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工作经历

博士后研究员 2023.10 - 至今

波士顿大学电子与计算机工程系 *Ji-xin Cheng* 教授课题组 波士顿

特聘副研究员 2021.7 - 2023.10

北京大学物理学院施可彬教授课题组 北京

博士后 2019.7 - 2021.6

北京大学物理学院施可彬教授课题组 北京

教育背景

北京大学 博士-光学 导师：施可彬教授 2014 - 2019

南开大学 本科-物理学 2010 - 2014

专业技能

[光学] **研究领域**：计算成像，非线性光学，全息学，显微技术，光谱学

熟练掌握：光学成像系统设计与搭建

应用方向：细胞成像，无标记/荧光成像，超分辨成像

[编程] MATLAB, C/C++, Labview, Python, Bash, LaTeX

- **仪器控制/自动化**：精通图像/信号采集编程，熟悉各种通讯接口，熟练掌握 *GUI* 交互设计及编程
- **图像/信号处理**：熟练掌握各种机器视觉和图像处理算法，具有丰富的图像处理算法开发经验
- **高新能计算**：掌握 *GPU* 和 *Linux* 集群的并行计算编程、实时图像处理编程

[软件] Fiji/ImageJ, Mathematica, OriginPro, Adobe AI/PS, Zemax, COMSOL

代表性论文

(1) *Lige Liu*[#], **Dashan Dong**[#], *Zhiwei Long, Wanxue Wei, Chang Sun, Wei Liu, Xiaoshuai Huang, Liangyi Chen, Haizheng Zhong*✉, *and Kebin Shi*✉. " Single particle fluorescence imaging of perovskite nanocrystal crystallization for illustrating coupled nucleation-and-growth ." *Nature Communications*, 16.5664, (2025).

(2) **Dashan Dong**[#], *Xiaoshuai Huang*[#], *Liuju Li*[#], *Heng Mao, Yanquan Mo, Guangyi Zhang, Zhe Zhang, Jiayu Shen, Wei Liu, Zeming Wu, Guanghui Liu, Yanmei Liu, Hong Yang, Qihuang Gong, Kebin Shi*✉, *and Liangyi Chen*✉. " Super-resolution fluorescence-assisted diffraction computational tomography reveals the three-dimensional landscape of the cellular organelle interactome ." *Light: Science & Applications*, 9.11, (2020).

(3) *Shuqi Mu*[#], *Yingtong Shi, Yintong Song, Wei Liu, Wanxue Wei, Qihuang Gong,* **Dashan Dong**✉, *and Kebin Shi.* " Multislice computational model for birefringent scattering ." *Optica*, 10.1, (2023).

(4) *Shuqi Mu*[#], *Yu Yang, Juhao Li,* ***Dashan Dong***✉, *Ruijun Lan*✉, *Kebin Shi.* " Three dimension refractive index characterization for photonic waveguides ." *Journal of Lightwave Technology*, 40.8, (2022).

(5) 魏婉雪[#], 何苗, 徐坚, **董大山**✉. " 一种大视野快速光学衍射层析成像技术 ." 中国激光, 50.3, (2023).

(6) **Dashan Dong**[#], *Kebin Shi*✉. " Solving the missing cone problem by deep learning ." *Advanced Photonics*, 2.2, (2020).

其它学术论文

(1) *Jia Danchen[#], Huang Steven[#], Tulegenov Dias,* **Dashan Dong**, *Shvets Gennady[✉], Cheng Ji-Xin[✉].* " Metasurface-enhanced infrared photothermal microscopy towards ultrasensitive chemical analysis ." *Advanced Photonics*, 7.5, (2025).

(2) *Qian Chen[#], Wen Gou[#], Wenqing Lu[#], Jie Li, Yuhong Wei, Haoyu Li, Chengyu Wang, Wei You, Zhengqian Li,* **Dashan Dong**, *Xiuli Bi, Bin Xiao[✉], Liangyi Chen[✉], Kebin Shi[✉], Junchao Fan[✉], Xiaoshuai Huang[✉].* " Fast, three-dimensional, live-cell super-resolution imaging with multiplane structured illumination microscopy ." *Nature Photonics*, (2025).

