

# Weiyun XU (徐蔚云), Ph.D. Candidate



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## EDUCATION

2014-09 — 2018-06	📖 <b>School of Mechanical Engineering, Shanghai Jiao Tong University</b>
	Bachelor of Mechanical Engineering      GPA: 3.95      Rank: 1/27
2018-09 — ...	📖 <b>School of Mechanical Engineering, Shanghai Jiao Tong University</b>
	PhD candidate of Mechanical Engineering      GPA: 3.69      Rank: 3/108

## RESEARCH PUBLICATIONS

### Journal Articles (First Author)

- 1 XU W, WANG L, LIU Z, ZHU P. General assembly rules for metamaterials with scalable twist effects[J]. International Journal of Mechanical Sciences, 2023, 259: 108579. (SCIE/EI, IF=7.3) 🔗
- 2 XU W, ZHANG L, ZHANG B, ZHANG H, LIU Z, ZHU P. Crushing behavior of contact-aided AlSi10Mg sandwich structure based on chiral mechanical metamaterials[J]. International Journal of Mechanical Sciences, 2023, 260: 108636. (SCIE/EI, IF=7.3) 🔗
- 3 XU W, LIU Z, WANG L, ZHU P. 3D chiral metamaterial modular design with highly-tunable tension-twisting properties[J]. Materials Today Communications, 2022, 30: 103006. (SCIE/EI, IF=3.8) 🔗
- 4 徐蔚云, 张涵寓, 刘钊, 朱平. 手性力学超材料的非周期性设计与耐撞性研究[J]. 机械工程学报, 2023. XU W, ZHANG H, LIU Z, ZHU P. Aperiodic design framework of chiral mechanical metamaterials considering crashworthiness[J]. Journal of Mechanical Engineering. (in Chinese) (EI, 1st revision)

### Conference Proceeding

- 1 XU W, ZHANG H, LIU Z, ZHU P. On the crashworthiness of aperiodic chiral mechanical metamaterials: design and modeling method[C]//Physics, Techniques and Applications of Advanced Materials: Proceedings of Chinese Materials Conference 2022-2023 (CMC 2022-2023), Shenzhen, China, July 7-10, 2023.
- 2 XU W, WANG W, ZHU P. GNN-based inverse design of three-dimensional aperiodic metamaterials enabling programmable shapes[C]. APS March Meeting 2024. (Submitted)

### Patents

- 1 徐蔚云, 朱平, 刘钊, 李雨峰. 无扭转尺寸效应的手性力学超材料夹芯结构及其应用: CN115691719A [P]. 2023-02-03. XU W, ZHU P, LIU Z, LI Y. Chiral mechanical metamaterial sandwich structures with size-effect-free twist and the applications: CN115691719A[P]. 2023-02-03.
- 2 徐蔚云, 朱平, 郭为忠. 可折叠多形态电动车: CN109178180B[P]. 2020-05-05. XU W, ZHU P, GUO W. Foldable multi-form electric vehicle: CN109178180B[P]. 2020-05-05.
- 3 刘钊, 徐蔚云, 朱平. 针对手性力学超材料压缩扭转力学试验的扭转角测量夹具: CN116026678A [P]. 2023-04-28. LIU Z, XU W, ZHU P. Twist angle measurement fixture for compression-torsional testing of chiral mechanical metamaterial: CN116026678A[P]. 2023-04-28.
- 4 朱平, 徐蔚云, 刘钊, 李钊石. 介观结构优化方法: CN110362912B[P]. 2022-11-08. ZHU P, XU W, LIU Z, LI M. Mesoscopic structural optimization methods: CN110362912B[P]. 2022-11-08.
- 5 朱平, 徐蔚云, 刘钊, 王力为, 张磊. 杆结构超材料结构多工况仿真自动化系统及方法: CN114297877A[P]. 2022-04-08. ZHU P, XU W, LIU Z, WANG L, ZHANG L. Automatic simulation system and method for strut-based metamaterial under multiple working conditions: CN114297877A[P]. 2022-04-08.

