THE UNIVERSITY OF HONG KONG

Department of Physics
THE UNIVERSITY OF HONG KONG

HK Institute of Quantum Science & Technology
香港量子研究院

High-T_c superconductivity based on low-dimensional materials platforms

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Abstract:

Discoveries of new superconductors with high transition temperatures have been a perpetual drive of condensed matter physics. In this talk, I attempt to give an overview on recent advances in this vibrant area, with some of own stories squeezed in. We start from predictive designs of freestanding or supported superconducting monolayers that may exhibit high-T_c superconductivity, as well as low-dimensional systems that display exotic Ising, chiral, or *p*-wave superconductivity. On the mechanistic side, I will demonstrate how plasmonic excitations or pronounced correlation effects can enhance the superconductivity of iron-based superconductors, and predict designer substrates that may optimize the strain in $La_3Ni_2O_7$ thin films for maximally enhanced T_c.

Biography:

Prof. Zhang received his B.S. degree from Wuhan University in 1982 and PhD degree from Rutgers University in 1989, both in physics. He was a Distinguished Research Scientist at Oak Ridge National Laboratory and Chair of Excellence Professor of Physics at the University of Tennessee, USA before joining USTC in January 2011. He is now Distinguished Chair Professor and Yan Jici Professor of Physics at USTC and serves as co-founding Director of ICQD. His research interests lie in the fields of theoretical understanding of the formation, stability, properties, and potential applications of low-dimensional materials. He has authored/coauthored around 350 peer-reviewed papers, and has disseminated the research findings in over 320 invited/keynote/plenary talks and lectures. He is a fellow of the American Physical Society, and has served or currently serves on the editorial boards of several professional journals.

ANYONE INTERESTED IS WELCOME TO ATTEND!

Thursday, November 6, 2025, 4:30pm

Room 522, 5/F, Chong Yuet Ming Physics Building, The University of Hong Kong

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Phone: 28592360 Fax: 25599152. Anyone interested is welcome to attend.