第８回トポロジカル物質科学セミナー
Topological Material Science Seminar (8)

Topological Phase Transitions in Line-nodal Superconductors

Prof. Eun-Gook Moon

Department of Physics, Korea Advanced Institute of Science and Technology

Place: **Room 401**, Department of Physics, Graduate School of Science Building No. 5, Kyoto University
Date: **April 15 (Friday), 2016**
Time: **11:00am-**

Abstract: Fathoming interplay between symmetry and topology of many-electron wave-functions has deepened understanding of quantum many body systems, especially after the discovery of topological insulators. Topology of electron wave-functions enforces and protects emergent gapless excitations, and symmetry is intrinsically tied to the topological protection in a certain class. Namely, unless the symmetry is broken, the topological nature is intact. We show novel interplay phenomena between symmetry and topology in topological phase transitions associated with line-nodal superconductors. The interplay may induce an exotic universality class in sharp contrast to that of the phenomenological Landau-Ginzburg theory. Hyper-scaling violation and emergent relativistic scaling are main characteristics, and the interplay even induces unusually large quantum critical region. We propose characteristic experimental signatures around the phase transitions in three spatial dimensions, for example, a linear phase boundary in a temperature-tuning parameter phase-diagram.

Host: Yuji Matsuda [Kyoto Univ. / Core Research Group A01]
(075-753-3790, matsuda@scphys.kyoto-u.ac.jp)