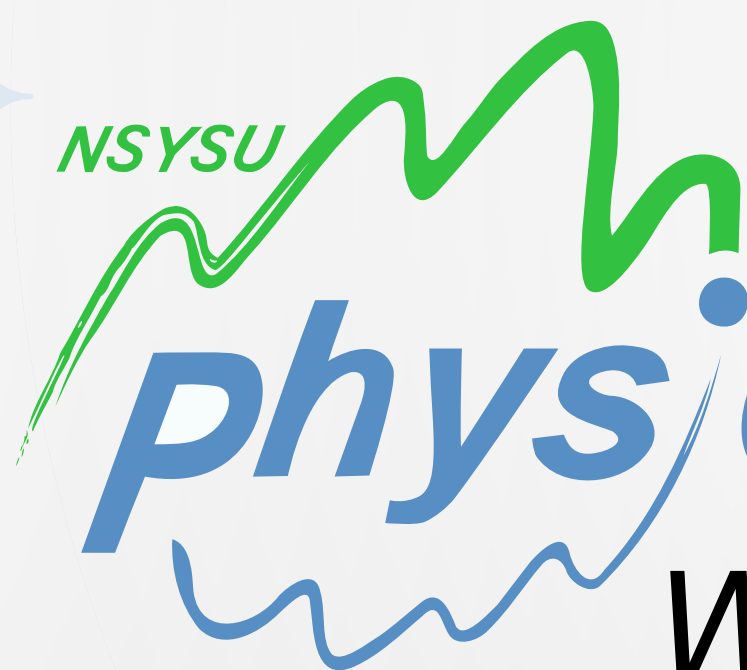




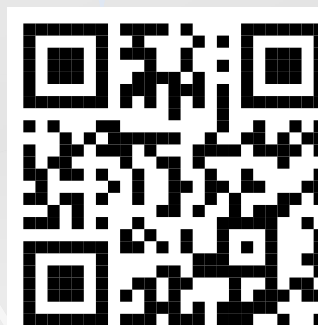
physics 書報討論 Weekly Seminar

Symmetry and Asymmetry Considerations in the Transport of Electrons

吳孟真 Phillip Wu

Institute of Physics, Academia Sinica
URL: <https://phillip-wu.com/>

URL QR



14:10-15:00 Thu-22/Oct/2026, at 地址: PH2006

Abstract

Symmetry is an important ingredient in the natural world, for single objects and for pairs. Understanding the interplay of mirror symmetry to asymmetry, in physics, reveals the interaction mechanisms of particles like the electron. In this talk, I'll discuss work that probed the electronic transport of asymmetric quantum point contacts in the spin-incoherent regime, which provides evidence for achieving a 1D Wigner state. The asymmetric geometry and voltage gating scheme allows for novel tuning to search for strongly correlated electronic behavior in quantum wires. Then, we'll look at another physics situation where the interaction of electrons is important, superconductivity [1]. I'll show results from our thermal transport investigations of FeSeTe, which provides evidence for the multiband nature of the material and rules out a fully gapped s-wave state. These findings may be traced ultimately to the crystal lattice symmetry of the material, which is tetragonal. These results show FeSeTe to be an unconventional superconductor. Finally, I'll talk about recent investigations into the thermal transport properties of LSMO-YBCO superconducting thin films.

[1] M. J. Wang, P. M. Wu, M. K. Wu, Handbook of Superconductivity Edited by D. A. Cardwell, D. C. Larbalestier and A. Braginski. 2nd Edition CRC Press (2021).

Acknowledgements

▶ We acknowledge financial support from the Institute of Physics at Academia Sinica (IoP, AS), and the National Science and Technology Council (NSTC), grant number 113-2811-M-001-006.