Chao Sun, Ph.D., P.E., M. ASCE
Mike N. Dooley Professorship in Department of Civil and Environmental Engineering
3240M Patrick Taylor Hall, Louisiana State University, Baton Rouge, LA 70803
Tel: 225-578-8511, Email: csun@lsu.edu
http://faculty.eng.lsu.edu/cm/csun/

Education

Ph.D.	Civil Engineering,	Rice University,	Houston, US	2014
M.S.	Civil Engineering,	Tongji University,	Shanghai, China	2009
B.S.	Civil Engineering,	Shanghai Jiaotong University,	Shanghai, China	2006

Research Interests

- Multi-hazard Modeling and Mitigation of Critical Infrastructure Systems;
- Coastal Infrastructure System Resilience Enhancement;
- CFD-based Modeling of Wind-Surge-Wave Flows and Fluid Structure Interaction;
- Physics-guided Machine Learning for System Identification and Damage Diagnosis;
- Offshore Wind Turbines and Ocean Waves Energy Harvesting;
- Computer Vision, Data Analytics and Advanced Signal Processing;
- Complex Dynamics, Smart Sensing and Adaptive Control;
- Theoretical and Numerical Modeling of Nonlinear Vibrations.

Academic Experience

Mike N. Dooley Professorship
Dept. of Civil & Environmental Engineering, Louisiana State University, 08/2024-present

Associate Professor
Dept. of Civil & Environmental Engineering, Louisiana State University, 08/2021-present

Assistant Professor
Dept. of Civil & Environmental Engineering, Louisiana State University, 08/2015-07/2021

Postdoctoral Researcher
Dept. of Civil & Environmental Engineering, Rice University, 10/2014-07/2015

Teaching Experience

Louisiana State University, Baton Rouge, LA

Structural Analysis I CE 3415 (Fall 2015, 2016, 2017, 2018, 2019, 2020, 2024)

Principles of Reinforced Concrete CE4410 (Spring 2016, 2017, 2019, 2020, Fall 2021, 2022, Fall 2025)

Strength of Materials CE3400 (Fall 2016, Spring 2018)

Structural Design for Dynamic Loads CE7430 (Fall 2016, 2018, 2020, Spring 2022, 2024)

Dynamics of Offshore Infrastructure CE7701 (Spring 2018, 2020, 2022, 2023, 2025)

Bridge Design CE4460 (Spring 2021, Spring 2022, 2023, 2024, 2025)

Honors & Awards

Louisiana State University 2024 *Mid-Career Rainmaker Award* (The only awardee from Science, Technology, Engineering & Mathematics for outstanding research and scholarship) 2025
Louisiana State University Academy of Scholars as Leaders 2025
Research Achievement Award, Department of Civil and Environmental Engineering, Louisiana State University 2025
Best Paper Award of Journal *Engineering Structures* 2024
Highly Cited Paper of journal Structural Health Monitoring 2023
Stanford/Elsevier's World's Top 2% Scientist 2022~2025
National Academies of Science, Engineering, and Medicine, **Early-Career Research Fellow Award**, Offshore Energy Safety Track, 2023
Advisor of **Second place** of Student Paper Competition of the Fluid Dynamics Committee, Engineering Mechanics Institute 2023
Advisor of Outstanding Ph.D. Dissertation Award of Louisiana State University (**1 out of 3**), 2022

Advisor of **Top four finalists** of Student Paper Competition in the EMI Structural Health Monitoring and Control Committee, ASCE Engineering Mechanics Institute 2020
Advisor of **Top four** of Student Paper Competition in the EMI Dynamics Committee, ASCE Engineering Mechanics Institute 2019
Louisiana Sea Grant Fellow, 2019
Outstanding Civil Engineering Educator Award, ASCE, 2019
Louisiana State University Hurricane Resilience Research Award, 2019
Louisiana State University Faculty Summer Research Award, 2018
Louisiana State University Faculty Research Award, 2016
Rice University Civil Engineering Graduate Research Award, 2013
Best Award in the 1st Rice University Graduate Elevator Pitch Competition 2013
Rice University Graduate Travel Grant, 2012
Rice University Research Fellowship, 2010
Xinjie Scholarship at Tongji University 2007/2008
Graduate with Honor, Shanghai Jiaotong University 2006
Exceptional Prize in *Structural Design Contest* (**First Place**), Shanghai Jiaotong University 2005
National Scholarship in Shanghai Jiao Tong University 2005
Excellent Student of Shanghai Jiao Tong University (**1st in the Department**) 2003
Scholarship for **Excellent Students** in Shanghai Jiao Tong University 2003/2004/2005
1st Prize Rank in the National High School Mathematics and Physics Competition 2000/2001

