

Yingyue Zhang

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Education

Ph.D. candidate in Mechanical Science & Engineering

Present

M.S. in Civil Engineering

May 2018

University of Illinois at Urbana-Champaign

B.S. in Building Thermal Energy Engineering

July 2017

Harbin Institute of Technology

Training and Skills

- Designing and building test platform, machining, using hand tools and sensors calibration, conducting automatic experimental data acquisition with LabVIEW
- Conducting data postprocessing with MATLAB, EES, and Audacity
- Simulation & Computation: MATLAB, EES, Audacity, Fluent, Python, C program language, Audacity, LabVIEW, AutoCAD, SOLIDWORKS

Academic Experience

Research Assistant, Mechanical Science & Engineering

2017~present

• **Analysis and mitigation of flow-induced noise in expansion devices**

- ✓ Building a pump system including component selection, sensor installation, electrical connection, control panel design, and program debugging
- ✓ Conducting experiments, including thermal system operation, test matrix design, components control, and flow visualization with a high-speed camera.
- ✓ Applying synchronized measurements of flow-induced noise and flow regimes and identifying simultaneous flow-induced noise characteristics with the variation of flow regimes
- ✓ Applying 3D printing and transparent tubes for flow regimes visualization

• **Simulation-based mitigation of flow-induced noise and experimental validation**

- ✓ Developing a flow-induced noise prediction map related to mass flux and flow quality with MATLAB
- ✓ Applying flow visualizations using a high-speed camera to predict the flow-induced noise waveform
- ✓ Simulating flow-induced noise using accelerometer signal and high-speed pressure transducer signal with MATLAB
- ✓ Designing test platform with stainless mesh for flow-induced noise mitigation, including mesh installation and flow visualizations with PFA tube

• **Independent study focusing on flow-induced noise modeling with Fluent**

Teaching Assistant, Mechanical Science & Engineering, Nuclear, Plasma & Radiological Engineering

08/2018~present

Awards

- **National Scholarship** (top 1 in 72) **2014**
- **First prize in the Chinese Mathematics Competition** **2014**
- **Sang De Scholarship** (top 3 in 203) **2015**

Publications

Zhang, Y. and Elbel, S., 2021. Synchronized measurements of noise characteristics and flow regimes near the thermal expansion valve using R134a refrigerant. *Int. J. Refrigeration*. <https://doi.org/10.1016/j.ijrefrig.2021.09.009>

Zhang, Y. and Elbel, S., 2018. Experimental Analysis to Mitigate Flow-Induced Noise in Expansion Devices, *17th International Refrigeration and Air Conditioning Conference at Purdue*, West Lafayette, IN. Paper 1862.

Zhang, Y. and Elbel, S., 2018. Modeling of Acoustics Based Geometry Optimization of Orifice Tube Design. *17th International Refrigeration and Air Conditioning Conference at Purdue*. West Lafayette, IN. Paper 1863.

Zhang, Y. and Elbel, S., 2020. Sound Evaluation of Flow-Induced Noise with Simultaneous Measurement of Flow Regimes at TXV Inlet of Automotive Evaporators. *SAE Technical Paper 2020-01-1255*.

Zhang, Y. and Elbel, S., 2020. Visualization Study of the Relationship between the Orientation of Tube and the Flow Regimes Near the Expansion Valve. *SAE Int. J. Adv. & Curr. Prac. in Mobility* 2(4):2276-2284.

Zhang, Y. and Elbel, S., 2021. Simulation-based Study on Predicting the Flow-induced Noise near the Expansion Device. *18th International Refrigeration and Air Conditioning Conference*. West Lafayette, IN. Paper 2243.