

Century of Superconductors

超導體之世紀

Professor Donglai FENG 封東來教授

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Lecture Date /Time/Venue

December 11, 2024 (Wednesday)
3:30-4:30 pm (Cocktail Reception follows)
Rayson Huang Theatre (黃麗松講堂), The University of Hong Kong

Abstract

100+ years after its discovery in 1911, superconductivity remains one of the most fascinating and challenging topics in physics. In this talk, the history of superconductor, its physics and applications as well as the recent progress made by Chinese will be reviewed. Several inspiring anecdotes of scientists working in this field will also be highlighted.

About the speaker

Prof. Feng has pioneered in the study of complex quantum materials and their microstructures in China. Recognizing that electronic structure is vital for unraveling the mechanisms of materials at the quantum mechanics level, he has been at the forefront of this field since its inception. Notably, he was among the first to use the term “Quantum Materials” as early as 2002, shifting the focus from macroscopic properties to more fundamental aspects. With his leadership amongst others, this area of study has flourished into one of the most dynamic and internationally recognized research frontiers in China.

Prof. Feng’s contributions to the understanding of iron-based superconductors have been particularly transformative. Challenging the weak coupling theories prevailing at the time, his work established a solid foundation for the now mainstream strong coupling theory. His groundbreaking investigations to the decades-old puzzle of superconductivity in bismuthate and the mechanism underlying interfacial superconductivity in FeSe/Oxide are hallmarks of his career. Additionally, his group’s discovery of the first quantized conductance evidence of Majorana zero mode in the vortex core of a topological superconductor marks a significant step towards practical quantum computing.

Prof. Feng is currently leading the construction of Hefei Advanced Light Facility (HALF), a 4th generation synchrotron light source. With a brightness 2~3 orders of magnitude greater than the existing 3rd generation synchrotrons and leading the world in the soft x-ray regime, HALF is expected to revolutionize scientific research in various fields.

Prof. Feng’s outstanding achievements have earned him numerous prestigious awards, including the UNESCO Javed Husain Prize for Young Scientists, the Overseas Chinese Physicist Association (OCPA) Achievement in Asia Award, and the Ho Leung Ho Lee Foundation Science and Technology prize. He was elected as an academician of the Chinese Academy of Sciences and a Fellow of American Physics Society.

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