

**Di Wang**

Associate professor, School of Instrumentation and Optoelectronic Engineering, Beihang University

Research interest: 3D display technology

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Work Experience

Associate Professor, School of Instrumentation and Optoelectronic Engineering, Beihang University, 02/2022-present

Post-doctoral Research Fellow, School of Instrumentation and Optoelectronic Engineering, Beihang University, 11/2018-01/2022, Supervisor: Qiong-Hua Wang

Lecturer, College of Physics and Electronic Engineering, Shanxi University, 06/2017-11/2018

Education History

Ph. D, School of Electronic Information, Sichuan University, 09/2012-06/2017, Supervisor: Qiong-Hua Wang

B. S, School of Electronic Information, Sichuan University, 09/2008-06/2012

Awards/Honors

Young scholars of Xiaomi in 2023

Top-notch Young Talents Program of Beihang University in 2022

Outstanding Post-doctoral Research Fellow of Beihang University in 2019

Outstanding Political Instructor of Shanxi University in 2017

Fundings

- [1] National Natural Science Foundation of China General Program “Dynamic holographic near-eye 3D Display technology with large viewing angle” (62275009), 2023~2026 (Project leader)
- [2] National Natural Science Foundation of China’s Joint Fund Project “Key technology research on high-density full-depth controlled scattering 3D holographic display” (U22A2079), 2023~2026 (Sub-project leader)
- [3] National Key Research and Development Program of China “Near-eye 3D display technology and device with realistic scene” (2021YFB2802100), 2021~2024 (Sub-project leader)
- [4] National Natural Science Foundation of China Youth Fund Project “Fast and high-quality computer-generated holographic 3D display technology based on liquid lens” (61805130), 2019~2021 (Project leader)
- [5] Special Funding Project of China Postdoctoral Science Foundation

“High-resolution dynamic holographic near-eye 3D display technology” (2020T130039), 2020~2021 (Project leader)

[6] China Postdoctoral Science Foundation Project “Dynamic large viewing angle computer-generated holographic 3D display technology based on liquid lens” (2019M650422), 2019~2020 (Project leader)

[7] Shanxi Province Applied Basic Research Project “Real-time acquisition and reproduction technology of holographic 3D video based on big data processing” (201801D221169), 2018-2020 (Project leader)

Fields of Research Interests and Accomplishments

Dr. Wang’s research interests are in 3D display technology. Her representative technical accomplishments are listed below.

[1] In terms of theory, a holographic display diffraction mechanism based on the effective area utilization was proposed. Under the guidance of this mechanism, the rapid generation technology of hologram was overcome. Compared with the conventional technology, the calculation speed of the hologram is increased by more than 2 times, and the holographic reproduction of real objects is realized. A high resolution holographic display technology with stray light elimination was proposed, and the signal-to-noise ratio of the reconstructed image was more than 20dB, which promotes the application of holography in AR display.

[2] In terms of system, a holographic 3D display system with large viewing angle was developed. Compared with similar foreign technologies, this system can expand the viewing angle from 8.2 degrees to 57.4 degrees, which solves the problem of small viewing angle of the existing holographic 3D display. The relevant research achievements have been recognized and positively evaluated by academicians Guo-Fan Jin, Prof. Shin-Tson Wu (SID/SPIE Fellow) and other well-known experts in the field of optics.

Papers and patents

Di Wang published more than 70 papers cited by Science Citation Index. The published papers have been cited more than 500 times according to Web of Science. The research results have been cited by top journals such as Science, Nature Photonics, and Nature Communications. She holds more than 50 Chinese invention patents and 9 of them have achieved achievement transformation, 4 PCT international invention patents and 3 US invention patent.

Representative papers (>70, selected)

[1] **Di Wang**, Yi-Long Li, Fan Chu, Nan-Nan Li, Zhao-Song Li, Sin-Doo Lee, Zhong-Quan Nie, Chao Liu, and Qiong-Hua Wang*, “Color liquid crystal grating

based color holographic 3D display system with large viewing angle,” *Light: Science & Applications*, Accepted, 2023. **(IF=19.4)**