(3) *Jiaze Yin[#], Christian Pfluegl, Chu C. Teng, Rylie Bolarinho, Guo Chen, Xinrui Gong,* **Dashan Dong**, *Daryoosh Vakhshoori, Ji-Xin Cheng[✉].* " Mid-infrared Energy Deposition Spectroscopy ." *Physical Review Letters*, 134.9, (2025).

(4) *Yue Wang[#], Jingrui Gong, Ning Xu, Shaohui Yan,* **Dashan Dong**, *Kebin Shi[✉].* " Large Field of View and Isotropic Light Sheet Microscopy with Aberration-Free Tunable Foci ." *Laser & Photonics Reviews*, 19.3, (2025).

(5) *Wenkai Yang[#], Zijian Wang, Jian Xu,* **Dashan Dong**, *Guiyuan Cao, Han Lin, Baohua Jia, Lige Liu[✉], Kebin Shi[✉].* " Ultracompact computational spectroscopy with a detour-phased planar lens ." *Light: Advanced Manufacturing*, 5.44, (2024).

(6) *Ziheng Ji[#], Wentao Yu,* **Dashan Dong**, *Hong Yang, Kaihui Liu, Yun-Feng Xiao, Qihuang Gong, Qinghai Song[✉], Kebin Shi[✉].* " High spatial resolution collinear chiral sum-frequency generation microscopy ." *Advanced Photonics Nexus*, 3.2, (2024).

(7) *Yue Wang[#],* **Dashan Dong**, *Wenkai Yang, Renxi He, Ming Lei, and Kebin Shi[✉].* " Reflective ultrathin light-sheet microscopy with isotropic 3D resolutions ." *Photonics Research*, 12.2, (2024).

(8) *Peng Liu[#], Jing Shi[#], Danli Sheng[#], Wenqing Lu, Jie Guo, Lei Gao, Xiaoqing Wang, Shaofeng Wu, Yanwen Feng,* **Dashan Dong**, *Xiaoshuai Huang[✉], and Hongyun Tang[✉].* " Mitopherogenesis, a form of mitochondria-specific ectocytosis, regulates sperm mitochondrial quantity and fertility ." *Nature Cell Biology*, 25, (2023).

(9) *Wenkai Yang[#], Lige Liu[✉],* **Dashan Dong**, *Yunan Gao, Hong Yang, Qihuang Gong, and Kebin Shi[✉].* " *In situ* three-dimensional observation of perovskite crystallization revealed by two-photon fluorescence imaging ." *Advanced Optical Materials*, 10.13, (2022).

(10) *Wenkai Yang[#], Lige Liu[#],* **Dashan Dong**, *Xin Zhang, Han Lin, Yunkun Wang, Hong Yang, Yunan Gao, Haizheng Zhong, Baohua Jia, and Kebin Shi[✉].* " Detour-phased perovskite ultrathin planar lens using direct femtosecond laser writing ." *Photonics Research*, 10.12, (2022).

(11) *Runfeng Li[#], Ruijun Lan[✉],* **Dashan Dong**, *Hong Yang, and Kebin Shi[✉].* " Bessel beam coherent anti-Stokes Raman scattering spectroscopy for turbulent flow diagnosis ." *Applied Spectroscopy*, (2022).

(12) 穆书奇[#], **董大山**, 施可彬[✉]. " 无标记光学成像技术 ." 激光与光电子学进展, 59.12, (2022).

(13) 李润丰[#], **董大山**, 施可彬[✉]. " 光场调控在相干拉曼散射光谱与成像中的应用 (特邀) ." 光子学报, 50.1, (2022).

(14) *Wei Liu[#],* **Dashan Dong**, *Hong Yang, Qihuang Gong, and Kebin Shi[✉].* " Robust and high-speed rotation control in optical tweezers by using polarization synthesis based on heterodyne interference ." *Opto-Electronic Advances*, 3.8, (2020).

(15) *Shuanglong Liu[#], Bowen Sheng, Xinqiang Wang[✉],* **Dashan Dong**, *Ping Wang, Zhaoying Chen, Tao Wang, Xin Rong, Duo Li, Liuyun Yang, Shangfeng Liu, Mo Li, Jian Zhang, Weikun Ge, Kebin Shi, Yuzhen Tong, Bo Shen.* " Molecular beam epitaxy of single-crystalline aluminum film for low threshold ultraviolet plasmonic nanolasers ." *Applied Physics Letters*, 122.23, (2018).

