Jingwen Ma

Research Assistant Professor of Electrical & Electronic Engineering
The University of Hong Kong
Pok Fu Lam, Hong Kong SAR, China
☎ (852) 53426298 ✉ jwma@hku.hk
Google Scholar Group Website

RESEARCH INTEREST AND EXPERTISE

Nano-photonics, light–matter interaction physics, polariton Bose-Einstein Condensation and quantum fluid/solid physics, semiconductor lasers, micro- and nano-electromechanics, van der Waals materials

APPOINTMENTS

08/2024 – present Research Assistant Professor, The University of Hong Kong, Hong Kong
08/2022 – 08/2024 Postdoctoral Research Fellow, The University of Hong Kong, Hong Kong
11/2021 – 08/2022 Postdoctoral Research Fellow, The Chinese University of Hong Kong, Hong Kong

EDUCATION

2021 Ph.D., Electronic Engineering, The Chinese University of Hong Kong, Hong Kong
2015 B.S., Optoelectronics, Huazhong University of Science and Technology, China

HONORS AND AWARDS

2025 Overseas Excellent Young Scholars Grant, National Natural Science Foundation of China
2023 Excellent Progress in Silicon Photonics over the past three years, Chinese Optical Engineering Society
2021 Postgraduate Research Output Award, The Chinese University of Hong Kong
Outstanding PhD Thesis Award, The Chinese University of Hong Kong
2016 World's 30 Most Clearly Communicated Breakthroughs in Optics, Optical Society of America
2015 Outstanding Graduate Award, Huazhong University of Science and Technology
2013 National Scholarship, Ministry of Education (China)
2011 National Scholarship, Ministry of Education (China)

PROFESSIONAL ACTIVITIES

- Co-chair for topical session *Nanosensors and Nanoactuators* at *The 23rd IEEE International Conference on Nanotechnology (IEEE-NANO 2023)*, Jeju Island, Korea, 07/2023.
- Serve as manuscript reviewer for academic journals including *Nature Communications*, *Optica*, *Optics Letters*, *Optics Express*.

RESEARCH EXPERIENCE

The University of Hong Kong, *as a Postdoc and now Research Assistant Professor* 08/2022 – present
Supervisor: *Prof. Xiang Zhang*

- Exciton-polariton Bose-Einstein condensation and quantum fluids/solids
- Exciton-polaritons in novel quantum materials

The Chinese University of Hong Kong, *as a Postdoc Research Fellow* 11/2021 – 08/2022
Supervisor: *Prof. Jianbin Xu*

- Photonic crystals integrated with 2D materials

The Chinese University of Hong Kong, *as a Ph.D. student* 09/2015 – 09/2021
Supervisor: *Prof. Xiankai Sun*

- Photonic-crystal devices and chips
- III-V semiconductor lasers
- Micro-electro-mechanical systems (MEMs)

RESEARCH PROJECTS

- Project Title: *Room-temperature supersolids in exciton–polariton photonic crystals*
  Agency: General Research Funding (GRF), Hong Kong Research Grants Council (RGC)
  Role: **PI** Period: pending
- Project Title: *Electrically-pumped large-area Dirac-vortex lasers*
  Agency: General Research Funding (GRF), Hong Kong Research Grants Council (RGC)
  Role: **PI** Period: 1 Jan 2026 – 31 Dec 2028 Amount: 1,163,861 HKD
- Project Title: *Experimental investigation on chiral topological nanophotonics integrated with semiconductor moiré superlattices*
  Agency: General Research Funding (GRF), Hong Kong Research Grants Council (RGC)
  Role: co-I Period: 1 Jan 2023 – 31 Dec 2026 Amount: 1,244,750 HKD
- Project Title: *2D material-based topological polariton lasers*
  Agency: NSFC-RGC Joint research scheme, Hong Kong Research Grants Council (RGC)
  Role: co-I Period: 1 Jan 2024 – 31 Dec 2026 Amount: 1,228,000 HKD

TEACHING EXPERIENCE

The Chinese University of Hong Kong, *as a teaching assistant*

- ENGG1100 (*Introduction to Engineering Design*)
- ENGG1310 (*Engineering Physics*)
- ELEG5550 (*Micro- and Nano-Fabrication Laboratory*)

The University of Hong Kong, *as a Research Assistant Professor*

- Act as co-supervisor of 3 postgraduate students at HKU.