Professional Activities

Active Reviewer for following journals:

- Annual Reviews in Control,
- Applied Energy,
- Applied Ocean Research,
- ASCE Journal of Aerospace Engineering,
- ASCE Journal of Bridge Engineering,
- ASCE Journal of Engineering Mechanics,
- ASCE Journal of Structural Engineering,
- ASCE Journal of Performance of Constructed Facilities,
- ASME Journal of Risk and Uncertainty in Engineering Systems Part B: Mechanical Engineering
- Coastal Engineering,
- Computer-aided Civil and Infrastructure Engineering,

- Earthquake Engineering and Structural Dynamics,
- Engineering Structures,
- Experimental Mechanics,
- International Journal of Structural Stability and Dynamics
- International Journal of Non-Linear Mechanics,
- Journal of Building Engineeirng,
- Journal of Control Review,
- Journal of Civil Structural Health Monitoring,
- Journal of Earthquake Engineering,
- Journal of Fluids and Structures,
- Journal of Low Frequency Noise, Vibration and Active Control
- Journal of Sound and Vibration,
- Journal of Vibration and Control,
- Journal of Wind Engineering & Industrial Aerodynamics,
- Marine Structures,
- Mechanical System and Signal Processing,
- Measurement,
- Nonlinear Dynamics,
- Ocean Engineering,
- Probabilistic Engineering Mechanics,
- Renewable Energy,
- Renewable & Sustainable Energy Reviews,
- Smart Structures and Systems,
- Smart Materials and Structures,
- Soil Dynamics and Earthquake Engineering,
- Structural Control and Health Monitoring Journal,
- Structures,
- Structural Health Monitoring,
- The Structural Design of Tall and Special Buildings,
- Wind Energy,
- Wind and Structures,
- Wind Energy and Engineering Research

✓ **Associate Editor** of *Structural Control and Health Monitoring***,**
✓ **Guest Editor for Special Issues** in *Engineering Failure Analysis,*
✓ **Editorial Board member** of *Wind Energy and Engineering Research***,**
✓ **Editorial Board member** of *Ocean Systems Engineering, An International Journal,*
✓ **Editorial Board member of** *Smart Construction and Sustainable Cities*
✓ **Serving in the panel for NSF proposals**
✓ **Serving in the panel for NASEM Gulf Research Program proposals**
✓ **Serving in the panel for NASA proposals**
✓ **Serving in the panel for DOT proposals**

Certifications & Professional Organizations

- **Licensed P.E.**, Texas

- Member of ASCE
- Member of ASCE EMI Fluid Dynamics Committee.
- Member of ASCE EMI Structural Health Monitoring & Control Committee.
- Member of ASCE EMI Dynamics Committee.
- Member of ASCE SEI Structural Sensing & Control Committee.
- Member of ASCE SEI Multi-hazard & Mitigation Committee.
- Member of ASCE SEI System Identification Committee.
- Member of ASCE SEI Performance Based Wind Engineering Committee.
- Vice Chair of EMI Fluid Dynamics Committee

Synergistic Activities

- Organizer or co-organizer of 21 special sessions/mini symposia in national/international conferences.
- Chair of 2022 Student Paper Competition of the EMI Structural Health Monitoring & Control Committee.
- Serve as the Louisiana State University Hurricane Experts to talk to local media to promote the 'culture of preparedness' for extreme windstorm induced multiple hazards.
- Serve as a coach team member to guide students from local *Scotlandville Magnet High School* and *Lee Magnet High School* to participate in the National Bridge Design Competition.
- Serve as the faculty advisor of the ASCE student chapter at LSU since September 2019. With my supervising, our steel bridge team won the 10th place among around 200 teams in the Finals of National Bridge Design Competition in Carbondale, IL in May 2019.
- Serve as chair/moderator of conference sessions, e.g., ASCE Engineering Mechanics Institute Conference and Structures Congress. Active member of several EMI and SEI committees of ASCE.

