Condensed Matter Physics Seminar

Bose-Einstein Condensation in Magnetic Insulators: Transport Signatures and Nonequilibrium Quantum Criticality

Prof. So Takei (竹井　聡先生)

Queens College of City University of New York, USA

July 22th Tue., 13:10 - 14:10

Seminar room 325, Sengen, NIMS and Online

Magnetic insulators provide an ideal platform for studying Bose-Einstein condensation (BEC), where magnetic fields control quasiparticle density and enable studies of quantum criticality. In this talk, I explore the fascinating interplay between driving forces, energy dissipation, and quantum coherence in these systems. First, I will consider a driven dissipative magnetic insulator by coupling the insulator to a metal with strong spin orbit coupling and discuss the effects of nonequilibrium damping compensation on magnon transport. Time permitting, I'll also show how critical spin fluctuations generate strong quantum enhancement in the magneto-conductivity in adjacent disordered metals. These results highlight how spintronic devices can probe BEC-related phenomena.

Zoom: https://us02web.zoom.us/j/82583433653?pwd=yvJUQmPeGMlaD8WXWtJaurIXH5FrrB.1

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Contact: Hiroyuki Yamase (yamase.hiroyuki@nims.go.jp)
Jun Ohara (ohara@phys.sci.hokudai.ac.jp)
Satoshi Tsuchiya (satoshi.tsuchiya@eng.hokudai.ac.jp)

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