(16) *Wentao Yu[#], Ziheng Ji,* **Dashan Dong**, *Xusan Yang, Yunfeng Xiao, Qihuang Gong, Peng Xi[✉], and Kebin Shi[✉].* " Superresolution deep imaging with hollow Bessel beam STED microscopy ." *Laser & Photonics Reviews*, 10.1, (2016).

(17) *Yonggang Lv[#], Ziheng Ji,* **Dashan Dong**, *Kebin Shi[✉], and Qihuang Gong.* " Wide-field vibrational phase contrast imaging based on coherent anti-Stokes Raman scattering holography ." *Chinese Physics Letters*, 32.7, (2015).

(18) *Bin Tsai[#], Wei Liu,* **Dashan Dong**, *Kebin Shi, Liangyi Chen, Ning Gao[✉].* " Phase separation of Mer2 organizes the meiotic loop-axis structure of chromatin during meiosis I ." *bioRXiv*, (2020).

会议论文

(1) *Wanxue Wei,* **Dashan Dong**, *Kebin Shi.* " Fast optical diffraction tomography microscopy with large field of view and lossless pupil beam combination ." *Ultrafast Nonlinear Imaging and Spectroscopy XII*, Proc. SPIE 1313910, (2024).

(2) **Dashan Dong**, *Xiaoshuai Huang, Liuju Li, Kebin Shi, and Liangyi Chen.* " Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Three-Dimensional Landscape of Cellular Organelle Interactome ." *Advanced Optical Imaging Technologies III*, SPIE/COS Photonics Asia 115490G, (2020).

(3) **Dashan Dong**, *Xiaoshuai Huang, Liuju Li, Kebin Shi, and Liangyi Chen.* " Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Three-Dimensional Landscape of Cellular Organelle Interactome ." *Digital Holography and Three-Dimensional Imaging 2020*, Imaging and Applied Optics Congress, Optica Publishing Group HF1G.6, (2020).

(4) **Dashan Dong**, *Yanhui Cai, Ziheng ji, Hong Yang, Qihuang Gong, and Kebin Shi.* " Tomographic Diffractive Microscopy for Better 3D Imaging ." *14th International Conference on Photonics and Imaging in Biology and Medicine*, Optica Publishing Group W3A.43, (2017).

(5) *Kebin Shi,* **Dashan Dong**, *Yanhui Cai, Wei Liu, Chendi Shao.* " High resolution nonlinear imaging based on optical field engineering ." *Ultrafast Nonlinear Imaging and Spectroscopy V*, Proc. SPIE 1038000Z, (2017).

专利

(1) 一种双模态显微成像系统和方法 — 国际专利 PCT/CN2021/071393, (2020)

(2) 一种基于缺失型反射镜的离轴全息合束装置及其方法 — 2023110715739, (2023)

(3) 一种双模态显微成像系统及其成像方法 — ZL202110946936.3, (2022)

(4) 基于微棱镜的反射式轴向光片荧光显微成像装置及方法 — ZL 202110817118.3, (2022)

(5) 一种基于贝塞尔 CARS 的湍流光谱测量系统及其测量方法 — ZL202110667298.1, (2022)

(6) 一种双模态显微成像系统和方法 — ZL202010059510.1, (2022)

(7) 基于光学外差干涉法的动态柱矢量光场产生装置及其方法 — ZL202010493775.2, (2021)

(8) 一种基于 GB-STED 的深层超分辨激光直写系统及其实现方法 — ZL202010069141.4, (2020)

科研项目

[课题负责人] 国家重点研发计划下设青年科学家课题 (2022YFC3401103) 2022

活细胞超分辨率三维全景成像与解析技术体系研发课题：无标记成像与大数据机器学习 234 万元

[主持] 国家自然科学基金青年科学基金项目 (12004013) 2021

用于活细胞成像的反射式光学衍射层析成像及其应用 24 万元

[共同负责人] 北京大学临床医学 +X 青年专项 2022

基于无标记成像探究脂滴在卵不对称分裂中的作用 10 万元

[主持] 中国博士后科学基金第 68 批面上资助 (2020M680220) 2021

超分辨荧光辅助的光学衍射层析成像及其应用 8 万元

[参与] 国家自然科学基金面上项目 (12174010) 2022

微腔混沌动力学的超高速光学成像 62 万元

会议报告

[口头报告] Optica Biophotonics Congress 2025 2025.4

Super-Resolution Chemical Imaging via Structured Illumination Fluorescence-Detected Mid-Infrared Photothermal Microscopy 美国-圣地亚哥