Peer-reviewed Journal Publications (* denotes corresponding author)

Google Scholar citation: >3000, h-index: 29, i10-index: 45
(https://scholar.google.com/citations?user=ZrsjbzoAAAAJ&hl=en**)**

- **Submitted and under review**

[70] Z. Shu, R. You, **C. Sun***, K.K. Charles, O.A. Russel. Viscoelastic Material Constitutive Modeling and Efficient Placement Strategy of Viscoelastic Placement Strategy of Viscoelastic Dampers (under review).
[69] B. Zhao, **C. Sun***, M. Ye, T. Shen. Seismic behavior of equal-leg L-section PEC columns (under review).
[68] X. Wang, **C. Sun*,** C.S. Cai. LES-based quantification of turbulence intensities on wind pressures on elevated buildings, (under review).

Published in 2026

[67] Chen, S., Liu, S., Sun, C., S. Guan. UAV-based automated 3D condition detection of railroad crossties, Journal of Civil Structural Health Monitoring, 2026, 16, 32.

[66] B. Zhao, C. Sun*, X. Zhu, T. Shen. Experimental and numerical study on the seismic behavior of T-section partially encased composite (PEC) columns, Structures, 2026, 86: 111365.

[65] G. Deskos, J. Wang, S. Arwade, M. Fisher, B. Hirth, X. Guo Larsén, J.K. Lundquist, A. Myers, W. Pang, W.J. Pringle, R. Rogers, M. Sanchez-Gomez, C. Sun, A. Yamaguchi, and P. Veers (**Authors contributed equally to the paper**). Grand Challenges in Designing Resilient Wind Energy Systems in Areas Prone to Tropical Cyclones, Wind Energy Systems, 2026, https://doi.org/10.5194/wes-2026-32.

[64] T. Ma, C. Sun*. Characterizing combined aero-hydrodynamic loading on offshore wind turbines considering wind-wave interactions, *Engineering Structures*, 2026, 352, 121984.
[63] H. Li, **C. Sun***. PGVAE-VBAKF: a robust strategy for complex system response prediction and noise variance estimation considering modeling errors and nonstationary noises, Mechanical System and Signal Processing, 243, 113669, 2026.

Published in 2025

[62] Z. Zhang, D. Lin, C. Sun, Z. Sun. Physics-informed neural network-based TMD parameter identification and response prediction, Structural Control and Health Monitoring, 2025, 1: 157493. https://doi.org/10.1155/stc/2157493
[61] Z. Liu, S. Tan, D. Jia, **C. Sun**, Z. Jiang, T. Guo, Z. Sun. Exploring scour mechanisms of bridge group tidal conditions: In-situ Survey, laboratory experiment, and numerical analysis, *Ocean Engineering*, 2025, 338: 122025.

[60] G. Zhao, W. Chen, K. Xing, M. Zhang, **C. Sun***. Wind-induced response prediction of coupled towers and lines of a transmission tower-line system based on an LSTM network, *Structures*, 2025, 77: 109101.

[59] H. Li, **C. Sun***. Efficient joint loosening damage identification of pipeline structures using a novel joint element model, *Journal of Civil Structural Health Monitoring*, 2025, 15: 2541-2562.

[58] B. Zhu, Y. Wu, **C. Sun***, J. Sun. Dynamic response mitigation of offshore wind turbines under ice and wind using an inerter-pendulum mass damper, *Ocean Engineering*, 2025, 327: 120932.

[57] H. Li, **C. Sun***. Nonlinear time-varying system response modeling via a real-time updated Runge-Kutta physics-informed neural network, *Engineering Applications of Artificial Intelligence*, 2025, 144: 110067.

Published in 2024

[56] B. Zhao, **C. Sun***, S. Zhong. Strength calculation model of eccentric rectangular hollow section (ERHS) X-joints under axial compression, *J. Structural Engineering-ASCE*, 2024, 150(12): 04024177.

