DASHAN DONG

董大山

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	Ph.D. in Optics Advisor: Prof. Kebin Shi	2014 - 2019
Nankai University	BS in Physics	2010 - 2014

Skills

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

[Programming] MATLAB, C/C++, Labview, Python, Bash, Bash

- Proficient in Instrument Control, with expertise in Imaging/Signal Acquisition and intuitive GUI Design

- 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) 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).
- (2) 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).
- (3) 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).
- (4) 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 Sh[™], and Liangyi Chen[™]. "Super-resolution fluorescence-assisted diffraction computational tomography reveals the three-dimensional landscape of the cellular or-ganelle interactome II". Light: Science & Applications, 9.11, (2020).
- (5) Dashan Dong[#], Kebin Sht[⊠]. "Solving the missing cone problem by deep learning **∠**". Advanced Photonics, 2.2, (2020).

Other Publications

- (1) 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 ^I." Nature Photonics, (2025).
- (2) 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 I^C." Physical Review Letters, 134.9, (2025).
- (3) Yue Wang[#], Jingrui Gong, Ning Xu, Shaohui Yan, **Dashan Dong**, Kebin Sht[⊠]. "Large Field of View and Isotropic Light Sheet Microscopy with Aberration-Free Tunable Foci **∠**". Laser & Photonics Reviews, 19.3, (2025).
- (4) 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 **Z**". Light: Advanced Manufacturing, 5.44, (2024).
- (5) 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 Z^{*}." Advanced Photonics Nexus, 3.2, (2024).
- (6) Yue Wang[#], **Dashan Dong**, Wenkai Yang, Renxi He, Ming Lei, and Kebin Sht[⊠]. "Reflective ultrathin light-sheet microscopy with isotropic 3D resolutions ∠". Photonics Research, 12.2, (2024).
- (7) 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).
- (8) Wenkai Yang[#], Lige Liu[™], Dashan Dong, Yunan Gao, Hong Yang, Qihuang Gong, and Kebin Sht[™]. "In situ three-dimensional observation of perovskite crystallization revealed by two-photon fluorescence imaging [™]." Advanced Optical Materials, 10.13, (2022).
- (9) 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 I[™]. " Photonics Research, 10.12, (2022).
- (10) 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).
- (11) 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).
- (12) 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).
- (13) 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).
- (14) 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 Z". Applied Physics Letters, 122.23, (2018).
- (15) 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 Z^I." Laser & Photonics Reviews, 10.1, (2016).
- (16) 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).

(17) 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 I ". *bioRXiv*, (2020).

Conference Abstracts

- (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 Z"." 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 Z." 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).

Patents

(1) Dual-modality microscopic imaging system and method \mathbf{Z}	International Patent PCT/CN2021/071393, (2020)
(2) Off-axis holographic beam combining device and method based on miss	sing reflector 🗹
	CN Patent 2023110715739, (2023)
(3) Dual-modality microscopic imaging system and imaging method \mathbf{C}	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 det	tection method 🗹
	CN Patent ZL202110667298.1, (2022)
(6) Dual-modality microscopic imaging system and method \mathbf{Z}	CN Patent ZL202010059510.1, (2022)
(7) Device and method for generating dynamic cylindrical vector light fie	eld based on optical heterodyne interferometry \mathbf{C}
	CN Patent ZL202010493775.2, (2021)
(8) GB-STED based deep-layer super-resolution laser direct writing system	and implementation method thereof \mathbf{C}
	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
National Key Research and Development Program of China	
[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
Peking University, the Fundamental Research Funds for the Central Universities	
[PI] Young Scientist Fund (12004013)	2021
Reflective optical diffraction tomography for live cell imaging and its application	CNY 240,000

National Natural Science Foundation of China

[PI] No.68 General Fund (2020M680220)2021Super-resolution fluorescence-assisted optical diffraction tomography and its applicationCNY 80,000China Postdoctoral Science FoundationCNY 80,000

Conference Presentations

[Oral]	Optica Biophotonics Congress 2025	Apr 2025
	Super-Resolution Chemical Imaging via Structured Illumination Fluorescence-Detected Mid-	Infrared Photothermal
	Microscopy	San Diego
[Poster]	Chemical Imaging 2023, Gordon Research Conference	Aug 2023
	Optical Diffraction Tomography Reveals the 3D Landscape of Living Cells	Boston, USA
[Invited]	Advanced Imaging and Information Processing Conference (AIIP 2023)	Jul 2023
	New Technologies for Bio-Optical Imaging with Low Phototoxicity	Jinggangshan, China
[Invited]	第三届全国光子技术论坛	Apr 2023
	High-Resolution Imaging Based on Light Field Modulation and Applications	Guangzhou, China
[Invited]	International Computational Imaging Conference (CSOE-CITA 2022)	Oct 2022
	Live Cell Landscape Imaging Based on Optical Diffraction Tomographic Microscopy	Shanghai, China
[Invited]	5th Optics Young Scientist Summit (OYSS2022)	Sep 2022
	High-Resolution Imaging Based on Light Field Modulation and Applications	Fuzhou, China
[Invited]	20th National Symposium on Basic Optics and Optical Physics	Sep 2021
	Live Cell Optical Diffraction Tomographic Imaging Based on 4D Spatiotemporal Continuity	Yanji, China
[Invited]	The Chinese Optical Society (COS) Academic Conference 2021	Sep 2021
	Optical Diffraction Tomographic Microscopy Based on 4D Spatiotemporal Continuity	Shenzhen, China
[Invited]	4th Optics Young Scientist Summit (OYSS2020)	Dec 2020
	Optical Diffraction Tomographic Microscopy and Its Applications	Ningbo, China
[Oral]	第二届全国光子技术论坛	Nov 2020
	Optical Diffraction Tomographic Microscopy and Its Applications	Guangzhou, China
[Invited]	Chinese Electron Microscopy Society Academic Conference 2020	Nov 2020
	Live Cell Landscape Imaging Based on Optical Diffraction Tomographic Microscopy	Chendu, China
[Oral]	The 12th National Academic Forum on Optical Youth	Nov 2020
	Optical Diffraction Tomographic Microscopy and Its Applications	Baoding, China
[Oral]	SPIE/COS Photonics Asia 2020	Oct 2020
	Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Th	ree-Dimensional Land-
	scape of Cellular Organelle Interactome	Webinar
[Oral]	Digital Holography and Three-Dimensional Imaging, Imaging and Applied Optics Co	ongress Jun 2020
	Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Th	ree-Dimensional Land-
	scape of Cellular Organelle Interactome	Webinar
[Poster]	International Conference on Photonics and Imaging in Biology and Medicine	Sep 2017
	Tomographic Diffractive Microscopy for Better 3D Imaging	Suzhou, China
[Poster]	SPIE Optics + Photonics 2017	Aug 2017
	Tomographic Diffractive Microscopy for Better 3D Imaging	San Diego, USA
[Oral]	Chinese Physical Society (CPS) Fall Meeting	Aug 2016

Services

[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]	Research on	Optical Diffraction	Tomographic 1	Microscopy 🗹
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[Bachelor Thesis] Characteristics of Novel Vector Field

Supervisor: Prof. Kebin Shi, Peking University Supervisor: Prof. Yongnan Li, Nankai University

Honors & Awards

Fellows Peking University	
Peking University	
Peking University	
Peking University	
Foundation for the Development of Science and Technology Museums in China	
Nankai University	
Nankai University	
nce Nankai University	