



School of Physics, Southeast University

Location

Southeast University
Jiulonghu Campus
Nanjing, China

Further Information: <https://physics.seu.edu.cn/>

Overview

Originated from the “Gezhi” department of Sanjiang Normal School established in 1904, the physics discipline of Southeast University (SEU) has evolved for more than one century. During the past century, numerous distinguished scholars have either studied or worked in our school of physics and its predecessors, including Prof. Chien-Shiung Wu, Prof. You-Hsun Wu, Prof. Chung-Yao Chao, and Prof. Jici Yan. Now, the School of Physics in SEU is focusing on cutting-edge scientific researches and first-class education.

Key Contact

Professor Zhenhua Ni
Dean, School of Physics
Telephone: +86-25-52090600-8201
E-mail: zhni@seu.edu.cn

Research Foci

●**High Energy Physics:** Particle and nuclear physics intends

to understand the most fundamental components of matter and interactions among them. It studies the origin of mass and the nature of time/space, through some large scientific experimental devices, such as the LHC (Large Hadron Collider). Frontiers research topics include but not limited to: probing the microscopic structure of matter, revealing the nature of matter/energy/time/space, understanding the universe and its evolution law, and exploring new forms of matter, etc. Nowadays breakthroughs are sought in particle and nuclear physics by probing the energy, intensity and cosmology frontiers.

●**Condensed Matter Physics:** Studying both the fundamental physical rules of condensed matter and the applications of materials’ functionalities. Theoretical physics, computational simulations & materials design, materials synthesis & characterizations, prototype micro-nano device fabrications, are all covered. Frontiers research topics include but not limited to low-dimensional semiconductors, superconductors, magnetic materials & ferroelectrics, topological materials, as well as energy materials.

●**Optics and Optoelectronics:** Encompassing a broad range of research areas: design and fabrication of micro-nano heterostructures, characterization and modulation of their optical properties, developing novel photonic and optoelectronic devices for on-chip integration and optical telecommunication, quantum optics and quantum information science aiming at understanding quantum nature of light and emergent quantum phenomena and quantum control. In addition, we have been collaborating closely with



(contents continued from inside back cover)

research teams focusing on nanophotonic and optoelectronic information technologies to synthesize superior low-dimensional, topological and superconducting materials and further develop various quantum devices, like single-photon sources and detections, towards cutting-edge quantum information processing and computing technologies.

Recent Research Highlights

●**Correlated Topological Matter:** The electronic structures of correlated topological matter, e.g., the topological superconductivity and the topological Kondo insulator, have been revealed. For example, the electronic band structure of UTe_2 has been clearly resolved [*Phys. Rev. Lett.* 124, 076401 (2020)], suggesting its Weyl superconductivity. The topological surface of Kondo insulator SmB_6 is found to be robust against the disorder of magnetic elements, which is strongly correlated with the formation of the direct Kondo gap [*Phys. Rev. Lett.* 126, 136401 (2021)].

●**Multiferroicity & Ferroelectricity:** New concepts of polarity in solids have been proposed, e.g., the noncollinear ferrielectricity [*Phys. Rev. Lett.* 123, 067601 (2019)]. In addition, novel mechanisms for converse magnetoelectric effects have been proposed, based on the ferroelectric-driving dynamics of magnetic domain walls [*Phys. Rev. Lett.* 126, 117603 (2021)].

●**Photonics and Optoelectronics:** The ultra-fast plasmon-induced hot-electron transfer has been demonstrated to effectively prevent carrier cooling and trapping processes, which is a new strategy for the implementation of efficient and high-speed photoelectric conversion [*Adv. Mater.* 31, 1903829 (2019)]. The doping effects of RbI in MAPbI_3 and CsFAMAPbI_3 has been clarified by means of optical spectroscopic characterizations. A quantitative link between the doping concentration, defects, trap density, carrier mobility and solar cell properties can be mapped, which provides a straightforward guidance to the design and optimization of organic–inorganic halide perovskite-based solar cells [*Adv. Mater.* (in press) (2021)].