[55] Y. Zhang, D. Wang, **C. Sun**, X. Fu. Probabilistic study on non-stationary extreme response of transmission tower under moving downburst impact, *Structures*, 2024, 68, 107179.

[54] B. Zhao, **C. Sun***, S. Lin, T. Lin. In-plane flexural behavior of eccentric rectangular hollow section (ERHS) X-joints: Experimental, numerical and analytical study, *Journal of Building Engineering*, 2024, 96: 110371.

[53] X. Wang, C.S. Cai, **C. Sun***. Large eddy simulation of wind pressures on elevated low-rise buildings, *Physics of Fluids*, 2024, 36, 5: 055121. DOI: 10.1063/5.0207971.

[52] T. Ma, **C. Sun*,** Paul Miller. Large Eddy Simulation of Non-stationary Highly Turbulent Hurricane Boundary Layer Winds, *Physics of Fluids*, 2024, 36, 7: 075158. DOI: 10.1063/5.0214627.

[51] T. Ma, **C Sun***. Large Eddy Simulation of Wind Turbulences over Non-breaking and Breaking Waves, *Ocean Engineering*, 2024, 305: 117898.

[50] B. Zhu, Y. Wu, **C. Sun***, D. Sun. An improved inerter-pendulum tuned mass damper and its application in monopile offshore wind turbines, *Ocean Engineering*, 2024, 298:117172.

[49] Y. Chen, X. Wang, **C. Sun***, B. Zhu. Exploring the failure mechanism of light poles on elevated bridges under high winds, *Engineering Failure Analysis*, 2024, 159: 108076.

- **Published in 2023**

[48] V. Jahangiri, **C. Sun***, H. Babaei. Application of a new two dimensional nonlinear tuned mass damper in bi-directional vibration mitigation of wind turbine blades, *Engineering Structures*, 2024, 302: 117371 (**Best Paper**).

[47] X. Wang, C.S. Cai, P. Yuan, G. Xu, **C. Sun***. An efficient and accurate DSRFG method via nonuniform energy spectra discretization, *Engineering Structures*, 2024, 298: 117014.

[46] M. Zhang, C. Gao, C. Wang, J. Li, G. Zhao, **C. Sun***. Fracture Failure Analysis of a Lightening Rod on a Substation Frame Residual Thermal Stress, *Engineering Failure Analysis*, 2023, 154: 107679.

[45] D. Wang, L. Yang, **C. Sun**, Q. Chen. Analytical Prediction of Quasi-static response of transmission lines under moving downburst: A nonlinear model with linear approximation, *Journal of Wind Engineering & Industrial Aerodynamics*, 2023, 237: 105407.

[44] T. Ma, **C Sun***. Characterization of Coupled Turbulent Wind-wave flows Using Large Eddy Simulation (under review, preprint https://arxiv.org/abs/2206.02085)

- **Published in 2022**

[43] **C. Sun***, W. Song, V. Jahangiri. A Real-Time Hybrid Simulation Framework for Floating Offshore Wind Turbines, *Ocean Engineering*, 2022, 265: 112529.

[42] J.M. Lorenzo, A. Bates, D.A. Patterson, **C. Sun**, T.A., Douglas, S. Karunatillake, et al. Evaluation of a wheel-based seismic acquisition system for a planetary rover, *Leading Edge*, 2022, 41(10): 681-689.

[41] V. Jahangiri, **C. Sun***, A novel three-dimensional nonlinear tuned mass damper and its application for reducing vibrations of offshore floating wind turbines, *Ocean Engineering*, 2022, 250:110703.

[40] **C. Sun***, V. Jahangiri, H. Sun. Adaptive bidirectional dynamic response control of offshore wind turbines with time-varying structural properties, *Structural Control and Health Monitoring*, 2021, 29: e2817.

[39] Z. Zhang, **C Sun***, B. Guo. Transfer-Learning Guided Bayesian Model Updating for Structural Damage Detection Accounting for Modeling Uncertainty, *Mechanical System and Signal Processing*, 166, 2022: 108426.

- **Published in 2021**

[38] B. Zhu, C. Sun*, Y. Huang. Vibration response and control of offshore monopile wind turbine in ice area, Journal of Vibration and Shock, 2021, 40(9): 133-141.