PUBLICATION

Selected Paper List

(Equal contribution *, Corresponding author †)

1. **Jingwen Ma***, Xiong Wang*, Yuanhao Gong, Chong Hu, Qi Wang, Kai Feng, Zemeng Lin, Teruya Ishihara, Nicholas Fang, Xiaobo Yin, Shuang Zhang, Zuxin Chen†, Xiaoze Liu†, Xiaodong Cui, Xiang Zhang†, "Excitonic negative refraction mediated by magnetic orders," ***Nature Nanotechnology***, 21(3): 374–379, 2026.
2. **Jingwen Ma**, Xiaobo Yin†, "Stacking the future of heterogeneous optoelectronics," ***Science***, 387: 6738, Mar. 2025. [Invited Expert Commentary Paper]
3. **Jingwen Ma***, Xiang Xi*, Yuan Li, and Xiankai Sun†, "Nanomechanical topological insulators with an auxiliary orbital degree of freedom," ***Nature Nanotechnology***, 16(5): 576–583, May 2021.
4. **Jingwen Ma**, Ding Jia, Li Zhang, Yi-jun Guan, Yong Ge, Hong-xiang Sun†, Shou-qi Yuan, Hongsheng Chen, Yihao Yang†, and Xiang Zhang†, "Observation of vortex-string chiral modes in metamaterials," ***Nature Communications***, 15: 2332, Mar. 2024.
5. Xiang Xi*, **Jingwen Ma***, Shuai Wan, Chun-Hua Dong, and Xiankai Sun†, "Observation of chiral edge states in gapped nanomechanical graphene," ***Science Advances***, 7(2): eabe1398, Jan. 2021.
6. **Jingwen Ma***, Taojie Zhou*, Mingchu Tang*, Haochuan Li, Zhan Zhang, Xiang Xi, Mickael Martin, Thierry Baron, Huiyun Liu, Zhaoyu Zhang†, Siming Chen†, and Xiankai Sun†, "Room-temperature continuous-wave Dirac-vortex topological lasers on silicon," ***Light: Science & Applications***, 12: 255,

Oct. 2023.

7. **Jingwen Ma**[*], Xiang Xi[*], and Xiankai Sun[†], "Experimental demonstration of dual-band nanoelectromechanical valley-Hall topological metamaterials," ***Advanced Materials***, 33(10): 2006521, Feb. 2021.
8. Xiang Xi[*], **Jingwen Ma**[*], Xiankai Sun[†], "A topological parametric phonon oscillator," ***Advanced Materials***, 37: 2309015, Jan. 2025.
9. **Jingwen Ma**, Xiang Zhang, Xiaobo Yin[†], "Parity-time and anti-parity-time symmetries in heat transfer," ***National Science Review***, 11: nwae275, Aug. 2024.
10. Taojie Zhou[*], **Jingwen Ma**[*], Mingchu Tang[*], Haochuan Li, Mickael Martin, Thierry Baron, Huiyun Liu[†], Siming Chen[†], Xiankai Sun[†], and Zhaoyu Zhang[†], "Monolithically integrated ultralow threshold topological corner state nanolasers on silicon," ***ACS Photonics***, 9(12): 3824–3830, Nov. 2022.
11. Haifeng Kang, **Jingwen Ma**[†], Junyu Li, Xiang Zhang[†], Xiaoze Liu[†], "Exciton polaritons in emergent two-dimensional semiconductors," ***ACS Nano***, 17(24): 24449–24467, Dec. 2023.
12. **Jingwen Ma**, Ziyao Feng, Yuan Li, and Xiankai Sun[†], "Optically controlled topologically protected acoustic wave amplification," ***IEEE Journal of Selected Topics in Quantum Electronics***, 26(5): 7600410, Sep./Oct. 2019.
13. **Jingwen Ma**, Xiang Xi, and Xiankai Sun[†], "Topological photonic integrated circuits based on valley kink states," ***Laser & Photonics Reviews***, 13(12): 1900087, Dec. 2019.
14. **Jingwen Ma**[*], Fei Xia[*], Shi Chen[*], Jian Wang[†], "Amplification of 18 OAM modes in a ring-core Erbium-doped fiber with low differential modal gain," ***Optics Express***, 27(26): 38087–38097, Dec. 2019.
15. **Jingwen Ma**, Xiang Xi, Zejie Yu, and Xiankai Sun[†], "Hybrid graphene/silicon integrated optical isolators with photonic spin-orbit interaction," ***Applied Physics Letters***, 108(15): 151103, Apr. 2016. [featured as cover article and selected as Editors Pick]

Full Journal Paper List

(Equal contribution [*], Corresponding author [†])

