Yang Liu

CONTACT **Research Associate**
Department of Modern Mechanical Engineering
Faculty of Science and Engineering
Waseda University, 3-4-1 Ookubo, Shinjuku-ku
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EDUCATION

Ph.D. in Mechanical Engineering, Waseda University March 2023

*Team for Advanced Flow Simulation and Modeling (T*AFSM), Tokyo, Japan*

Dissertation: "Carrier-Domain Method for High-Resolution Computation of Time-Periodic Long-Wake Flows and Application to Wind Turbines Wakes "

Advisor: Kenji Takizawa, Tayfun E. Tezduyar

M.Eng in Mechanics, Beihang University Jan 2016

School of Aeronautic Science and Engineering, Institute of Fluid Mechanics, Beijing, China

B.Eng in Safety Engineering, Kunming University Science and Technology Jun 2012

Faculty of Land Resources Engineering. Kunming, China

RESEARCH EXPERIENCE

Research Associate April 2023 - Present

Waseda Research Institute for Science and Engineering, Waseda University, Tokyo, Japan

Institute for Frontier Fluid-Structure Interaction Analysis, Waseda University, Tokyo, Japan

Isogeometric Analysis, Finite element method, Mesh moving methods, Full-scale wind turbines and wind farm modeling

Visiting Scholar Jan 2022-April 2022

Department of Mechanical Engineering, Rice University, Houston, USA

Carrier-Domain Method for High-Resolution Computation of Time-Periodic Long-Wake Flows

Graduate Researcher September 2019 - Mar 2023

Team for Advanced Flow Simulation and Modeling, Waseda University, Tokyo, Japan

Isogeometric Analysis, Fluid-structure interaction, Time-periodic long-wake flows, Wind turbine

Research Assistant August 2021 - February 2022

Team for Advanced Flow Simulation and Modeling, Waseda University, Tokyo, Japan

Research Project: Isogeometric Fluid-Structure Analysis of Variable Geometry Turbocharger (VGT)

Teaching Assistant October 2019 - Mar 2023

Department of Modern Mechanical Engineering, Waseda University, Tokyo, Japan

Wind turbine modeling, computation methods for long-wake flows, Mesh moving methods, Mesh generation

Graduate Researcher September 2013 - January 2016

Institute of Fluid Mechanics, Beihang University, Beijing, China

Wind tunnel experiments, Test model design, Force measurement, Flow separation control

HONORS AND AWARDS

BEST CFD Graphics Award (CFD36) March 2022

The Japan Society of Fluid Mechanics, Tokyo, Japan

W-SPRING (2,700,000 JPY/year) October 2021 - October 2022

Waseda University, Tokyo, Japan

Scholarship for Young Doctoral Students (500,000 JPY) December 2019

Faculty of Science and Engineering, Waseda University, Tokyo, Japan

Outstanding Student Scholarship (6,000 RMB/year) September 2013 - January 2016

Beihang University, Beijing, China

Outstanding Student Scholarship June 2010

Kunming University of Science and Technology, Kunming, China

JOURNAL PUBLICATIONS

J4. **Yang Liu**, Y. Otoguro, K. Takizawa, T.E. Tezduyar, "Space–Time Isogeometric Analysis of NREL 5MW wind turbine rotor and tower aerodynamics", *Computational Mechanics*, published online, (2024), doi: 10.1007/s00466-024-02574-1

J3. **Yang Liu**, K. Takizawa, T.E. Tezduyar, "High-Resolution 3D computation of Time-Periodic Long-Wake Flows with the Carrier-Domain Method and Space–Time Variational Multiscale Method with Isogeometric Discretization", *Computational Mechanics*, published online, (2024), doi: 10.1007/s00466-023-02419-3

J2. **Yang Liu**, K. Takizawa, T.E. Tezduyar, T. Kuraishi, and Y. Zhang, "Carrier-Domain Method for High-Resolution Computation of Time-Periodic Long-Wake Flows", *Computational Mechanics*, published online, (2022), doi: 10.1007/s00466-022-02230-6

J1. **Yang Liu**, K. Takizawa, Y. Otoguro, T. Kuraishi, and T.E. Tezduyar, "Flow Computation with the Space–Time Isogeometric Analysis and Higher-Order Basis Functions in Time", *Mathematical Models and Methods in Applied Sciences*, published online, (2022), doi: 10.1142/S0218202522500579

CONFERENCE PAPERS

C7. Y. Saiki, **Yang Liu**, Z. Xu, T. Kuraishi, Y. Otoguro, H. Akira, T. Nakamura, K. Takizawa, T.E. Tezduyar, "Differences in Fluid Responses in Similar Vibration Modes for Elucidating Resonance Phenomena in Turbocharger Turbines", in *Proceedings of the 29th Japan Society for Computational Engineering and Science Conference*, Kobe, Japan, (2024)

C6. L. Lin, **Yang Liu**, T. Terahara, T. Kuraishi, K. Takizawa, T.E. Tezduyar , "Wake Flow Analysis of a Helicopter in Forward Flight", in *Proceedings of the 29th Japan Society for Computational Engineering and Science Conference*, Kobe, Japan, (2024)

C5. Y. Saiki, T. Kuraishi, **Yang Liu**, Z. Xu, T. Nakamura, K. Takizawa, T.E. Tezduyar, "Fluid Analysis of Variable Geometry Turbocharger considering Rotation and Vibration of Turbine Blade", in *Proceedings of the 37th Symposium on Computational Fluid Dynamics*, Nagoya, Japan, (2023)

C4. **Yang Liu**, T.Terahara, N. Pritchard, T. Kuraishi, K. Takizawa, T.E. Tezduyar , "Space–Time Isogeometric Analysis of a Helicopter with Main and Tail Rotors", in *Proceedings of the 37th Symposium on Computational Fluid Dynamics*, Nagoya, Japan, (2023)

C3. **Yang Liu**, K. Takizawa, T.E. Tezduyar, T. Kuraishi, and Y. Zhang, "Carrier-Domain Method for High-Resolution Computation of Time-Periodic Long-Wake Flows and Application to Wind Turbines Wakes", in *Proceedings of the 36th Symposium on Computational Fluid Dynamics*, Tokyo, Japan, (2022)

C2. **Yang Liu**, S. Yamasaki, Y. Zhang, T. Kuraishi, F. Zhang, K. Takizawa, and T. E. Tezduyar, "Multi-Domain Computation of Wind Turbine Wake Flows", in *Proceedings of the Mechanical Engineering Congress 2020 Japan*, Nagoya, Japan, (2020)

C1. S. Yamasaki, **Yang Liu**, Y. Zhang, T. Kuraishi, K. Takizawa, and T. E. Tezduyar, "Effective Isogeomertric Analysis for Multiple Wind Turbines", in *Proceedings of the 25th Japan Society for Computational Engineering and Science Conference*, Kitakyushu, Japan, (2020)

PRESENTATION AND TALKS

Yang Liu, K. Takizawa, T.E. Tezduyar, T. Kuraishi, and Y. Zhang, "Carrier-Domain Method for High-Resolution Computation of Time-Periodic Long-Wake Flows", in *Proceedings of the International workshop on Bifurcation Governed by Partial Differential Equations*, Tokyo, Japan (2022)