[墙报] **Chemical Imaging 2023, Gordon Research Conference** 2023.8

Optical Diffraction Tomography Reveals the 3D Landscape of Living Cells 美国-波士顿

[邀请报告] **第一届先进成像与信息处理会议暨 2023 中国光学学会全息与光信息处理专委会学术年会** 2023.7

面向低光毒性的生物光学成像新技术 江西-井冈山

[邀请报告] **第三届全国光子技术论坛** 2023.4

基于光场调控的高分辨成像及应用 广东-广州

[邀请报告] **第二届国际计算成像会议 (CITA2022)** 2022.10

基于光学衍射层析的活细胞全景成像 上海 (线上)

[邀请报告] **第五届光学青年科学家论坛 (OYSS2022)** 2022.9

基于光场调控的高分辨成像及应用 福建-福州

[邀请报告] **第二十届全国基础光学与光物理学术讨论会** 2021.9

基于四维时空连续性的光学衍射层析成像 吉林-延吉

[邀请报告] **2021 年中国光学学会学术大会** 2021.9

基于四维时空连续性的光学衍射层析成像 广东-深圳

[邀请报告] **第四届光学青年科学家论坛 (OYSS2020)** 2020.12

光学衍射层析显微成像及其应用 浙江-宁波

[口头报告] **第二届全国光子技术论坛** 2020.11

光学衍射层析显微成像及其应用 广东-广州

[邀请报告] **2020 年全国电子显微学学术年会** 2020.11

基于光学衍射层析的活细胞全景成像 四川-成都

[口头报告] **第十二届全国光学青年学术论坛** 2020.11

光学衍射层析显微成像及其应用 河北-保定

[口头报告] **2020 年亚洲光电子会议 (Photonics Asia 2020)** 2020.10

Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Three-Dimensional Landscape of Cellular Organelle Interactome 线上

[口头报告] **Digital Holography and Three-Dimensional Imaging, Imaging and Applied Optics Congress** 2020.6

Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Three-Dimensional Landscape of Cellular Organelle Interactome 线上

[墙报] **International Conference on Photonics and Imaging in Biology and Medicine** 2017.9

Tomographic Diffractive Microscopy for Better 3D Imaging 江苏-苏州

[墙报] **SPIE Optics + Photonics 2017** 2017.8

Tomographic Diffractive Microscopy for Better 3D Imaging 美国-圣迭戈

[口头报告] **中国物理学会 2016 年秋季学术会议** 2016.8

光学衍射断层显微成像 北京

学术服务

[审稿人] Photonics Research, Optics Letters, Optics Express, Advanced Science, APL Photonics, 中国激光, 光学学报

[程序委员] 国际计算成像会议 (CSOE-CITA), 专题 9: 生物医学与计算成像 2022, 2023

[青年编委] 《中国激光》杂志 2022, 2023

[志愿者] SPIE/COS 亚洲光电子会议 2016, 2022

[主席] 北京大学 SPIE 学生分会 2017

[副主席] 北京大学 SPIE 学生分会 2016

学位论文

[博士学位论文] 光学衍射层析显微成像的研究 导师: 施可彬教授, 北京大学

[本科毕业论文] 新型矢量光场的特性研究 指导教师: 李勇男教授, 南开大学

荣誉奖项

[2022] 人工微结构和介观物理国家重点实验室甘子钊优秀博士后奖 北京大学

[2022] 现代光学所重要科研进展 北京大学

[2017] 五四奖学金 北京大学

[2017] 优秀科研单项奖 北京大学

[2013] 合展励学金 中国科技馆发展基金会

[2012] 国家励志奖学金 南开大学

[2012] 第三届中国大学生物理学术竞赛-团队一等奖

[2012] 三好学生 南开大学

[2011] 优秀学生基础学科奖学金 南开大学