1. **Jingwen Ma**[*], Yuanhao Gong[*], Shuang Zhang, Xiaobo Yin[†], Xiang Zhang[†], "Room-temperature polariton supersolids," ***Preprints***, Mar. 2026.
2. **Jingwen Ma**[*], Xiong Wang[*], Yuanhao Gong, Chong Hu, Qi Wang, Kai Feng, Zemeng Lin, Teruya Ishihara, Nicholas Fang, Xiaobo Yin, Shuang Zhang, Zuxin Chen[†], Xiaoze Liu[†], Xiaodong Cui, Xiang Zhang[†], "Excitonic negative refraction mediated by magnetic orders," ***Nature Nanotechnology***, 21(3): 374–379, 2026.
3. Xinyi Zhao, **Jingwen Ma**, Fuhuan Shen, Xiaokun Guo, Zefeng Chen, Jianbin Xu, "Monolayer J-aggregate crystals strong coupling with an all-dielectric metasurface for photonic properties modification," ***Laser & Photonics Reviews***, 20(2): e01208, 2026.
4. Peiwen Ren, Junrong Zheng, Zhuo Huang, Yan Liu, Long Zhang, Hua Zhang, **Jingwen Ma**, Zhanghai Chen, Jian-Feng Li, Jun Yi, Zhilin Yang, "Far-field excitation of a photonic flat band via a tailored anapole mode," ***Physical Review Letters***, 135: 083803, Aug. 2025.
5. **Jingwen Ma**, Xiaobo Yin[†], "Stacking the future of heterogeneous optoelectronics," ***Science***, 387: 6738, Mar. 2025. [Invited Expert Commentary Paper]
6. Xiang Xi[*], **Jingwen Ma**[*], Xiankai Sun[†], "A topological parametric phonon oscillator," ***Advanced Materials***, 37: 2309015, Jan. 2025.
7. Aoning Luo, Haitao Li, Ken Qin, **Jingwen Ma**, Shijie Kang, Jiayu Fan, Yiyi Yao, Xiexuan Zhang, Jiusi Yu, Boyang Qu, Xiaoxiao Wu, "Hybrid cavity from tunable coupling between anapole and Fabry-Perot resonance or anti-resonance," ***Laser & Photonics Reviews***, e02392, 2025.
8. Ning Han, Fujia Chen, Mingzhu Li, Rui Zhao, Wenhao Li, Qiaolu Chen, Li Zhang, Yuang Pan, **Jingwen Ma**, Zhi-Ming Yu, Hongsheng Chen[†], Yihao Yang[†], "Boundary-induced topological chiral extended states in Weyl metamaterial waveguides," ***Physical Review Letters***, 134(19): 196601, 2025.
9. **Jingwen Ma**, Xiang Zhang, Xiaobo Yin[†], "Parity-time and anti-parity-time symmetries in heat transfer," ***National Science Review***, 11: nwae275, Aug. 2024.

