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 — *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, LaTeX
- 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) *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).
*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) *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).
Shuqi Mu[#], ***Dashan Dong***, *Kebin Shi*[✉]. " Label-free optical imaging technology ." *Laser & Optoelectronics Progress*, 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).
Runfeng Li[#], **Dashan Dong**, *Kebin Shi*[✉]. " Coherent Raman scattering spectroscopy and microscopy based on optical field engineering (Invited) ." *Acta Photonica Sinica*, 51.1, (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*[✉]. " Superresolu-

tion 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).

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 ." *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).

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

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) 2021

Super-resolution fluorescence-assisted optical diffraction tomography and its application CNY 80,000

China Postdoctoral Science Foundation

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 Three-Dimensional Landscape of Cellular Organelle Interactome *Webinar*

[Oral] Digital Holography and Three-Dimensional Imaging, Imaging and Applied Optics Congress Jun 2020

Super-Resolution Fluorescence Assisted Diffraction Computational Tomography Reveals the Three-Dimensional Landscape 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

Optical Diffraction Tomographic Microscopy *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] *Research on Optical Diffraction Tomographic Microscopy*

Supervisor: Prof. Kebin Shi, Peking University

[Bachelor Thesis] *Characteristics of Novel Vector Field* 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 4th Scolarship *Peking University*

[2017] Individual Honor for Research Excellence *Peking University*

[2013] He-Zhang Encouragement Scholarship

Foundation for the Development of Science and Technology Museums in China

[2012] National Encouragement Scholarship *Nankai University*

[2012] Merit Student *Nankai University*

[2011] Outstanding Student Scholarship in Fundamental Science *Nankai University*