Zhiping WANG

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Education

Master of Science, University of Basel — *Basel, Switzerland*
Biozentrum — *Sep. 2024 – Jun. 2026 (expected)*

Major: Master of Science in Physics of Life (Fellowship)

Ranking: 1   GPA: 4.78/6 (limited graded courses; most coursework Pass/Fail)

Bachelor of Science in Physics, Lanzhou University (Project 985 in China) — *Lanzhou, China*
School of Physical Science and Technology — *Sep. 2020 – Jul. 2024*

Major: Physics (magnetic track) in National Training Base for Research and Teaching Talents in Basic Science Disciplines

Ranking: 4/20 (20 Selected from 52)   GPA: 85.25/100

Major Courses: *Fourier Optics (89), Computational Physics (100), Methods of Mathematical Physics II (99), Opto-electronic Technology and Applications (94), Theoretical Mechanics, Statistical Physics, Electrodynamics, Quantum Mechanics, Linear Algebra, as well as several interdisciplinary courses in biophysics and structural biology.*

Honors and Awards

EPFL Excellence in Engineering Fellowship	EPFL	*Jun. - Sep. 2025*
Biozentrum Fellowship for Master's Study	University of Basel	*Jun. 2024 - Jan. 2026*
Excellent Bachelor's Thesis	Lanzhou University	*Jun. 2024*
Outstanding Student Scholarship	Lanzhou University	*Sep. 2023 & Sep. 2022*
China Undergraduate Physics Tournament (Northwest Region)	First & second Prize	*Jul. 2022 & Jun. 2021*

Publications

[1] Zhiping Wang, Tianci Feng, Aiye Wang, Jinghao Xu, and An Pan. "Fusion-based enhancement of multi-exposure Fourier ptychographic microscopy." *Advanced Photonics Nexus* 4, no. 4 (2025): 046001. Link. DOI: 10.1117/1.APN.4.4.046001.

[2] Fannuo Xu[†], Zhiping Wang[†], Zipei Wu, and An Pan. "Wide-field quantitative phase imaging without slicing via feature-domain Fourier ptychographic microscopy." *Optics & Laser Technology* 187 (2025): 112727. Link. DOI: 10.1016/j.optlastec.2025.112727.

[3] Tianci Feng, Aiye Wang, Zhiping Wang, Yizheng Liao, and An Pan. "Linear-space-variant model for Fourier ptychographic microscopy." *Optics Letters* 49, no. 10 (2024): 2617–2620. Link. DOI: 10.1364/OL.522745.

[4] Fannuo Xu, Zipei Wu, Chao Tan, Yizheng Liao, Zhiping Wang, Keru Chen, and An Pan. "Fourier ptychographic microscopy 10 years on: a review." *Cells* 13, no. 4 (2024): 324. Link. DOI: 10.3390/cells13040324.

[5] Yanqi Chen, Jiurun Chen, Zhiping Wang, Yuting Gao, Yonghong He, Yishi Shi, and An Pan. "Fast full-color pathological imaging using Fourier ptychographic microscopy via closed-form model-based colorization." *Advanced Photonics Nexus* 4, no. 2 (2025): 026001. Link. DOI: 10.1117/1.APN.4.2.026001.

[•] Zhiping Wang, *Exploring advancements in slicing-free Fourier ptychographic microscopy*, Bachelor's thesis, Lanzhou University (2024). Supervisor: Dr. Hao Jia (Lanzhou University & KAUST) and Dr. An Pan (Chinese Academy of Sciences). Grade: **Excellent (oral defense)**.

Research/Projects Experience

3D Multi-View Tracking and Sleep Behavior Analysis of *Drosophila* — *Oct 2025 – Present*
Master's Thesis, Biozentrum, University of Basel Advisors: Prof. Anissa Kempf, Alex Medeiros — *Basel, Switzerland*

- Built a dual-view behavioral arena using mirrors to provide two simultaneous views of fly to a single camera.
- Implemented reliable two-view keypoint detection and tracking of freely moving *Drosophila* using DeepLabCut.
- Plan to recover 3D trajectories from dual-view data via camera calibration and triangulation of predicted keypoints.
- Will quantify sleep-related motor patterns using reconstructed 3D poses and trajectories.

3D Reconstruction for TVAM 3D-Printed Sample   *June 2025 – Sep 2025*
EPFL EEE Summer Project, Advisor: Felix Wechsler, Dr. Christophe Moser, EPFL   *Lausanne, Switzerland*

- Developed a custom multi-slice forward model and inverse reconstruction framework for 3D Fourier Ptychographic Microscopy (FPM) based on the angular spectrum method.
- Replaced traditional voxel-based optimization with implicit neural representations (INR), leading to substantially improved 3D reconstruction fidelity and artifact suppression in simulation.
- Independently built a complete FPM experimental setup — including LED source soldering, optical alignment, and reconstruction code — achieving successful super-resolution reconstruction from real data.
- Implemented defocused multi-slice imaging of calibration samples; preliminary results confirmed feasibility though limited by the short project duration.

Optimal Filtered Back-Projection for Cryo-electron tomography   *Nov 2024–Feb 2025*
Master's Project, Advisor: Dr. Ricardo Righetto & Dr. Valentin Debarnot, Biozentrum & DMI in UniBasel   *Switzerland*

- * The project's report can be found at the [Report link on Github](#).
- Explored the principles of Filtered Back-Projection and implemented tomographic reconstruction using ODL in simulations by Python.
- Designed and trained an optimal network for filter optimization on Cryo-ET datasets using PyTorch, incorporating total variation (TV) regularization to enhance reconstruction quality.
- Conducted experiments on real datasets (Chlamydomonas sample from EMPIAR-11830), enhancing the details in the reconstruction results.

Research on High-effective Fourier Ptychographic   *Aug 2023–July 2024*
Research Internship, Supervisor: Dr. An Pan, Pioneering Interdiscipline Center of Chinese Academy of Sciences China

- * The project's result can be found at the [GitHub project link1](#) and [GitHub project link2](#).
- Studied articles related to the principles of Fourier Ptychographic Microscopy and actively participated in experiments to gain insights into the details.
- Discovered that block stitching is a cause of many issues in the field of FPM. Through MATLAB simulations and using Arduino to control the LED array for illumination modulation, progressively expanded the field of view in single imaging (0.2mm-1mm-3.3mm) using an improved collaborative algorithm.
- Noticed some deficiencies in the algorithm. By drawing on the concept of image fusion, successfully utilized existing multi-exposure images for innovative nonlinear stitching, significantly improving the imaging quality.

Above are some selected research projects. For a more comprehensive overview, please visit my [personal website](#).

Skills

Programming:	Proficient in C/C++, MATLAB, Mathematica, Python (TensorFlow, PyTorch, OpenCV, etc.), LaTeX/Tex
Software:	Familiar with Comsol, SolidWorks, Inventor, Zemax, PixInsight; Proficient in Adobe Illustrator, Photoshops, Visio.
Computing Skills:	Experienced in supercomputing environments for high-performance computing tasks Competent in Linux for system administration and scripting Familiar with CUDA for GPU-accelerated computing

Teaching Experience

School of Physical Science and Technology, Lanzhou University   *Lanzhou, China*
Teaching Assistant for the Computational Physics Class   *September 2021 – January 2022*

- Reviewed and graded student assignments, provided constructive feedback to students, and helped teachers with ongoing evaluation.
- Assisted students with course material, answered questions during regular office hours I held or in the class, and conducted supplemental study sessions to enhance students' understanding of complex topics.
- Collaborated with the course instructor to develop educational materials, including presentations and assignments, to improve the overall learning experience.