



## Introduction

The School Department of Physics and Astronomy has two first-level disciplines of Physics and Astronomy, with the former includes a number of secondary disciplines: Theoretical and Interdisciplinary Physics, Nuclear and Particle Physics, Laser Plasma Physics, Condensed Matter Physics, Optics Science and Engineering, and two post-doctoral research centers of Physics and Optics Science. Condensed Matter Physics and Optics became state key disciplines in 2002 and 2007 respectively. In the 2012 first-level discipline ranking of Ministry of Education, Physics was No. 6, and it was selected in the First Class Disciplines Construction Plans (Class A) of Colleges and Universities in Shanghai in September 2012.

# School of Physics and Astronomy

Subject Fields	Research Contents
Theoretical and Interdisciplinary Physics	Study on the frontiers of Electron Transport and Superconductivity in the Condensed Matter, Soft Condensed Matter Physics, Complex Physics Systems, Theoretical Biophysics, Statistical Physics, Low-Dimensional Condensed Matter Theory, Quantum Field Theory and Phase Transition Theory.
Nuclear and Particle Physics	Study on the frontiers of Particle and Nuclear Physics Theory and Experiment, including Neutrino, Nuclear Structure, Quantum Chromodynamics and Dark Matter.
Laser Plasma Physics	Study on the frontiers of Physics and key technology of High Energy Density Matter, including Novel Particle Acceleration and Radiation Sources, Novel Laser Fusion, Laboratory Simulation of Astrophysical Phenomena, and Ultrafast Dynamics of Physical Structure.
Condensed Matter Physics	Study on the frontiers of Topological Insulators and Topological Superconductors, High-temperature Superconductivity, Semiconductor Physics, Surface and Interface Physics, Soft Matter Physics, Condensed Matter Spectroscopy, Computational Condensed Matter Physics, Optoelectronic Device Physics, and Solar and Energy Physics.
Optics Science and Engineering	Study on the frontiers of Optical Physics, including Nonlinear Optics, Nano-photonics and Quantum Optics, and on the application of Optical Fiber, Optical Waveguide, Optical Instruments and Solar Cell.
Astronomy and Astrophysics	The research interests mainly focus on the formation and evolution of stars, galaxies, galaxy clusters and large scale structure of the universe. Study on the experiment, observation and simulation of astronomy and astrophysics at multi-wavebands from radio, infrared, optical, to X-ray and Gamma-ray, including the physical properties and spatial distribution of baryons and dark matter particles, black hole and its impact on the galaxy activity, supernova and Gamma-ray burst, the first stars and the re-ionization of the universe, etc.



# Achievements

In 2016, the School of Physics and Astronomy made remarkable achievements in base construction, major projects application, research funds, and scientific research. In the evaluation of the key laboratory of Ministry of Education, artificial structure and quantum control laboratory was excellent. Three "National key research and development program", one "National key research and development youth program" of Ministry of Science and Technology, one NSFC innovation research group program, one NSFC distinguished young scholar program, and one NSFC key program. The research funds received by the school was 215 million in 2016, which reached a record number. Two scientific achievements were awarded first prize of natural science of Ministry of education. Two scientific research were selected in Science and Technology Review's list of 2016 China top ten scientific progresses. Prof. Dao Xiang was obtained Young Scientist Award of Ministry of education and Prof. Zhengming Sheng received Asian Accomplishment Award of global Chinese physics and astronomy society. Moreover, 54 high-quality papers were published in top journals like Nature series, Physical Review Letters, PNAS, and Astrophysical Journal, among which 26 papers were the school as the first author or corresponding author affiliation.

## Platforms for Scientific Innovation

- > Key Laboratory for Laser Plasmas, Ministry of Education
- > Key Laboratory of Artificial Structures and Quantum Control, Ministry of Education
- > National Key Laboratory of Advanced Optical Communication Systems and Networks
- > Shanghai Key Laboratory for Particle Physics and Cosmology
- > Collaborative Innovation Center of IFSA
- > Artificial Microstructure Science and Technology Collaborative Innovation Center
- > Shanghai Center for Complex Physics Research
- > Tsung-Dao Lee Institute



上海交通大学  
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## Renowned Professors

Name	Research Fields
LI Jiaming	Atomic and Molecular Physics
LEI Xiaolin	Semiconductor Electron Transport and Optical Properties
ZHANG Jie	Laser Plasmas
PAN Jianwei	Quantum Physics
WU Xiangping	Cosmology
JING Yipeng	Cosmology
FAN Dianyuan	Dark Matter Detection Experiments
JI Xiangdong	Dark Matter Detection Experiments
CAI Shenou	Theoretical Physics
HE Xiaogang	Particle Physics Theory
WANG Xijie	Laser Accelerator
LIU Ying	Superconductivity Nano Physics
JIA Jinfeng	Surface Physics
ZHONG Dongping	Femtobiology & Biomolecular Interactions
KU Wei	Strongly Correlated Materials
CAO Jianming	Structural Dynamics
ZHENG Hang	Condensed Matter Physics
SHEN Wenzhong	Solar Photovoltaic Science and Technology
YAO Xin	Crystal Growth and Mechanism
JIA Jinfeng	Surface Physics
SHENG Zhengming	Laser Plasmas
WANG Xiaoqun	Correlated Electron Systems and Quantum Control
WANG Bin	Theory of Gravity
QIAN Liejia	Ultrafast Nonlinear Optics
YANG Xiaohu	Astrophysics
ZHANG Pengjie	Cosmology
CHEN Xianfeng	Nonlinear Optics
XU Haiguang	Astronomy and Astrophysics
ZHANG Weiping	Atomic, Molecular and Optical Physics
ZHAO Yumin	Nuclear Structure Theory
LIU Jianglai	Particle Physics
CHEN Liewen	Theoretical Nuclear Physics
QIAN Dong	Surface Physics

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