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Wenhao Peng

ECE Ph.D. Candidate
The University of Michigan
Dual M.S. and Dual B.S.

BIOGRAPHY

Wenhao Peng was born in Shanghai, China, in 1995. He received the B.S.E. degree in ECE from Shanghai Jiao Tong University, Shanghai, in 2018, the B.S.E. degree in EE from the University of Michigan, Ann Arbor, MI, USA, in 2018, the M.S. degree in ECE from the University of Michigan, in 2019, and the M.S.E. degree in ME from the University of Michigan, in 2024, where he is currently pursuing the Ph.D. degree in electrical and computer engineering. His research interests include designing and modeling acoustic wave resonators driven by thin-film piezoelectric and ferroelectric materials for applications in frontend filters and developing fabrication technologies for resonant MEMS devices.

EDUCATION

The University of Michigan **Ann Arbor, MI**
Electrical and Computer Engineering PhD, 4.00/4.00 *Expected: 2025*
Acoustic Wave Resonators, Thin Film Ferroelectrics, Resonant MEMS Fabrication. Aluminum Nitride, Scandium Aluminum Nitride, and Barium Strontium Titanate based devices. Cleanroom device fabrication and mm-wave frequency network analyzer measurements. Theory and finite element simulations. Develop novel acoustic wave resonators that operate at mm-wave frequencies with record-setting performance based on the knowledge background in electrical and computer engineering and mechanical engineering.

The University of Michigan **Ann Arbor, MI**
Master of Science in Engineering, Mechanical Engineering, 4.00/4.00 *Received in 2024*

The University of Michigan **Ann Arbor, MI**
Master of Science, Electrical and Computer Engineering, 4.00/4.00 *Received in 2019*

The University of Michigan **Ann Arbor, MI**
Bachelor of Science in Engineering, Electrical E, Summa Cum Laude, 4.00/4.00 *Received in 2018*

Shanghai Jiao Tong University **Shanghai, China**
Bachelor of Science in Engineering, Electrical and Computer Engineering *Received in 2018*

PUBLICATIONS

H. Desai, **W. Peng** and A. Mortazawi, "Single-Pole Single-Throw RF Acoustic Phase Inversion Switch Leveraging Poled Ferroelectrics," in *IEEE Transactions on Microwave Theory and Techniques*,
doi: 10.1109/TMTT.2024.3496665.

W. Peng, S. Nam, D. Wang, Z. Mi and A. Mortazawi, "A 56 GHz Trilayer AlN/ScAlN/AlN Periodically Poled FBAR", *2024 IEEE/MTT-S International Microwave Symposium - IMS 2024*, Washington, DC, USA, 2024, pp. 150-153,
doi: 10.1109/IMS40175.2024.10600386.

D. Wang, P. Wang, S. Mondal, J. Liu, M. Hu, M. He, S. Nam, **W. Peng**, S. Yang, D. Wang, Y. Xiao, Y. Wu, A. Mortazawi, and Z. Mi, "Controlled ferroelectric switching in ultrawide bandgap AlN/ScAlN multilayers," *Applied Physics Letters*, vol. 123, no. 10, p. 103506, 09 2023,
doi: 10.1063/5.0160163

S. Nam, **W. Peng**, P. Wang, D. Wang, Z. Mi and A. Mortazawi, "A mm-Wave Trilayer AlN/ScAlN/AlN Higher Order Mode FBAR," in *IEEE Microwave and Wireless Technology Letters*, vol. 33, no. 6, pp. 803-806, June 2023,
doi: 10.1109/LMWT.2023.3271865.

W. Peng, M. Z. Koohi, S. Nam and A. Mortazawi, "Phenomenological Circuit Modeling of Ferroelectric-Driven Bulk Acoustic Wave Resonators," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 70, no. 1, pp. 919-925, Jan. 2022,
doi: 10.1109/TMTT.2021.3130609.

