Randy Stefan Tanuwijaya CV

Contact Information

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Research Interests

Optical metasurfaces, Photonic computing, Quantum optics, Nanolithography

Education

Hong Kong University of Science and Technology (HKUST) Hong Kong
Ph.D. (candidate) in Physics, (Advisors: Jensen Li & Jingdi Zhang) *Since 2022*
B.Sc. in Physics and Computer Science (CGA: 3.7/4.3) *2018-25*

Honors and Awards

- Best Student Paper, The International Symposium of Plasmonics and Nanophotonics, NUS, Singapore 2025
- Best Teaching Assistant, Department of Physics, HKUST 2024
- **Hong Kong Postgraduate Fellowship Award,** Research Grants Council of Hong Kong 2022
- First Class Honors, HKUST 2022
- **SSCI Medalist Scholarship**, School of Science HKUST 2018
- Silver Medal, Asian Physics Olympiad 2018
- Bronze Medal, Indonesian National Physics Olympiad 2017

Teaching Duty

- Tutorial instructor for General Physics I PHYS 1112, HKUST (Fall 23)
- Tutorial instructor for Introductory Physics PHYS 1191, HKUST (Spring 24)
- Supervising experimental projects for Capstone Research PHYS 4291, HKUST (Fall 24, Spring 25) Experiments: Superconductivity, Photolitography and device fabrication

Publications

[1] Randy Stefan Tanuwijaya, So Lap, Wai Chun Wong, Tailin Ain, Jingdi Zhang, Wing Yim Tam, and Jensen Li
Metalens array for complex-valued optical discrete Fourier transform
in press, preprint arXiv:2502.08770 (2025)

[2] Jiawei Xi, Randy Stefan Tanuwijaya, Tan Li, and Jensen Li
Optical Neural Networks with Intensity-Based Projection Layers as Effective Nonlinear Activations
in press, (2025)

[3] Randy Stefan Tanuwijaya, Liang Hong, Jiawei Xi, Wai Chun Wong, Tsz Yung Kit, Wing Yim Tam, and Jensen Li
Metasurface for programmable quantum algorithms with classical and quantum light
Nanophotonics 13, 927–936 (2024)

[4] Tsz Kit Yung, Jiawei Xi, Hong Liang, Kai Ming Lau, Wai Chun Wong, Randy Stefan Tanuwijaya, Fan Zhong, Hui Liu, Wing Yim Tam, and Jensen Li
Polarization coincidence images from metasurfaces with HOM-type interference
iScience 25, 104155 (2022)

Presentations and Talks

- **15th International Conference on Metamaterials, Photonic Crystals and Plasmonics**
  "Computing metalens array for programmable quantum algorithms and complex-to-complex discrete Fourier transform" Torremolinos, Spain, 26 July 2025
- **The International Symposium on Plasmonics and Nanophotonics 2025**
  "Metalens array for programmable quantum algorithms and complex-valued optical computing" National University of Singapore, 17 February 2025
- **13th International Conference on Metamaterials, Photonic Crystals and Plasmonics**
  "Optical matrix computation using programmable metalens array" Paris, France, 19 July 2023

Undergraduate Research Projects

- Optical and quantum metasurfaces, advisor: Jensen Li 2021-22
- All-optical neural network, advisor: Shengwang Du 2020-21
- Photonic microring resonator, advisor: Andrew Poon 2019-20

Internship Experience

- Fullstack Web Developer Intern, Quokka HR Summer 2021
  Develop frontend (vue.js), backend (flask), and maintain database (SQLalchemy)

Open-Source Contributions

- **Zen Browser**, a firefox-based browser, github.com/zen-browser/desktop
  Added a trigger to allow scrolling from the edge of the browser window #8461
  Added a keybind to search for tabs #8272

Technical Proficiency

Programming languages: **Wolfram Language**, **Python**, **JS**, Java, Matlab, C++
Simulation and experimental tool: Comsol Multiphysics**,** LabView
Typewriting: Microsoft Office, LaTeX
Illustration: Blender, Inkscape, GIMP
Cloud computing: AWS, Hetzner Cloud, Cloudflare
Others: **Linux**, Docker, TrueNAS

Languages

- English, Professional Working proficiency
- Chinese, Elementary proficiency
- Indonesian, Native proficiency

Extracurricular Services

- **Undergraduate Hall Tutor,** UG Hall 1 Since 2022
  Organize social events, offer pastoral care and counseling to students
- Student Peer Companion, HKUST Counseling and Wellness Center Since 2023
  Volunteer in mental health campaigns and featured in promotional media

- updated August 2025 -