

DASHAN DONG

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Academic Experience

Postdoctoral Associate	Oct 2023 - now
Prof. Ji-xin Cheng's Lab, ECE, Boston University	Boston, MA, USA
Associate Research Fellow	Jul 2021 - Oct 2023
Prof. Kebin Shi's Lab, School of Physics, Peking University	Beijing, China
Postdoctoral Fellow	Jul 2019 - Jun 2021
Prof. Kebin Shi's Lab, School of Physics, Peking University	Beijing, China

Education

Peking University	<i>Ph.D. in Optics</i> Advisor: Prof. Kebin Shi	2014 - 2019
Nankai University	<i>BS in Physics</i>	2010 - 2014

Skills

[Optics] Expert in Computational Imaging, Nonlinear Optics, Holography/Digital Holography, Microscopy, Spectroscopy
Skilled in Designing, Building, Aligning, and Optimizing Complex Optical Imaging Systems
Proficient in Live-Cell Imaging, Label-free and Fluorescence Imaging, Multimodal and Super-resolution Microscopy

[Programming] MATLAB, C/C++, Labview, Python, Bash, L^AT_EX

- Proficient in **Instrument Control**, with expertise in *Imaging/Signal Acquisition and Embedded System*
- Skilled in **Image/Signal Processing**, with experience in *Computer Vision, Data Visualization*
- Experienced in **High Performance Computing** with *Parallel Programming on GPU and Linux-Clusters*

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

Highlighted Publications

- (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, Jaiyu 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).
Wanxue Wei[#], Miao He, Jian Xu, Dashan Dong[✉]. “ Large field-of-view fast optical diffractive tomographic microscopy ↗

.” *Chinese Journal of Lasers*, 50.3, (2023).

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

Other Publications

- (1) *George Abu-Aqil[#], Dashan Dong[#], Jiaze Yin[#], Jianpeng Ao, Hongjian He, Guangrui Ding, Qing Xia, Ji-Xin Cheng[✉]*. “ Bond-Selective Imaging via Vibrational Relaxation Encoded Fluorescence  .” *The Journal of Physical Chemistry Letters*, 16, (2025).
- (2) *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).
- (3) *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).
- (4) *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).
- (5) *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).
- (6) *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).
- (7) *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).
- (8) *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).
- (9) *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).
- (10) *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).
- (11) *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).
- (12) *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).
- (13) 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).
Shuqi Mu[#], Dashan Dong, Kebin Shi[✉]. “ Label-free optical imaging technology  .” *Laser & Optoelectronics Progress*, 59.12, (2022).
- (14) 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).
Runfeng Li[#], Dashan Dong, Kebin Shi[✉]. “ Coherent Raman scattering spectroscopy and microscopy based on optical field engineering (Invited)  .” *Acta Photonica Sinica*, 51.1, (2022).
- (15) *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).
- (16) *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).

- (17) *Wentao Yu[#], Ziheng Ji, Dashan Dong, Xusan Yang, Yunfeng Xiao, Qihuang Gong, Peng X[✉], and Kebin Shi[✉].* “ Superresolution deep imaging with hollow Bessel beam STED microscopy  .” *Laser & Photonics Reviews*, 10.1, (2016).
- (18) *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).
- (19) *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).

Conference Abstracts

- (1) **Dashan Dong** and Ji-Xin Cheng. “ Super-resolution Chemical Imaging via Structured Illumination Fluorescence-Detected Mid-Infrared Photothermal Microscopy  .” *Novel Techniques in Microscopy*, Optica Biophotonics Congress NTu3C.3 (2025).
- (2) 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).
- (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  .” *Advanced Optical Imaging Technologies III*, SPIE/COS Photonics Asia 115490G, (2020).
- (4) **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).
- (5) **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).
- (6) 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 103800Z, (2017).

Patents

- (1) Dual-modality microscopic imaging system and method  International Patent PCT/CN2021/071393, (2020)
- (2) Off-axis holographic beam combining device and method based on missing reflector  CN Patent 2023110715739, (2023)
- (3) Dual-modality microscopic imaging system and imaging method  CN Patent ZL202110946936.3, (2022)
- (4) Reflective axial light sheet fluorescence microscopy imaging device and method based on microprism  CN Patent ZL 202110817118.3, (2022)
- (5) Bessel CARS-based turbulence spectral measurement system and its detection method  CN Patent ZL202110667298.1, (2022)
- (6) Dual-modality microscopic imaging system and method  CN Patent ZL202010059510.1, (2022)
- (7) Device and method for generating dynamic cylindrical vector light field based on optical heterodyne interferometry  CN Patent ZL202010493775.2, (2021)
- (8) GB-STED based deep-layer super-resolution laser direct writing system and implementation method thereof  CN Patent ZL202010069141.4, (2020)

Received Grants

[Co-PI] Young Scientists Sub-Project (Label-free imaging and big-data machine learning)	2022
Super-resolution 3D landscape imaging and resolving technology of living cell	CNY 2,340,000
<i>National Key Research and Development Program of China</i>	
[Co-PI] Clinical Medicine Plus X - Young Scholars Project	2022
Exploring the role of lipid droplets in egg asymmetric division based on label-free imaging	CNY 100,000
<i>Peking University, the Fundamental Research Funds for the Central Universities</i>	
[PI] Young Scientist Fund (12004013)	2021
Reflective optical diffraction tomography for live cell imaging and its application	CNY 240,000
<i>National Natural Science Foundation of China</i>	
[PI] No.68 General Fund (2020M680220)	2021
Super-resolution fluorescence-assisted optical diffraction tomography and its application	CNY 80,000
<i>China Postdoctoral Science Foundation</i>	