W. Peng, M. Z. Koohi, S. Nam and A. Mortazawi, "Physics Based Modeling of Electrostriction Based BAW Resonators," *2021 IEEE MTT-S International Microwave Symposium (IMS)*, Atlanta, GA, USA, 2021, pp. 214-217,
doi: 10.1109/IMS19712.2021.9574949.

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S. Nam, M. Z. Koohi, **W. Peng** and A. Mortazawi, "A Switchless Quad Band Filter Bank Based on Ferroelectric BST FBARs," in *IEEE Microwave and Wireless Components Letters*, vol. 31, no. 6, pp. 662-665, June 2021, doi: 10.1109/LMWC.2021.3069880.

M. Z. Koohi, **W. Peng** and A. Mortazawi, "An Intrinsically Switchable Balanced Ferroelectric FBAR Filter at 2 GHz," *2020 IEEE/MTT-S International Microwave Symposium (IMS)*, Los Angeles, CA, USA, 2020, pp. 131-134, doi: 10.1109/IMS30576.2020.9223799.

Y. Dai, **W. Peng**, Y. Wang, L.-X. Chuo, K. Suri, H. Zheng, D. Wentzloff, and H.-S. Kim, "Implementation and evaluation of bi-directional wifi back-channel communication," in *2018 IEEE 29th Annual International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)*, Bologna, Italy, 2018, pp. 1–7, doi: 10.1109/PIMRC.2018.8580736.

COURSEWORK

MECHENG 645 Wave Propagation in Elastic Solids
MECHENG 641 Advanced Vibrations of Structures
MECHENG 541 Mechanical Vibrations
MECHENG 524 Advanced Engineering Acoustics
MECHENG 511 Theory of Solid Continua
MECHENG 501 Math Methods in ME
MECHENG 424 Engineering Acoustics
ROB 501 Math for Robotics
EECS 530 Electromagnetic Theory I
EECS 470 Computer Architecture
EECS 455 Digital Communication Signals
EECS 427 VLSI Design I
EECS 414 Introduction to MEMS
EECS 413 Monolithic Amplifier Circuits
Ve 475 Introduction to Cryptography
Ve 438 Advanded Lasers and Optics Laboratory
EECS 311 Analog Circuits
EECS 312 Digital Integrated Circuits
EECS 330 Intro. to Antennas and Wireless Systems
EECS 334 Principles of Optics
EECS 351 Intro. to Digital Signal Processing
EECS 370 Intro. to Computer Organization
Vp 390 Modern Physics
EECS 281 Data Structures and Algorithms
Ve 230 Electromagnetics I
Ve 280 Programming & Elem. Data Structures
Vp 260 Honors Physics II
Vp 141 Physics Lab I
Vp 241 Physics Lab II
Vc 210 Chemistry
EECS 627 VLSI Design II
EECS 525 Advanced Solid-State Microwave Circuits
EECS 522 Analog Integrated Circuits
EECS 452 DSP Design Lab
EECS 411 Microwave Circuits I
Ve 401 Probabilistic Methods in Engineering
EECS 320 Intro. to Semiconductor Devices
Ve 203 Discrete Mathematics
Ve 215 Intro. to Circuits
Ve 216 Intro. to Signals and Systems
Ve 270 Intro. to Logic Design
Vv 286 Honors Mathematics IV
Vv 285 Honors Mathematics III
Vv 186 Honors Mathematics II
Vp 160 Honors Physics I
Vg 101 Intro. to Computers & Programming
Vc 211 Chemistry Lab
Vg 100 Intro. to Engineering

Note: In **bold font** classes A+ grades were received.

TEACHING ASSISTANCE

EECS 411 Microwave Circuits I F19,F20,F21
EECS 312 Digital ICs W21,F22,W24,F24,W25
EECS 215 Intro to Elect Circ W22,W23,F23,S24
Vp 160 Honors Physics I S16,S18
Vc 211 Chemistry Lab S16
Vc 210 Chemistry F15