10. **Jingwen Ma**, Ding Jia, Li Zhang, Yi-jun Guan, Yong Ge, Hong-xiang Sun†, Shou-qi Yuan, Hongsheng Chen, Yihao Yang†, and Xiang Zhang†, "Observation of vortex-string chiral modes in metamaterials," ***Nature Communications***, 15: 2332, Mar. 2024.
11. Fuhuan Shen, Yaoqiang Zhou, **Jingwen Ma**, Jiapeng Zheng, Jianfang Wang, Zefeng Chen†, Jianbin Xu†, "Tunable Kerker scattering in a self-coupled polaritonic metasurface," ***Laser & Photonics Reviews***, 18(1): 2300584, 2024.
12. Haifeng Kang, **Jingwen Ma**†, Junyu Li, Xiang Zhang†, Xiaoze Liu†, "Exciton polaritons in emergent two-dimensional semiconductors," ***ACS Nano***, 17(24): 24449–24467, Dec. 2023.
13. **Jingwen Ma***, Taojie Zhou*, Mingchu Tang*, Haochuan Li, Zhan Zhang, Xiang Xi, Mickael Martin, Thierry Baron, Huiyun Liu, Zhaoyu Zhang†, Siming Chen†, and Xiankai Sun†, "Room-temperature continuous-wave Dirac-vortex topological lasers on silicon," ***Light: Science & Applications***, 12: 255, Oct. 2023.
14. Mingzeng Peng, Jiadong Cheng, Xinhe Zheng, **Jingwen Ma**, Ziyao Feng, and Xiankai Sun†, "2D-materials-integrated optoelectromechanics: recent progress and future perspectives," ***Reports on Progress in Physics***, 86(2): 026402, Jan. 2023.
15. Taojie Zhou*, **Jingwen Ma***, Mingchu Tang*, Haochuan Li, Mickael Martin, Thierry Baron, Huiyun Liu†, Siming Chen†, Xiankai Sun†, and Zhaoyu Zhang†, "Monolithically integrated ultralow threshold topological corner state nanolasers on silicon," ***ACS Photonics***, 9(12): 3824–3830, Nov. 2022.
16. Fuhuan Shen*, Zhenghe Zhang*, Yaoqiang Zhou*, **Jingwen Ma**, Kun Chen, Hunjun Chen, Shaojun Wang†, Jianbin Xu†, and Zefeng Chen†, "Transition metal dichalcogenide metaphotonic and self-coupled polaritonic platform grown by chemical vapor deposition," ***Nature Communications***, 13(1): 5597, Sep. 2022.
17. Xudong Liu, Jialiang Huang, Hao Chen, Zhengfang Qian, **Jingwen Ma**, Xiankai Sun, Shuting Fan, and Yiwen Sun†, "Terahertz topological photonic waveguide switch for on-chip communication," ***Photonics Research***, 10(4): 1090–1096, Apr. 2022.
18. Xiang Xi, **Jingwen Ma**, Zhong-Hao Zhou, Xin-Xin Hu, Yuan Chen, Chang-Ling Zou†, Chun-Hua Dong†, and Xiankai Sun†, "Experimental investigation of the angular symmetry of optical force in a solid dielectric," ***Optica***, 8(11): 1435–1441, Nov. 2021.
19. **Jingwen Ma***, Xiang Xi*, Yuan Li, and Xiankai Sun†, "Nanomechanical topological insulators with an auxiliary orbital degree of freedom," ***Nature Nanotechnology***, 16(5): 576–583, May 2021.
20. **Jingwen Ma***, Xiang Xi*, and Xiankai Sun†, "Experimental demonstration of dual-band nanoelectromechanical valley-Hall topological metamaterials," ***Advanced Materials***, 33(10): 2006521, Feb. 2021.
21. Xiang Xi*, **Jingwen Ma***, Shuai Wan, Chun-Hua Dong, and Xiankai Sun†, "Observation of chiral edge states in gapped nanomechanical graphene," ***Science Advances***, 7(2): eabe1398, Jan. 2021.
22. **Jingwen Ma**, Xiang Xi, and Xiankai Sun†, "Topological photonic integrated circuits based on valley kink states," ***Laser & Photonics Reviews***, 13(12): 1900087, Dec. 2019.
23. **Jingwen Ma***, Fei Xia*, Shi Chen*, Jian Wang†, "Amplification of 18 OAM modes in a ring-core Erbium-doped fiber with low differential modal gain," ***Optics Express***, 27(26): 38087–38097, Dec. 2019.
24. Zejie Yu, Xiang Xi, **Jingwen Ma**, Hon Ki Tsang, Chang-Ling Zou, and Xiankai Sun†, "Photonic integrated circuits with bound states in the continuum," ***Optica***, 6(10): 1342–1348, Oct. 2019.
25. **Jingwen Ma**, Ziyao Feng, Yuan Li, and Xiankai Sun†, "Optically controlled topologically protected acoustic wave amplification," ***IEEE Journal of Selected Topics in Quantum Electronics***, 26(5): 7600410, Sep./Oct. 2019.
26. Xiang Xi, **Jingwen Ma**, and Xiankai Sun†, "Carrier-mediated cavity optomechanics in a semiconductor laser," ***Physical Review A***, 99(5): 053837, May 2019.
27. Ziyao Feng, **Jingwen Ma**, and Xiankai Sun†, "Parity-time-symmetric mechanical systems by the cavity optomechanical effect," ***Optics Letters***, 43(17): 4088–4091, Sep. 2018.
28. Ziyao Feng, **Jingwen Ma**, Zejie Yu, and Xiankai Sun†, "Circular Bragg lasers with radial PT symmetry: design and analysis with a coupled-mode approach," ***Photonics Research***, 6(5): A38–A42, May 2018.

