

Xiao He

Address: Department of Mechanical Engineering, Imperial College London, London, SW7 2AZ

Website: <https://www.imperial.ac.uk/people/xiao.he2014> Email: xiao.he2014@imperial.ac.uk

RESEARCH OVERVIEW

My research interest in general involves the field of fluid mechanics, data science, and their applications to turbomachinery. I am currently working on turbulence modeling for compressor applications. My former research focused on compressor aerodynamics.

EDUCATION

09/2018 - present	Imperial College London	Department of Mechanical Engineering	Doctor of Philosophy
	Topic: Data-Driven Turbulence Modeling, Advisor: Prof. Mehdi Vahdati		
08/2015 – 07/2018	Tsinghua University	Department of Automotive Engineering	Master of Science
	GPA: 3.6/4.0, Rank: 3/60, Advisor: Prof. Xinqian Zheng		
08/2011 – 07/2015	Tsinghua University	Department of Automotive Engineering	Bachelor of Engineering
	GPA: 91/100, Rank: 4/74, Honored Graduate		

AWARDS AND HONORS

06/2020	Young Engineer Turbo Expo Participation Award	ASME IGTI
06/2019	Student Advisory Committee Travel Award	ASME IGTI
10/2018	President's PhD Scholarship	Imperial College London
12/2017	IHI Scholarship	IHI Corporation
11/2017	National Scholarship	Ministry of Education of China
07/2017	Japan Student Services Organization Scholarship	Tokyo Institute of Technology
12/2016	Overall Excellent Scholarship	Tsinghua University
07/2015	Honored Graduate Award	Ministry of Education of China
07/2015	Excellent Bachelor Thesis Award	Tsinghua University
12/2012-2014	Academic Excellent Scholarship (3 times)	Tsinghua University
12/2012	1 st Prize in the 29 th National College Student Physics Competition	Beijing Physics Society
11/2010	1 st Prize in the 27 th National High School Student Physics Competition	Chinese Physical Society

TEACHING AND TUTORING EXPERIENCE

Graduate Teaching Assistant

10/2019 – 04/2020	Fluid Mechanics 2 (MECH95003, Imperial)
	Lead tutorial session and mark exam papers

Tutor for Undergraduate / Master Theses

01/2020 – 06/2020	Jianheng Tan (M.E., Imperial, co-supervised with Prof. Mehdi Vahdati)
	Topic: RANS Turbulence Model Enhancement Using Machine Learning
01/2018 – 06/2018	Zitian Niu (B.E., USTB, co-supervised with Prof. Xinqian Zheng)
	Topic: Vaned Diffuser for Centrifugal Compressors
01/2017 – 06/2017	Wenchao Zhang (B.E., Tsinghua, co-supervised with Prof. Xinqian Zheng)
	Topic: Synthetic Jet for Centrifugal Compressors
01/2016 – 06/2016	Jie Wei (B.E., Tsinghua, co-supervised with Prof. Xinqian Zheng)
	Topic: Tandem Diffuser for Centrifugal Compressors

SELECTED PUBLICATIONS

Journal Papers

- J1. **He, X.**, Zhao, F., and Vahdati, M., "Uncertainty Quantification of Spalart-Allmaras Turbulence Model Coefficients for Simplified Compressor Flow Features", ASME Journal of Fluids Engineering, 2020, 142(9), 091501.

-
- J2. Zou, W., **He, X.**, Zhang, W., Niu, Z., and Zheng, X., “Roles of Vanes in Diffuser on Stability of Centrifugal Compressor,” IMechE, Part G: Journal of Aerospace Engineering, 2019, 233(14), 5380-5392.
 - J3. **He, X.**, and Zheng, X., “Roles and Mechanisms of Casing Treatment on Different Scales of Flow Instability in High Pressure Ratio Centrifugal Compressors,” Aerospace Science and Technology, 2019, 84, 734-746.
 - J4. **He, X.**, and Zheng, X., “Flow Instability Evolution in High Pressure Ratio Centrifugal Compressor with Vaned Diffuser,” Experimental Thermal and Fluid Science, 2018, 98, 719-730.
 - J5. **He, X.**, and Zheng, X., “Performance Improvement of Transonic Centrifugal Compressors by Optimization of Complex Three-Dimensional Features,” IMechE, Part G: Journal of Aerospace Engineering, 2017, 231(14), 2723-2738.
 - J6. **He, X.**, and Zheng, X., “Mechanisms of Sweep on the Performance of Transonic Centrifugal Compressor Impellers,” Applied Sciences, 2017, 7(10), 1081.
 - J7. **He, X.**, and Zheng, X., “Mechanisms of Lean on the Performance of Transonic Centrifugal Compressor Impellers,” AIAA Journal of Propulsion and Power, 2016, 32(5), 1220-1229.

Conference Proceedings

- C1. **He, X.**, Zhao, F., and Vahdati, M., “Evaluation of Spalart-Allmaras Turbulence Model Forms for Compressor Stall — Part I: Canonical Flows,” GPPS Paper No. GPPS-CH-2020-0012. (under review)
- C2. **He, X.**, Zhao, F., and Vahdati, M., “Evaluation of Spalart-Allmaras Turbulence Model Forms for Compressor Stall — Part II: Transonic Axial Compressor,” GPPS Paper No. GPPS-CH-2020-0013. (under review)
- C3. **He, X.**, Zhao, F., and Vahdati, M., “Uncertainty Quantification of Spalart-Allmaras Turbulence Model Coefficients for Compressor Stall,” ASME Paper No. GT2020-15014. Recommended for Journal Publication.
- C4. **He, X.**, Zhao, F., and Vahdati, M., “Machine Learning Uncertainty Quantification of Spalart-Allmaras Turbulence Model for Compressors,” GPPS Paper No. 2019-BJ-0050. Recommended for Journal Publication.
- C5. **He, X.**, Zheng, X., Wei, J., and Zeng, H., “Investigation of Vaned Diffuser Splitters on the Performance and Flow Control of High Pressure Ratio Centrifugal Compressors,” ASME Paper No. GT2016-56255.

Patent

- P1. Zheng, X., Zhu, D., **He, X.**, Lin, Y., and Zhang, W., “Internal Combustion Engine System,” 2018, Chinese Patent No. CN108167063A.

Poster

- O1. **He, X.**, Zhao, F., and Vahdati, M., “Towards Improved Prediction of Compressor Flow by Uncertainty Quantification of Spalart-Allmaras Turbulence Model,” ASME Poster No. GT2019-92244. People’s Choice Best Poster Award.

PROFESSIONAL SERVICES

Referee for Journals

Aerospace Science and Technology
 International Journal of Mechanical Sciences
 IMechE Journal of Power and Energy
 IMechE Journal of Automobile Engineering
 IMechE Journal of Aerospace Engineering
 Advances in Mechanical Engineering

Referee for Conferences

ASME Turbo Expo
 GPPS Conference

Membership

ASME (ID: 000101977824)
 AIAA (ID: 937472)

MISCELLANEOUS

Homeless animal charity volunteer; Amateur hiker