Conference Presentations

[Oral] Optica Biophotonics Congress 2025	Apr 2025
<i>Super-Resolution Chemical Imaging via Structured Illumination Fluorescence-Detected Mid-Infrared Photothermal Microscopy</i>	
<i>San Diego</i>	
[Poster] Chemical Imaging 2023, Gordon Research Conference	Aug 2023
<i>Optical Diffraction Tomography Reveals the 3D Landscape of Living Cells</i>	
<i>Boston, USA</i>	
[Invited] Advanced Imaging and Information Processing Conference (AIIP 2023)	Jul 2023
<i>New Technologies for Bio-Optical Imaging with Low Phototoxicity</i>	
<i>Jinggangshan, China</i>	
[Invited] 第三届全国光子技术论坛	Apr 2023
<i>High-Resolution Imaging Based on Light Field Modulation and Applications</i>	
<i>Guangzhou, China</i>	
[Invited] International Computational Imaging Conference (CSOE-CITA 2022)	Oct 2022
<i>Live Cell Landscape Imaging Based on Optical Diffraction Tomographic Microscopy</i>	
<i>Shanghai, China</i>	
[Invited] 5th Optics Young Scientist Summit (OYSS2022)	Sep 2022
<i>High-Resolution Imaging Based on Light Field Modulation and Applications</i>	
<i>Fuzhou, China</i>	
[Invited] 20th National Symposium on Basic Optics and Optical Physics	Sep 2021
<i>Live Cell Optical Diffraction Tomographic Imaging Based on 4D Spatiotemporal Continuity</i>	
<i>Yanji, China</i>	
[Invited] The Chinese Optical Society (COS) Academic Conference 2021	Sep 2021
<i>Optical Diffraction Tomographic Microscopy Based on 4D Spatiotemporal Continuity</i>	
<i>Shenzhen, China</i>	
[Invited] 4th Optics Young Scientist Summit (OYSS2020)	Dec 2020
<i>Optical Diffraction Tomographic Microscopy and Its Applications</i>	
<i>Ningbo, China</i>	
[Oral] 第二届全国光子技术论坛	Nov 2020
<i>Optical Diffraction Tomographic Microscopy and Its Applications</i>	
<i>Guangzhou, China</i>	
[Invited] Chinese Electron Microscopy Society Academic Conference 2020	Nov 2020
<i>Live Cell Landscape Imaging Based on Optical Diffraction Tomographic Microscopy</i>	
<i>Chendu, China</i>	
[Oral] The 12th National Academic Forum on Optical Youth	Nov 2020
<i>Optical Diffraction Tomographic Microscopy and Its Applications</i>	
<i>Baoding, China</i>	
[Oral] SPIE/COS Photonics Asia 2020	Oct 2020
<i>Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Three-Dimensional Land-</i>	

[Oral] Digital Holography and Three-Dimensional Imaging, Imaging and Applied Optics Congress	Jun 2020
<i>Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Three-Dimensional Landscape of Cellular Organelle Interactome</i>	Webinar
[Poster] International Conference on Photonics and Imaging in Biology and Medicine	Sep 2017
<i>Tomographic Diffractive Microscopy for Better 3D Imaging</i>	Suzhou, China
[Poster] SPIE Optics + Photonics 2017	Aug 2017
<i>Tomographic Diffractive Microscopy for Better 3D Imaging</i>	San Diego, USA
[Oral] Chinese Physical Society (CPS) Fall Meeting	Aug 2016
<i>Optical Diffraction Tomographic Microscopy</i>	Beijing, China

Services

[Reviewer] Photonics Research, Optics Letters, Optics Express, Advanced Science, APL Photonics, Chinese Journal of Lasers, Acta Optica Sinica	
[Program Committee] Topic 9: Biomedicine and Computational Imaging, International Computational Imaging Conference (CSOE-CITA)	2022, 2023
[Youth Editor] Chinese Journal of Lasers	2022, 2023
[Volunteer] SPIE/COS Photonics Asia	2016, 2022
[President] Peking Univ. Club, SPIE Student Chapter	2017
[Vice President] Peking Univ. Club, SPIE Student Chapter	2016

Theses

[Doctoral Thesis] <i>Research on Optical Diffraction Tomographic Microscopy</i> ↗	Supervisor: Prof. Kebin Shi, Peking University
[Bachelor Thesis] <i>Characteristics of Novel Vector Field</i> ↗	Supervisor: Prof. Yongnan Li, Nankai University

Honors & Awards

[2022] Gan Zizhao Scholarship for Outstanding Postdoctoral Fellows	Peking University
[2022] Important Advance for Institute of Modern Optics	Peking University
[2017] May 4 th Scolarship	Peking University
[2017] Individual Honor for Research Excellence	Peking University
[2013] He-Zhang Encouragement Scholarship	<i>Foundation for the Development of Science and Technology Museums in China</i>
[2012] National Encouragement Scholarship	Nankai University
[2012] Merit Student	Nankai University
[2011] Outstanding Student Scholarship in Fundamental Science	Nankai University