Xi Beiyufei

202521210121@std.uestc.edu.cn | ORCID 0000-0001-6974-1286 | Chengdu, China

M.S. student in Optical Engineering at UESTC, with research training in experimental quantum optics, warm-atom quantum memories, optical instrumentation, and laboratory automation.

EDUCATION

M.S. in Optical Engineering **2025 - Present**

University of Electronic Science and Technology of China | Institute of Fundamental and Frontier Sciences

B.S. in Optoelectronic Information Science and Engineering **2021 - 2025**

Beijing Jiaotong University | School of Physical Science and Engineering

Chengdu Foreign Languages School **Earlier education**

Junior and senior high school

Chengdu Experimental Primary School **Earlier education**

Yuquan Kindergarten **Early education**

RESEARCH EXPERIENCE

Warm-rubidium-ensemble DLCZ quantum memory **Jul 2026 - Present**

UESTC | Early-stage research

- Studying the theory and experimental methods of write-read correlations, collective spin-wave storage, and four-wave-mixing noise in warm rubidium ensembles; experimental optimization is not yet presented as completed work.

Entangled-photon experiments and laboratory automation **Sep 2025 - Jun 2026**

UESTC

- Built and aligned polarization-path and two-dimensional polarization-entanglement setups; balanced detector channels and performed single-photon coincidence measurements.
- Calibrated liquid-crystal retarders and half-wave plates; processed data in MATLAB; adapted AI-assisted Python wrappers for a Thorlabs KLC controller and validated the modified code on hardware.
- Participated in assembly and on-site validation of an EtherCAT/PLC dual-axis motion-control platform.

RESEARCH EXPERIENCE (CONTINUED)

Laser Doppler vibrometer design and simulation **2025**

B.S. thesis | Beijing Jiaotong University

- Designed a heterodyne Mach-Zehnder LDV architecture using a He-Ne source, acousto-optic frequency shifting, balanced detection, and a PLL-based signal-processing chain.
- Developed COMSOL ray-optics and dynamic-mesh simulations for optical paths, polarization, interference, and Doppler-frequency recovery; the thesis covered system design and numerical validation rather than construction of a complete instrument.

Ultrasonic imaging of buried rail defects **Jun 2023 - Jun 2024**

National Undergraduate Innovation Training Project | Participant

- Studied direct and full-skip total-focusing approaches, COMSOL wave-field simulation, additively manufactured rail specimens, and Verasonics-based experimental imaging.
- Co-authored the IEEE TIM article listed below on localization and quantification of buried rail-web defects. Team patents and later manuscripts are not claimed as personal outputs.

Ternary layer-by-layer polymer solar cells **Jun 2022 - Jun 2023**

National Undergraduate Innovation Training Project | Participant

- Contributed to D18-Cl/Y6/MAZ-2 device-fabrication procedures and interpretation of photovoltaic and spectroscopic characterization; project data reported 17.97% power-conversion efficiency for the ternary devices.
- Co-authored the Chemical Engineering Journal article listed below.

PUBLICATIONS

H. Sun, Q. Feng, J. Li, F. Zheng, L. Peng, S. Li, S. Huang, and **Y. Xibei**. “Rail Web Buried Defect Location and Quantification Methods in Hybrid High-Order Guided Wave Detection.” IEEE Transactions on Instrumentation and Measurement, 73, 1-12 (2024). DOI: 10.1109/TIM.2023.3338679

H. Zhou, L. Zhang, X. Ma, **Y. Xibei**, Y. Zheng, Z. Liu, X. Gao, J. Zhang, Z. Liu, and F. Zhang. “Approaching 18% efficiency of ternary layer-by-layer polymer solar cells with alloyed acceptors.” Chemical Engineering Journal, 462, 142327 (2023). DOI: 10.1016/j.cej.2023.142327

TECHNICAL EXPERIENCE

- Introductory hands-on experience: quantum-optical alignment, SPDC entangled-photon sources, single-photon detection, and coincidence measurements.
- Python and MATLAB for data processing and instrument control; introductory integration with EtherCAT, PLC, and TCP-based control systems.
- Introductory use of Zemax, COMSOL Multiphysics, and CAD for optical and engineering design.

SELECTED HONORS

- Three-Good Student and Second-Class Academic Excellence Scholarship, Beijing Jiaotong University (2022).
- National Undergraduate Innovation Training Projects (2022, 2023).
- Best Performance Award, Beijing University Student Music Festival (2023).

ACTIVITIES

- Oboe player and former deputy principal, Beijing Jiaotong University Symphony Orchestra; former member of the School football team.