Many-Body Invariants for Multipolar Higher-Order Topological Insulators

By
Dr Gil Young Cho
Postech Korea

Date: 29 November 2018, Thursday
Time: 11am – 12pm
Venue: Hilbert Space (PAP-02-02)
Host: Asst Prof Justin Song

Abstract

In this talk, we will propose many-body invariants for multipolar higher-order topological insulators by generalizing Resta's pioneering work on polarizations. The many-body invariants are designed to measure the distribution of electron charge in unit cells and thus can detect quantized multipole moments purely from the bulk ground state wave functions. Using the invariants, we prove the bulk-boundary correspondence of the higher-order topological insulators. We will also discuss application of our invariants to spin systems as well as various other aspects of these many-body invariants.

Short Biography

Gil Young Cho joined the physics department faculty of POSTECH in South Korea as an assistant professor in May 2018. He received his B.A. in physics from KAIST (South Korea) in 2009 and his Ph.D. in physics at UC Berkeley. He worked at UIUC (2013 - 2015) and postdoctoral research position at KAIST and KIAS for his alternative military duty (2015 - 2018).