[37] D. Wang, S. Li, **C. Sun***, G. Huang, Q. Yang. Assessment of wind-induced fragility of transmission towers under quasi-static wind, *Wind and Structures,* 2021, 33(4): 343-352.
[36] Zhu, B., **Sun, C***., & Huang, Y. (2021). Ice-induced vibration response analysis of monopile offshore wind turbine. *China Civil Engineering Journal, 54* (1), 88-96.
[35] G. Zhao, J. Xu, J. Zhou, M. Zhang, **C. Sun***, Study of thermal-structural characteristics of electrified conductors under aeolian vibration, *Wind and Structures,*2021, 33(2):155-168.
[34] Z. Zhang, **C. Sun*,** V. Jahangiri. Structural Damage Identification of Offshore Wind Turbines: a Two-step Strategy via FE Model Updating, *Structural Control and Health Monitoring* 2022, 29: e2872 (DOI: 10.1002/stc.2872).
[33] V. Jahangiri, **C. Sun*,** F. Kong. Study on a 3D pounding pendulum tuned mass damper for mitigating bi-directional vibration of offshore wind turbines, *Engineering Structures*, 241, 2021: 112383.
[32] F. Kong, H. Xia, **C. Sun**, S. Li. Pounding tuned mass damper for vibration control of offshore wind turbine subjected to combined wind and wave excitations, *Journal of Vibration and Shock* (In Chinese), 2021, 40(3): 19-27.
[31] T. Ma, **C Sun*.** Large Eddy Simulation of Hurricane Boundary Layer Turbulence and Its Application for Power Transmission Systems, *Journal of Wind Engineering and Industrial Aerodynamics*, 2021, 210:104520.
[30] B. Zhao, **C. Sun*,** Y Zheng, Y. Cai, Effects of adjacent braces interaction on the out-of-plane flexural behavior of CHS connections, *Engineering Structures*, 2021, 231:111711.
[29] B. Zhu, **C. Sun*,** V. Jahangiri, Characterizing and Mitigating Wind Ice-induced Vibration of Monopile Offshore Wind Turbines, *Ocean Engineering*, 2021, 219:108406.

- **Published in 2020**

[28] W. Song, **C. Sun***, Y. Zuo, V. Jahangiri, Y. Lu, Q. Han. Conceptual Study of a Real-Time Hybrid Simulation Framework for Monopile Offshore Wind Turbines under Wind and Wave Loads, *Frontiers in Built Environment* doi.org/10.3389/fbuil.2020.00129.
[27] Z. Zhang, **C Sun***. Structural Damage Localization via Physics-Guided Machine Learning: A Methodology Integrating Pattern Recognition and Finite Element Model Updating, *Structural Health Monitoring,* 2020, DOI: 10.1177/1475921720927488.
[26] V. Jahangiri, **C. Sun***. Three-dimensional vibration control of offshore floating wind turbines using multiple tuned mass dampers, *Ocean Engineering* 2020*,* 206: 107196.
[25] Z. Zhang, **C. Sun***. Multi-site Structural Damage Identification Using a Machine Learning Method of Multi-label Classification. *Measurement* 2020, 154: 107473.
[24] Z. Zhang, **C. Sun***. A Numerical Study of Multi-Site Damage Identification: A Data-Driven Method via Constrained Independent Component Analysis, *Structural Control and Health Monitoring,* 2020, 27: e2583.
[23] B. Zhao, **C. Sun***, H. Li. Study on the moment-rotation behavior of eccentric rectangular hollow section cross-type connections under out-of-plane bending moment and chord stress, *Engineering Structures*，2020, 207:110211.
[22] Z. Zhang, **C. Sun*,** Y. Huang. Sparse Signal Recovery for WIM Measurements from Under-sampled Data through Compressed Sensing with Highly Coherent Sensing Matrices, *Measurement,* 2020, 151: 1-18.
[21] B. Zhao, **C. Sun***, Y. Cai, C. Liu. An out-of-plane bending hysteretic model for unstiffened CHS X-connections, *Structures,* 2020, 23:335-350.

