Dr. Leitao Chen

Assistant Professor

Contact Information

Office: ET 138D

Phone: (615) 963-5390

Fax: (615) 963-5496

Email: lchen1@tnstate.edu

Research Interests

- Lattice Boltzmann method
- Computational fluid dynamics (CFD)
- Numerical methods for hyperbolic partial differential equations
- Thermal management of electric vehicles and electronics
- Heat transfer in energy systems
- Multiscale and multiphase fluid flows in porous media
- Low-temperature plasma physics
- Data-driven modeling approaches
- High-performance computing (HPC)
- Quantum computing

Teaching Activities

Courses in thermo-fluid, including heat transfer, thermodynamics, and fluid mechanics, etc.

Education

Ph.D. Mechanical Engineering

University of Pittsburgh, 2016

M.E. Power Machinery and Engineering

Tongji University, Shanghai, China, 2009

B. S. Mechanical Engineering

East China University of Science and Technology, Shanghai, China, 2006

Employment

Research Scientist

Rice University, November 2018 – July 2020

Postdoctoral Fellow

Rice University, August 2016 – October 2018

Research Intern

IBM T.J. Watson Research Center, June 2015 – September 2015

Major Journal Publications

- Chen, L., Succi, S., Cai, X., Schaefer, L., 2020, "Semi-Lagrangian implicit Bhatnagar-Gross-Krook collision model for the finite-volume discrete Boltzmann method," Physical Review E.
- Perdue, D., Chen, L., Schaefer, L., 2019, "Exergetic Relationship between the Thermal Properties of Direct Contact Membrane Distillation," Journal of Heat Transfer.
- Chen, L., Schaefer, L., 2018, "Godunov-Type Upwind Flux Schemes of the Two-Dimensional Finite Volume Discrete Boltzmann Method," Computers & Mathematics with Applications, 75 (9), 3105-3126.
- Chen, L., Schaefer, L., 2015, "A Unified and Preserved Dirichlet Boundary Treatment for the Cell-Centered Finite Volume Discrete Boltzmann Method," Physics of Fluids, 27 (2), 207104.
- Chen, L., Xu, S., 2009, "A Study on Flow Field Characteristics of HEV Battery Thermal Management System," Automotive Engineering, vol. 31, 224-227.

Major Conference Publications

- Chen, L., Petrosius, T., Schaefer, L., 2020, "Numerical Simulation of Heat Conduction Problems with the Lattice Boltzmann Method (LBM) and Discrete Boltzmann Method (DBM): A Comparative Study," ASME Summer Heat Transfer Conference.

- Chen, L., Sadat, H., Schaefer, L., 2019, “A Multi-Relaxation-Time Finite Volume Discrete Boltzmann Method for Viscous Flows,” ASME-JSME-KSME 2019 Joint Fluids Engineering Conference.
- Chen, L., Schaefer, L., Cai, X., 2018, “An Accurate Unstructured Finite Volume Discrete Boltzmann Method,” ASME 2018 International Mechanical Engineering Congress and Exposition, V007T09A010.
- Chen, L., Yang, F., Parida, P., Schultz, M., Chainer, T., 2016, “Enthalpy-Based System-Model for Pumped Two-Phase Cooling Systems,” 15th IEEE ITHERM Conference, 805-812.