ACCMS-Global Research Center
SRMIST, Chennai India

Webinar #17

Prof. Enge Wang

International Center for Quantum Materials, Peking University & Institute of Physics, Chinese Academy of Sciences

Title: Full Quantum Effects in Condensed Matter Physics

30 May 2023, 12.30 – 2.00 pm Indian Standard Time

Registration link: https://tinyurl.com/4psyndty

**Zoom details will be shared with the registered participants*

Short biography

Prof. Enge Wang is working in Peking University. He is also the Chairman of Advisor Board of Institute of Physics and the Honorary Director of Kavli Institute of Theoretical Sciences, Chinese Academy of Sciences. He was the Director of the Institute of Physics, the President of Peking University, and the Vice President of Chinese Academy of Sciences from 1999 to 2017. He was selected as the Vice President of the International Union of Pure and Applied Physics (IUPAP) in 2017, the International Councilor of American Physical Society (APS) in 2018, and the Chairman of Global Cooperation Alliance of Science Centers (GCASC) in 2019. He researches condensed matter physics; the approach is a combination of theoretical and experimental study of full quantum effects in light-element materials.

Abstract

In recent years, more and more new physics in condensed matter has been reported beyond the Born–Oppenheimer approximation. This is partly because that, as physical science develops, theoretical simulations will become increasingly reflective of realistic materials, and experimental observations will become more precise and refined. Therefore, going beyond the adiabatic ball-and-stick model of electronic states is inevitable. In practical materials, nuclear quantum effect and non-adiabatic effect emphasized in this talk cannot be overlooked when performing accurate simulations or measurements of their physical and chemical properties. As an example, by using a combination of experimental (cryogenic STM/AFM) and theoretical (first-principle path integral molecular dynamics) methods, we systematically studied the nuclear quantum effect on a single hydrogen-bonding strength and a concerted proton tunneling of water on salt. Our results show that the full quantum effects play a key role in understanding of water nature on surface.

Panelist

Prof. Yoshiyuki Kawazoe
Professor Emeritus
New Industry Creation Hatchery Center (NICHe)
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