



# Peng Jin

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## Education

**PhD** in Theoretical Physics (Advisor: Prof. Jiping Huang)

2019.09-2024.06

Department of Physics, **Fudan University**

Shanghai, China

### Awards & Honors:

- The 15<sup>th</sup> Academic Star, Fudan University (**Top 0.1%**; 2024)
- Shanghai Excellent Graduates, Shanghai Municipal Commission of Education (2024)
- National Scholarship, Ministry of Education (2023)
- Honorable Mention of the Photonics and Electromagnetics Research Symposium (PIERS) (2023)
- Gold Award of poster of the Annual Academic Conference of Dept. Physics, Fudan University (2023)
- First prize of poster of the 8<sup>th</sup> and 10<sup>th</sup> Five-School-Union, Five School Union (2021 and 2023)
- KLA Scholarship, Fudan University (2021); Huawei Scholarship, Fudan University (2020)
- First prize of scholarship for outstanding doctoral candidates, Fudan University (2021)
- Outstanding students, Fudan University (2020); Excellent League Member, Fudan University (2022)

**Visiting scholar** (Advisor: Prof. Emil J. Bergholtz)

2023.10-2024.01

Department of Physics, **Stockholm University**

Stockholm, Sweden

**Bachelor** in Optoelectronic Information Science and Engineering

2015.09-2019.06

School of Science, **Donghua University**

Shanghai, China

### Awards & Honors:

(GPA: 4.18/5.00; 1st/40 2018; 1st/40 2017; 1st/50 2016)

- National Scholarship, Ministry of Education (2017 and 2018)
- Shanghai Excellent Graduates, Shanghai Municipal Commission of Education (2019)
- Student Person of the Year, Donghua University (**Top 0.05%**; 2018)
- Youth pacesetter of the May 4th, Donghua University (2017)
- Third prize of the 35<sup>th</sup> National University Physics Competition, Shanghai Physical Society (2019)

## Study tours

2018.07-2018.08

**Cambridge University**

UK

### Awards & Honors:

- Tianji International Exchange Scholarship (40000 RMB), Donghua University (2018)

## Research interest

Transformation theory; Thermal metamaterials; Nonreciprocal heat transport; Non-Hermitian physics;  
Hydrodynamics; Machine learning

(First author<sup>#</sup>, Corresponding author<sup>\*</sup>)

1. F. Yang<sup>#</sup>, Z. Zhang<sup>#</sup>, L. Xu<sup>#</sup>, Z. Liu<sup>#</sup>, **P. Jin**<sup>#</sup>, P. Zhuang, M. Lei, J. Liu, J.-H. Jiang, X. Ouyang, F. Marchesoni, and J. P. Huang\*, Controlling mass and energy diffusion with metamaterials, *Reviews of Modern Physics* **96**, 015002 (2024).
2. **P. Jin**<sup>#</sup>, L. Xu, G. Xu, J. Li, C.-W. Qiu\*, J. P. Huang\*, Deep learning-assisted active metamaterials with heat-enhanced thermal transport, *Advanced Materials* **36**, 2305791 (2024).
3. **P. Jin**<sup>#</sup>, J. Liu, L. Xu, J. Wang, X. Ouyang, J.-H. Jiang\*, and J. P. Huang\*, Tunable liquid-solid hybrid thermal metamaterials with a topology transition, *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* **120**, e2217068120 (2023).
4. **P. Jin**<sup>#</sup>, J. Liu<sup>#</sup>, F. Yang, F. Marchesoni, J.-H. Jiang, and J. P. Huang\*, *In-situ* simulation of thermal reality, *Research* **6**, 0222 (2023). [IF=8.5]
5. **P. Jin**<sup>#,\*</sup>, S. Yang, L. Xu, G. Dai, J. P. Huang\*, and X. Ouyang\*, Particle swarm optimization for realizing bilayer thermal sensors with bulk isotropic materials, *International Journal of Heat and Mass Transfer* **172**, 121177 (2021). [IF=5.0]
6. **P. Jin**<sup>#</sup>, L. Xu\*, T. Jiang, L. Zhang, and J. P. Huang\*, Making thermal sensors accurate and invisible with an anisotropic monolayer scheme, *International Journal of Heat and Mass Transfer* **163**, 120437 (2020). [IF=5.0]
7. H. Tan<sup>#</sup>, H. Cai, **P. Jin**<sup>\*</sup>, and J. P. Huang\*, A dynamic thermal sensing mechanism with reconfigurable expanded-plane structures, *Journal of Applied Physics* **135**, 214501 (2024).
8. Z. Liu<sup>#</sup>, **P. Jin**, M. Lei, C. Wang, F. Marchesoni, J.-H. Jiang\*, and J. P. Huang\*, Topological thermal transport, *Nature Reviews Physics*, in press (2024).
9. F. Yang<sup>#</sup>, **P. Jin**, M. Lei, G. Dai, J. Wang\*, and J. P. Huang\*, Space-time thermal binary coding by spatiotemporally modulated metashell, *Physical Review Applied* **19**, 054096 (2023).
10. L. Xu<sup>#</sup>, J. Liu<sup>#</sup>, **P. Jin**, G. Xu, J. Li, X. Ouyang, Y. Li, C.-W. Qiu\*, and J. P. Huang\*, Blackhole-inspired thermal trapping with graded heat-conduction metadevices, *National Science Review* **10**, nwac159 (2023). [IF=16.3]
11. C. Zhang<sup>#,\*</sup>, T. Li, **P. Jin**, Y. Yuan, X. Ouyang, F. Marchesoni, and J. P. Huang\*, Extracting stellar emissivity via a machine learning analysis of MSX and LAMOST catalog data, *Physical Review D* **106**, 123035 (2022).