### Book and Chapter

- 1 朱平. 先进设计理论与方法[M]. 北京: 机械工业出版社, 2023, ISBN: 978-7-111-71470-5. ZHU P. Advanced design theory and methodology[M]. Beijing: China Machine Press, 2023, ISBN: 978-7-111-71470-5. (in Chinese) (Chapter 3 and Chapter 7)

# MISCELLANEOUS EXPERIENCE

## Research Projects (Principal Completor)

- **Shanghai Natural Science Foundation (Grant No. 23ZR1431600)** 2023-04 — 2026-03  
Research on energy absorption mechanism and optimization design method of 3D chiral metamaterials
- **Shanghai Natural Science Foundation (Grant No. 21ZR1431500)** 2021-04 — 2024-03  
Research on data-driven multi-scale optimization design method of mechanical metamaterial
- **Personal Urban Mobility Access Program (PACE) of GM** 2018-06 — 2018-06  
Won 1<sup>st</sup> Place in Road Test Competition of PACE by General Motors (North America) Ltd.

## Awards and Achievements

- 2017/2019/2023 ■ **National Scholarship** (1%), Ministry of Education of the People's Republic of China
- 2016 ■ **National Inspirational Scholarship**, MoE of PRC
- 2017 ■ **Merit Student Award**, Shanghai Jiao Tong University
- 2018 ■ **Outstanding Graduate Award**, Shanghai Jiao Tong University
- 2018 ■ **Excellent Graduation Design Award**, School of Mechanical Engineering, SJTU
- 2019 ■ **2<sup>nd</sup> Place of 30<sup>th</sup> International Design Contest ROBOCON**, Held in MIT
- 2020 ■ **Inspirational Individual Award**, Shanghai Jiao Tong University
- 2020 ■ **Excellence Teaching Assistant Award**, Shanghai Jiao Tong University

## Certification

- 2016 ■ **Certified Volunteer** in Shanghai International Marathon
- 2020 ■ **Student President** of Graduate Union, Shanghai Jiao Tong University

## SKILLS

- Languages ■ Strong reading, writing, and speaking competencies for English and Mandarin Chinese.
- Coding ■ Java, Python, C/C++, SQL (Postgres), JavaScript, MATLAB, Latex.
- CAD ■ Solidworks, Unigraphics NX, AutoCAD, Blender, ...
- CAE ■ ABAQUS, ANSYS, COMSOL Multiphysics, LS-DYNA, ...
- Hardware ■ Arduino, STM8/STM32, Raspberry Pi, ...
- Manufacturing ■ CNC, Casting, Additive Manufacturing (FDM, SLA, SLM, SLS), DIY 3D-Printer

## BIOGRAPHY



Born and raised in Southern China, Weiyun Xu's growing curiosity towards machinery and computer in his teenage year led himself to the world of science and engineering. Through constant effort, he was admitted to Shanghai Jiao Tong University (SJTU) and was selected by both Tsien Hsue-shen Program and Zhiyuan Honor Program of SJTU. After Weiyun Xu got his B.E. degree he began his doctoral studies advised by Prof. Ping Zhu at the State Key Laboratory of Mechanical System and Vibration, National Engineering Research Center of Automotive Power and Intelligent Control, School of Mechanical Engineering, SJTU. He is well trained in linear algebra, solid mechanics, and mechanical principles, and is good at programing, designing, modeling, and manufacturing and processing.

He's current research interests mainly include the programable property regulation and design of mechanical metamaterials (lattice, cellular, and porous structures, etc.), data-driven structure-property relationship investigation and optimization, and functional metamaterials considering composites or multi-material additive manufacturing with corresponding applications. As an enthusiastic and creative person, Weiyun is optimistic about challenges and diligent to pursue his goals. He keeps the passion for academic research by which he tries to further explore the integrated design method of material, structure, and process, and thus contribute to the materials and manufacturing industries.