

WANG Haiwei

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Personal Profile

An engineering student passionate about physics. Before coming to EPFL as a master student, I enjoyed exploring various fields within **optics & photonics**, and realized my interest in **nonlinear dynamics & complex systems**, with the laser an emblematic example. At EPFL, I immerse myself in **quantum science & technology**, which I deem promising. I'm looking for opportunities to apply and deepen my knowledge in **these three fields**.

Education

EPFL

Lausanne, Switzerland

MSc in Microengineering (ongoing)

Sep 2023 - present

- Minor in Quantum Science and Engineering
- with a focus on photonics

Zhejiang University

Hangzhou, China

Withdrawal of PhD program in Optical Engineering

Sep 2022 - Sep 2023

Zhejiang University

Hangzhou, China

BEng in Optical Engineering

Sep 2018 - Jun 2022

- Elected to Mixed Class, Chu Kochen Honors College
- Overall GPA: 3.99/4.0 Rank: 1/134

Projects

Building an optical fiber based setup for topological photonics (ongoing)

Lausanne, Switzerland

Laboratory of Wave Engineering, EPFL (Prof. Romain Flury)

July 2024 - present

- Literature review, presentation, and proposal of the project.
- Modeling and simulation of the system, which is based on a two loop structure. Related concepts: quantum walk, synthetic dimension, PT symmetric, Floquet, nonlinear, etc.
- Building the setup in collaboration with another lab at EPFL.

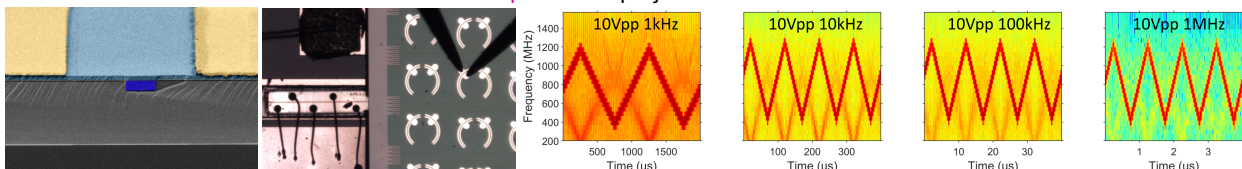
Integrated lithium tantalate-on-silicon nitride photonic platform

Lausanne, Switzerland

K-Lab, EPFL (Prof. Tobias Kippenberg)

Feb 2024 - June 2024

- Developing a novel microresonator platform for electro-optical applications: Lidar, electro-optical frequency comb, microwave-optical quantum transducer, etc.
- Working with large team and responsible for analyzing device performance via various experimental techniques, such as quality factors characterization and comparison with simulations.
- Demonstration of frequency-agile laser tuning by self-injection locking a laser diode to the microresonator.
- Code for Lumerical **MODE** and **FDTD** simulation. **Report** of the project.



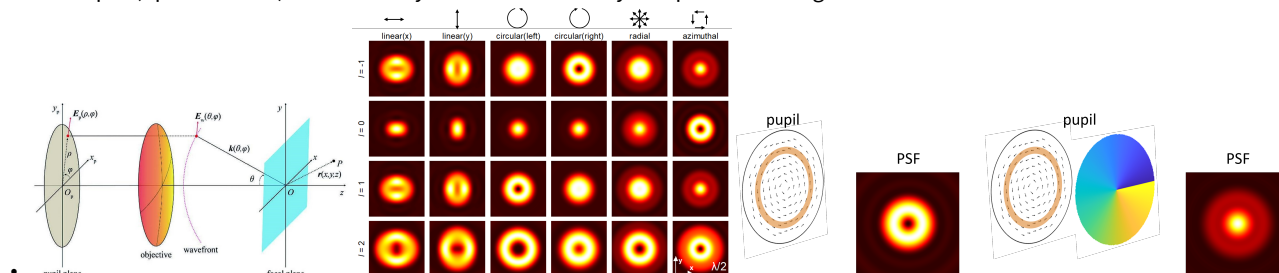
Controlled generation of optical vortices by tight focusing

Hangzhou, China

X Lab, Zhejiang University (Prof. Xiang Hao)

Nov 2021 - Jun 2022

- Simulation work with potential applications in biomedicine, optical communication, and quantum optics.
- Numerical analysis of vortex beams focused by a high NA (numerical aperture) objective using vectorial diffraction equation.
- Tailoring the PSF (point spread function) of an objective by pupil function manipulation. Controlled generation of ring-shaped focal spot (optical vortex) with arbitrary radius and width by an optimization algorithm.



Skills

Programming Language Python (see my [course project](#) about ray tracing in graded index media), MATLAB, Julia

Scientific Software Lumerical FDTD/MODE, Zemax, ASAP, SOLIDWORKS

Miscellaneous Optical labs (free space, fiber, chips), Git, LaTeX, Arduino, nonlinear fiber optics

Selected courses at EPFL [Quantum optics and quantum information](#) (6/6), [Lasers: theory and modern applications](#) (6/6)

Honors & Awards

2022	Outstanding Graduates , Zhejiang University	China
2021	First Prize , The Chinese Science Competition on Energy Conservation and Emission Reduction	China
2020	Student Leadership Award , Zhejiang University	China
2019	First Prize , The Chinese Mathematics Competitions	China

Interests

Cooking

I call my cooking style as experimental and minimal, with a fusion of Chinese fashion and local ingredients. I like improvisation rather than following the recipe.

Electronic music

I love listening to electronic music over broad categories. I love playing all kinds of free software of synthesizers, DAWs, and DJ controllers.

Photography

Landscape and abstract, with my single-camera iPhone only, check my works at

<https://nlphotonics.github.io/gallery/>

Languages

English High proficiency; TOEFL iBT 104/120

Chinese Mother tongue

Side remarks

- Internship period: 6 months, can start from 1 Feb 2025 and end before 1 Sep 2025
- This job completes the mandatory internship required by my master program at EPFL([link](#))