# Publication list

(First author<sup>#</sup>, Corresponding author<sup>\*</sup>)

12. C. Wang<sup>#</sup>, **P. Jin**<sup>#,\*</sup>, F. Yang, L. Xu<sup>\*</sup>, and J. P. Huang<sup>\*</sup>, Click metamaterials: Fast acquisition of thermal conductivity and functionality diversities, under review (2024). <https://arxiv.org/abs/2308.16057>
13. M. Lei<sup>#</sup>, **P. Jin**, Y. Zhou, Y. Li, L. Xu<sup>\*</sup>, and J. P. Huang<sup>\*</sup>, Reconfigurable, zero-energy, and wide-temperature loss-assisted thermal non-reciprocal metamaterials, under review (2024). <https://arxiv.org/abs/2405.00002>

## Book chapters

1. **P. Jin**, Diffusion Metamaterials: Basic Simulation Methods, Chapter 2 in *Diffusionics: Diffusion Process Controlled by Diffusion Metamaterials* (edited by Fubao Yang and Jiping Huang, Springer, 2024).
2. **P. Jin**, G. Dai, and F. Yang, Convective Heat Transfer in Porous Materials, Chapter 7 in *Diffusionics: Diffusion Process Controlled by Diffusion Metamaterials* (edited by Fubao Yang and Jiping Huang, Springer, 2024).

## Conferences (Talk)

- The 13<sup>th</sup> National Academic Conference on Soft Matter and Life Matter Physics, Xi'an (2024)
- Photonics and Electromagnetics Research Symposium (PIERS), Online (2023)
- Annual Academic Conference of Dept. Physics, Fudan University (2023)
- Frontiers of International Soft Matter Research, Wenzhou Institute (2023)
- The 2<sup>nd</sup> International Conference on Thermodynamics and Thermal Metamaterials, Online (2022)
- The 6<sup>th</sup> National Workshop on Thermal Transport, Online (2021)
- The 6<sup>th</sup> National Conference on Statistical Physics and Complex Systems, Jilin University (2021)
- The 1<sup>st</sup> International Conference on Thermodynamics and Thermal Metamaterials, Online (2020)
- Academic Innovation Forum on "Physical Problems in Metamaterials" for Postgraduates, Online (2020)

## Skills

- Programming via Matlab/Python; Comsol with Matlab; PSO; Machine learning (ANN)
- Photoshop; Adobe Ai; Shapr3D/KeyShot (Modeling/Rendering)
- GUI programming via Python (1 Chinese software copyright)

## Referee

- Journal: *Physics of Fluids*, Reviewer (2024); [IF=4.1]
- Journal: *Physics of Fluids*, Reviewer (2023); [IF=4.1]
- Journal: *Numerical Heat Transfer, Part A: Applications*, Reviewer (2023). [IF=2.8]

## Bibliometrics

- Total citations: 287, h-index = 9 according to Google Scholar