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IAPME Seminar

Topological singularities under artificial gauge fields in metamaterials

12 December 2024

Prof. Shuang ZHANG
University of Hong Kong
Venue: N23-4018
Time: 10:30 - 11:30
Hosted by: Prof. Hongchao LIU

Abstract

Band singularities in periodic systems play a crucial role in determining their topological properties. Notable examples include Weyl points in three-dimensional systems and Yang monopoles in five-dimensional systems. When a magnetic field is applied to these systems, intriguing topological effects, such as chiral zero modes, emerge. These chiral zero modes are unidirectional propagating modes within the bulk. In this talk, I will demonstrate various topological singularities, including Weyl points, Dirac points, Yang monopoles, and Berry dipoles, using metamaterials. I will particularly focus on their interactions with artificially engineered gauge fields, facilitated by the flexibility in designing metamaterial properties.

Biography

Prof. Shuang ZHANG is a Chair Professor and Interim Head of the Department of Physics at the University of Hong Kong. He obtained his PhD in Electrical Engineering from the University of New Mexico. Thereafter, he worked as postdoc at UIUC and UC Berkeley. He joined the University of Birmingham, UK as a Reader in 2010 and was promoted to Professor in 2013. Prof. Zhang joined the University of Hong Kong as a Chair Professor in 2020. He was the recipient of IUPAP Young Scientist Award in Optics (2010), ERC consolidator grant (2015-2020), Royal Society Wolfson Research Award (2016-2021), and New Cornerstone Investigator program (2023-2028). He was elected OSA fellow in 2016, APS fellow in 2022, and has been on the list of highly cited researchers (by Clarviate) since 2018.

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