LIU Xin

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Research Interests

I have a broad interest in *Computational Optics*, with a particular focus on *Point Spread Function Engineering*, *Computational Imaging*, *Adaptive Optics*, *Super-resolution Microscopy*, and *Light Shaping*.

Education

2018/09 – 2023/12 **Zhejiang University**, Hangzhou, China
Ph.D. in Optical Engineering
Advisor: Prof. Xiang Hao & Prof. Xu Liu @ZJU

2022/12 – 2023/04 **The University of Hong Kong**, Hong Kong SAR, China
Research Postgraduate Visiting Student in Electrical and Electronic Engineering
Advisor: Dr. E.Y. Peng & Prof. E.Y. Lam @HKU

2014/09 – 2018/06 **South China University of Technology**, Guangzhou, China
B.E. in Optoelectronic Information Science and Engineering

Present Academic Position

2018/09 – Present **State Key Laboratory of Extreme Photonics and Instrumentation**
Hangzhou, China
Research Assistant

Representative Publications

Rceent Five Years as the 1st Author (#Equal contributors)

1. **X. Liu**, Y. Hu, S. Tu, C. Kuang, X. Liu, and X. Hao, "Fast generation of arbitrary optical focus array," *Optics and Lasers in Engineering*, vol. 162, p. 107 405, 2023, **(IF = 4.6)**.
2. H. Wei[#], **X. Liu**[#], X. Hao, E. Y. Lam, and Y. Peng, "Modeling off-axis diffraction with the least-sampling angular spectrum method," *Optica*, vol. 10, no. 7, pp. 959–962, 2023, **(IF = 10.4), [Monthly Top Downloads of Journal]**.
3. **X. Liu**, S. Tu, C. Kuang, X. Liu, and X. Hao, "Calibration of phase-only liquid-crystal spatial light modulators by diffractogram analysis," *Optics and Lasers in Engineering*, vol. 156, p. 107 056, 2022, **(IF = 4.6)**.
4. **X. Liu**[#], L. Li[#], X. Liu, X. Hao, and Y. Peng, "Investigating deep optics model representation in affecting resolved all-in-focus image quality and depth estimation fidelity," *Optics Express*, vol. 30, no. 20, pp. 36 973–36 984, 2022, **(IF = 3.8)**.
5. **X. Liu**, Y. Peng, S. Tu, J. Guan, C. Kuang, X. Liu, and X. Hao, "Generation of arbitrary longitudinal polarization vortices by pupil function manipulation," *Advanced Photonics Research*, vol. 2, no. 1, p. 2 000 087, 2021, **(IF = 3.8), [Cover Story]**.
6. **X. Liu**, S. Tu, Y. Xu, H. Song, W. Liu, Q. Liu, C. Kuang, X. Liu, and X. Hao, "Aberrations in structured illumination microscopy: A theoretical analysis," *Frontiers in Physics*, vol. 7, no. 254, 2020, **(IF = 3.1)**.

Awards

2022 **Individual scholarship for innovation and entrepreneurship**, Zhejiang University.
Junshi Chen scholarship, Zhejiang University.
Outstanding graduate student, Zhejiang University.
Merit graduate student, Zhejiang University.
2021 **Junshi Chen scholarship**, Zhejiang University.
Outstanding graduate student, Zhejiang University.
Merit graduate student, Zhejiang University.
Outstanding graduate student cadres, Zhejiang University.
2020 **Junshi Chen scholarship**, Zhejiang University.
Outstanding graduate student cadres, Zhejiang University.
2019 **Outstanding graduate student**, Zhejiang University.
2015 **Third-class award on 3rd Physics Tournament of SCUT**, South China University of Technology.

Reviewer Service

- Optics Express, Journal of Microscopy, and Optics Communications

Mentorship

2023 "Deep Stereo Optics Imaging for High Fidelity Depth Estimation", HKU MSc Yuhui Liu, HKU EEE MSc Thesis Dissertation Project
2022 "Full Vectorial Manipulation of Tightly Focused Optical Field", Haiwei Wang, Zhejiang University, Undergraduate Thesis
"Numerical Simulation of Vectorial Field Based on Vectorial Diffraction Theory", Yunpeng Wang, Changchun University of Science and Technology, Undergraduate Thesis

Granted Patents

- Xiang Hao, **Xin Liu**, Cuifang Kuang, Xu Liu, "A Method for Point Spread Function Reconstruction", CN110133849B, National Invention Patent of China.
- Xiang Hao, **Xin Liu**, Shijie Tu, Xu Liu, "A Two-Dimensional Rapid Beam Scanning Module for Coherent Fluorescence Microscopy", CN109491065A, National Invention Patent of China.
- Xu Liu, **Xin Liu**, Xiang Hao, Cuifang Kuang, Haifeng Li, "A Device for Coherent Beam Modulation in Imaging and Lithography Systems", CN110568650B, National Invention Patent of China.
- Xiang Hao, **Xin Liu**, Yubing Han, Cuifang Kuang, Xu Liu, "A Method and Device for Calibration of Phase-Type Spatial Light Modulators", CN112697401A, National Invention Patent of China.
- Xiang Hao, **Xin Liu**, Cuifang Kuang, Xu Liu, "A Device for Generating Super-Diffraction-Limited Focal Spot Arrays", CN110568731B, National Invention Patent of China.
- Xiang Hao, Shijie Tu, **Xin Liu**, Xu Liu, "A Multicolor Super-Resolution Microscope System with Automatic Alignment Capability", CN109358030B, National Invention Patent of China.

Skills

Languages Good reading, writing and speaking competencies in English and Mandarin Chinese.
Coding MATLAB, Python, LabVIEW, and LaTeX.