29. Jiahua Gu, Xiang Xi, **Jingwen Ma**, Zejie Yu, and Xiankai Sun†, "Parity-time-symmetric circular Bragg lasers: a proposal and analysis," ***Scientific Reports***, 6: 37688, Nov. 2016.
30. Wen Zhou, Zejie Yu, **Jingwen Ma**, Bingqing Zhu, Hon Ki Tsang†, and Xiankai Sun†, "Ultraviolet optomechanical crystal cavities with ultrasmall modal mass and high optomechanical coupling rate," ***Scientific Reports***, 6: 37134, Nov. 2016.
31. **Jingwen Ma**, Xiang Xi, Zejie Yu, and Xiankai Sun†, "Hybrid graphene/silicon integrated optical isolators with photonic spin-orbit interaction," ***Applied Physics Letters***, 108(15): 151103, Apr. 2016. [featured as cover article and selected as Editors Pick]

Conference and Presentations

1. **Jingwen Ma**, "Using nanostructures to explore exotic quantum phases of light," ***NSFC-RGC Young Scholar Forum***, Guang Zhou, China, Nov. 2025. [**invited**]
2. **Jingwen Ma**, "Light-matter interaction at nanoscale," ***IEEE Optoelectronics Global Conference***, Shen Zhen, China, Sep. 2025. [**invited**]
3. **Jingwen Ma**, "Light-matter interaction at nanoscale," ***Sustainable Photonic Conference***, Hang Zhou, China, July 2025. [**invited**]
4. **Jingwen Ma**, "Dirac vortices in optical and acoustic metamaterials," ***2nd World Materials Conference***, Guang Zhou, China, July 2024. [**invited**]
5. **Jingwen Ma**, Xiang Xi, Xiankai Sun, "Topological nano-electro-mechanical systems," ***IEEE NANO 2023***, JeJu, Republic of Korea, July 2023. [**invited**]
6. **Jingwen Ma**, "Dirac vortices of light and sound at nanoscale," ***Quantum Materials & Materials Informatics***, Guang Zhou, China, Nov. 2023. [**invited**]
7. **Jingwen Ma**, Ziyao Feng, Yuan Li, and Xiankai Sun, "Topologically protected acoustic wave amplification in an optomechanical array," ***CLEO 2020***, San Jose, CA, USA, May 2020.
8. **Jingwen Ma**, Xiang Xi, and Xiankai Sun, "Topological nanophotonic circuits based on valley kink states," ***CLEO 2020***, San Jose, CA, USA, May 2020.
9. Ziyao Feng, **Jingwen Ma**, and Xiankai Sun, "Parity-time-symmetric mechanical array with the cavity optomechanical effect," ***Frontiers in Optics 2019***, Washington, DC, USA, Sep. 2019.
10. Ziyao Feng, **Jingwen Ma**, Zejie Yu, and Xiankai Sun, "Parity-time-symmetric circular Bragg lasers: enhanced modal discrimination between azimuthal modes," ***Frontiers in Optics 2019***, Washington, DC, USA, Sep. 2019.
11. Xiang Xi, Zefeng Chen, **Jingwen Ma**, Jian-Bin Xu, and Xiankai Sun, "Graphene nano-optomechanical resonators on an integrated photonic platform," ***CLEO 2018***, San Jose, CA, USA, May 2018.
12. **Jingwen Ma**, Xiang Xi, Zejie Yu, and Xiankai Sun, "Hybrid graphene/silicon integrated optical isolators with photonic spin-orbit interaction," ***IEEE Photonics Conference 2016***, Waikoloa, HI, USA, Oct. 2016.
13. **Jingwen Ma**, Xiang Xi, Zejie Yu, and Xiankai Sun, "Spin-orbit interaction of light in photonic nanowaveguides: a proposal of graphene-based optical isolators," ***PIERS 2016 in Shanghai***, Shanghai, China, Aug. 2016.
14. **Jingwen Ma**, Xiao Hu, Jing Du, Zhidan Xu, Jian Wang, "Design of Integrated Circularly Polarized Orbital Angular Momentum (OAM) Beam Emitter Using Microring with Interleaved Tailored Angular Gratings," ***CLEO 2015***, San Jose, CA, USA, May 2015.
15. **Jingwen Ma**, Fei Xia, Shuhui Li, Jian Wang, "Design of Orbital Angular Momentum (OAM) Erbium Doped Fiber Amplifier with Low Differential Modal Gain," ***OFC 2015***, Los Angeles, CA, USA, March 2015.
16. Chengcheng Gui, Fei Xia, **Jingwen Ma**, Jing Du, Jian Wang, "Scalable All-Optical Signal Converter of Advanced Modulation Format Signals Up to 256-QAM Based on Silicon Photonics Devices," ***Asia Communications and Photonics Conference***, Shanghai, China, Nov. 2014.

Magazine Articles

1. **Jingwen Ma**, Xiang Xi, Zejie Yu, and Xiankai Sun, "Hybrid graphene/silicon integrated optical isolators," ***Optics & Photonics News***, 27(12): 49, Dec. 2016. [selected as one of the world's 30 most clearly communicated breakthroughs in optics in 2016]