- [2] Yi-Long Li, Nan-Nan Li, **Di Wang***, Fan Chu, Sin-Doo Lee, Yi-Wei Zheng and Qiong-Hua Wang*, “Tunable liquid crystal grating based holographic 3D display system with wide viewing angle and large size,” *Light: Science & Applications*, 11, 188, 2022. **(IF=19.4, ESI Hot paper, ESI Highly Cited)**
- [3] **Di Wang**, Chao Liu, Chuan Shen, Yan Xing, and Qiong-Hua Wang*, “Holographic capture and projection system of real object based on tunable zoom lens,” *Photonix*, 1(1), 6, 2020. **(IF=16.5)**
- [4] **Di Wang**, Zhao-Song Li, Yi-Wei Zheng, Nan-Nan Li, Yi-Long Li, and Qiong-Hua Wang*, “High-quality holographic 3D display system based on virtual splicing of spatial light modulator,” *ACS Photonics*, 10(7), 2297-2307, 2023. **(IF=7.077)**
- [5] **Di Wang**, Nan-Nan Li, Zhao-Song Li, Chun Chen, Byoung-ho Lee and Qiong-Hua Wang*, “Color curved hologram calculation method based on angle multiplexing,” *Optics Express*, 30(2), 3157-3171, 2022. **(IF=3.8)**
- [6] **Di Wang**, Nan-Nan Li, Yi-Long Li, Yi-Wei Zheng, and Qiong-Hua Wang*, “Curved hologram generation method for speckle noise suppression based on stochastic gradient descent algorithm,” *Optics Express*, 29(26), 42650-42662, 2021. **(IF=3.8)**
- [7] **Di Wang**, Jin-Bo Xu, Rong-Ying Yuan, You-Ran Zhao, Chao Liu, and Qiong-Hua Wang*, “High stability liquid lens with optical path modulation function,” *Optics Express*, 29(17), 27104-27117, 2021. **(IF=3.8)**
- [8] **Di Wang**, Nan-Nan Li, Chao Liu, and Qiong-Hua Wang*, “Holographic display method to suppress speckle noise based on effective utilization of two spatial light modulators,” *Optics Express*, 27(8), 11617-11625, 2019. **(IF=3.8)**
- [9] **Di Wang**, Chao Liu, Fan Chu, and Qiong-Hua Wang*, “Full color holographic display system based on intensity matching of reconstructed image,” *Optics Express*, 27(12), 16599-16612, 2019. **(IF=3.8)**
- [10] **Di Wang**, Chao Liu, and Qiong-Hua Wang*, “Holographic zoom micro-projection system based on three spatial light modulators,” *Optics Express*, 27(6), 8048-8058, 2019. **(IF=3.8)**

Representative patents (>50, selected)

- [1] **Di Wang**, Qiong-Hua Wang, Chao Liu, Chu Fan, and Yi-Long Li, Tunable crystal

grating-based holographic true 3D display system and method, U.S. Patent 17,604/872

- [2] **Di Wang**, Qiong-Hua Wang, Chao Liu, Chu Fan, and Yi-Long Li, Holographic true 3D display system and method based on adjustable liquid crystal grating, PCT Patent PCT/CN2021/070320
- [3] **Di Wang**, Qiong-Hua Wang, Zhao-Song Li, Nan-Nan Li, Yi-Long Li, and Chao Liu, Holographic 3D display system based on virtual array splicing of spatial light modulator, PCT Patent PCT/CN2021/111015
- [4] **Di Wang**, Ying-Fei Pang, Qiong-Hua Wang, Li-Jun Xu, Nan-Nan Li, and Zhao-Song Li, Crosstalk-free holographic 3D display method based on the principle of diffraction blur imaging, PCT Patent PCT/CN2021/115786
- [5] **Di Wang**, Qiong-Hua Wang, Nan-Nan Li, Yi-Wei Zheng, and Zhao-Song Li, Calculation method of polarization hologram based on high-frequency phase factor, PCT Patent PCT/CN2021/132856
- [6] **Di Wang**, Qiong-Hua Wang, Zhao-Song Li, Nan-Nan Li, Yi-Long Li, Chao Liu, Holographic 3D display system based on virtual array splicing of spatial light modulator, Chinese Patent ZL202110812111.2.
- [7] **Di Wang**, Qiong-Hua Wang, Chao Liu, Chu Fan, Yi-Long Li, Holographic true 3D display system and method based on adjustable liquid crystal grating, Chinese Patent ZL202011479541.9.
- [8] **Di Wang**, Qiong-Hua Wang, Chao Liu, Nan-Nan Li, Yi-Long Li, Method for holographic speckle noise suppression based on layered pixel scanning algorithm, Chinese Patent ZL202010149335.5
- [9] **Di Wang**, Qiong-Hua Wang, Yi-Long Li, Nan-Nan Li, Chao Liu, Fast hologram calculation method based on hologram optimization segmentation calculation, Chinese Patent ZL202010288882.1
- [10] **Di Wang**, Qiong-Hua Wang, Chao Liu, Dan Xiao, Large viewing angle holographic display system based on high optical power liquid lens, Chinese Patent ZL201910374243.4

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推荐信息：

Recommended by Name: Qiong-Hua Wang; Affiliate: Beihang University;

Occupation: Teacher, SID Fellow; Email: qionghua@buaa.edu.cn

Di Wang is associate professor at the School of Instrumentation and Optoelectronic Engineering, Beihang University. She is a member of the Holographic and Optical Information Committee of the Chinese Optical Society and the executive secretary of the Optical Display Committee of Chinese Society for Optical Engineering. Her research is focused on the holographic 3D display technology. She presided over six national and provincial projects, and published more than 70 papers cited by Science Citation Index such as Light: Science & Applications and PhotoniX. The research results have been cited by top journals such as Science and Nature Photonics. She holds more than 50 Chinese invention patents and 9 of them have achieved achievement transformation, 4 PCT international invention patents and 3 US invention patent. Co-authored 1 book. She have participated in academic exchange activities many times and made invitation reports for more than 20 times, including ICDT conferences.