THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

RESUMÉ

Name Chuang Xu (徐創)

Address EF113, 11 Yuk Choi Road, Hung Hom, Hong Kong

Contact 53001805 xu_feb@foxmail.com chuang.xu@connect.polyu.hk

Supervisor Prof. Alan Pak Tao Lau

Education

2021–Present PhD Candidate, Dept. of Electrical and Electronic Engineering, The Hong Kong Polytechnic University

2014–2017 MEng, School of Materials Science and Engineering, Wuhan University of Technology

2010–2014 BEng, School of Materials Science and Engineering, Wuhan University of Technology

Research Experience

09/2021–Present Developed simplified equalization algorithms for discrete nonlinear frequency division multiplexing (D-NFDM) systems without sacrificing performance. Proposed a unified and standard DSP flow for dual-polarization D-NFDM systems.

Fiber perturbative nonlinearity mitigation based on sequence selection in probabilistic shaping coherent systems. Experienced in coherent systems in the lab.

04/2021–08/2021: Research assistant at PolyU. DSP codes development with NumPy and JAX to greatly improve computation efficiency. Spectral reconstruction based on compressed sensing.

11/2015–06/2017: Research on polarization-dependent absorption property of graphene and its application in fiber polarizer. Optics simulation based on Comsol and MATLAB.

Work Experience

07/2023—12/2023: Research Intern, Theory Lab, 2012 Labs, Huawei Hong Kong Research Center.

- Study on the nonlinear fiber optic transmission from the perspective of Koopman theory.

07/2023—12/2023: Part-time Teaching Assistant, The Hong Kong Polytechnic University

- Through Teaching Postgraduate Scholarship Scheme. Tutorial, laboratory Session for subject “Signal and Linear System” and “Light”

07/2017—03/2021: Optical transmission engineer, Advanced Research Department, FiberHome.

Photonics simulation research project: Project Manager.

- Developed transceiver models that can pre-emphasize the signal spectrum to combat cascading filtering, and included the main non-idealities of commercial transceivers, getting performance curves well matched to the real-world ones.
- Investigated SNR equalization strategy, obtaining < 0.5dB SNR flatness in simulation and field test.

SOP transient in OPGW:

- Analysis of the state of polarization (SOP) transient (up to ~Mrad/s) in optical ground wire (OPGW) and its impact on digital coherent receivers. Field and laboratory experiments of SOP transient in the optical coherent system.
- Attended standards establishment conference as the FiberHome technical expert, specifying the SOP transient tolerance standard in the coherent communication system.

Publications

C. Xu, G. Zhou, and A. P. T. Lau. "A Full Digital Signal Processing Flow for Dual-Polarization Discrete Nonlinear Frequency Division Multiplexing Systems," Journal of Lightwave Technology, **under review**.

C. Xu, and A. P. T. Lau. "Optimal Nonlinear Spectral Back Rotation for Discrete Eigenvalue Transmission Systems," Journal of Lightwave Technology, vol. 43, no. 11, pp. 5129-5139, 2025.

C. Xu, G. Zhou, C. Lu, and A. P. T. Lau. "81 Gb/s Dual-Polarization Discrete Eigenvalue Transmission Based on Nonlinear Fourier Transform," IEEE Photonics Technology Letters vol. 35, no. 11, 617-620, 2023.

C. Xu, J. Wang, and A. P. T. Lau. "Optimal Symbol Rate for Discrete Nonlinear Frequency Division Multiplexing Transmissions," European Conference on Optical Communication (ECOC), Copenhagen, Denmark, 2025.

C. Xu, and A. P. T. Lau. "A Full DSP Flow for Dual-Polarization Discrete NFDM Systems," Optoelectronics and Communications Conference (OECC), Sapporo, Japan, 2025.

C. Xu, and A. P. T. Lau. "New Perspectives on Perturbation-based Pre-Distortion and Post-Compensation for Nonlinear Optical Transmission," Optoelectronics and Communications Conference (OECC), Sapporo, Japan, 2025.

C. Xu, and A. P. T. Lau. "Optimal Nonlinear Spectral Back-Rotation for Discrete Eigenvalue NFT Transmission Systems," In 2024 Optical Fiber Communications Conference (OFC).

C. Xu, et al. "6.48 Tb/s Transmissions Using 50 GHz Integrated Lithium Niobate Flat-Top Electro-Optic Combs," In 2024 Optical Fiber Communications Conference (OFC), ***Top-Scored***.

C. Xu, and A. P. T. Lau. "A Method of Generating Second-Order Soliton with Specified Time Positions," In 2023 Asia Communications and Photonics Conference (ACP).

Y. He, Z. Zhai, S. Chen, H. Zhang, **C. Xu**, et al. "Transceiver Penalty and Amplifier Noise Figure Characterization for Accurate QoT Estimation in Hyperscale Disaggregated DCI Networks," In 2025 Optical Fiber Communications Conference (OFC).

Patents: Dual-Polarization-Joint Noise Processing Method and Device (US11949464B1, 2022)

A method and device for predicting optical network transmission performance (CN112532314B, 2022)

Honors

Top-scored paper in OFC Conference 2024

TPS Teaching Excellence Award 2021

First-class postgraduate scholarship (2015, 2016)

Second-class postgraduate scholarship (2017)

Quarterly outstanding employee award (for the top 10% of employees) × 3, and Special awards for "Solving Key Problem in ROADM Project" and "Tackling the SOP Problem" in FiberHome.

Skills

Language: English, IELTS – Overall 7 (L 7.5, R 8.5, W 6.5, S 5.5)

Technical skills: Optics and photonics simulation, MATLAB, COMSOL Finite Element Analysis, NumPy, devices, and instruments in commercial/research fiber communication systems**.**

Teaching and Research Interest

I am seeking a teaching position in a post-secondary education institution. With a background in optics and digital communication, I served as a teaching assistant for subjects "Signal and Linear System" and "Light". I conducted tutorial sessions many times, enjoying delivering knowledge and learning experiences to students. I am interested in the nonlinearity and polarization-related problems of optical coherent systems, and I have been doing related research during my PhD program, such as NFDM and perturbative fiber nonlinearity distortion modeling and compensation.