- **Published in 2019**

[20] Z. Zhang, **C. Sun***, C. Li, M. Sun. Vibration based bridge scour evaluation: A data-driven method using support vector machines. *Structural Monitoring and Maintenance,* 2019, 6(2): 125-145.
[19] V. Jahangiri, **C. Sun***. Integrated Bi-Directional Vibration Control and Energy Harvesting of Monopile Offshore Wind Turbines, *Ocean Engineering*, 2019, 178: 260-269.
[18] V. Jahangiri, **C. Sun***. Performance of a 3D-PTMD in Offshore Wind Turbines under Multiple Hazards and Damage, *Smart Structures and Systems,* 2019, 24(1): 53-65.
[17] **C. Sun***, S. Nagarajaiah. Study of a Novel Adaptive Passive Stiffness Device and Its Application for Seismic Mitigation, *Journal of Sound and Vibration*, 2019, 443: 559-575
[16] **C. Sun***, V. Jahangiri. Fatigue Damage Mitigation of Offshore Wind Turbines under Real Wind and Wave Conditions, *Engineering Structures*, 2019, 178:472-483.

- **Published in 2018**

[15] Z. Zhang, **Sun***, R. Bridgelall, M. Sun. Road profile reconstruction and evaluation using connected vehicle responses and wavelet analysis. *Journal of Terramechanics*, 2018，80：21-30.
[14] Z. Zhang, **C. Sun***, M. Sun, R. Bridgelall. Application of a Machine Learning Method to Evaluate Road Roughness from Connected Vehicles. *Journal of Transportation Engineering, Part B: Pavements,* 2018, 144(4): 04018043.

[13] W. Xu, Y. Ma, C. Ji, **C. Sun**. Laboratory Measurements of Vortex-induced Vibrations of a Yawed Flexible Cylinder at Different Yaw Angles. *Ocean Engineering*, 2018, 154:27-42.

- **Published in 2017**

[12] **C. Sun*,** V. Jahangiri. Bi-directional Vibration Control of Offshore Wind Turbines Using a 3D Pendulum Tuned Mass Damper. *Mechanical System and Signal Processing,* 2018, 105: 338-360.

[11] **C. Sun***. Mitigation of Offshore Wind Turbine Responses under Wind and Wave Loading: Considering Soil Effects and Damage. *Structural Control and Health Monitoring,* 2018 25(3): 1-22.

[10] **C. Sun***. Semi-active Control of Offshore Wind Turbines under Multi-Hazards. *Mechanical System and Signal Processing*, 2018, 99: 285-305.

- **Published in 2016**

[9] E. Sonmez, **C. Sun**, S. Nagarajaiah, B. Basu. A study on Semi-active Tuned Liquid Column Dampers (sTLCDs) for Structural Response Reduction under Random Excitations. *Journal of Sound and Vibration*, 2016(362) 1-15.

- **Published before 2015**

[8] R. P. Eason, **C. Sun**, A. J. Dick, S. Nagarajaiah. Steady-state response attenuation of a linear oscillator-nonlinear absorber system by using an adjustable-length pendulum in series: Experimental and numerical results. *Journal of Sound and Vibration*, 2015, 344(26): 332-344.

[7] **C. Sun**, S. Nagarajaiah, A. J. Dick. Experimental Investigation of Vibration Attenuation Using Nonlinear Tuned Mass Damper and Pendulum Tuned Mass Damper in Parallel. *Nonlinear Dynamics*, 2014, 78(4): 2699-2715.

[6] **C. Sun,** S. Nagarajaiah. Study on Semi-active Tuned Mass Damper with Variable Damping and Stiffness under Seismic Excitations. *Structural Control and Health Monitoring*: 2014, 21(6): 890-906.

[5] **C. Sun,** S. Nagarajaiah, A. J. Dick. Family of Smart Tuned Mass Dampers with Variable Frequency under Harmonic Excitations and Ground Motions: Closed-Form Evaluation. *Smart Structures and Systems*, 2014, 13(2): 319-341.

[4] **C. Sun,** R. P. Eason, S. Nagarajaiah, A. J. Dick. Hardening Dűffing Oscillator Attenuation Using a Nonlinear TMD, a Semi-active TMD and Multiple TMD. *Journal of Sound and Vibration*, 2013, 332(4): 674-686.

[3] R. P. Eason, **C. Sun,** A. J. Dick., S. Nagarajaiah. Attenuation of a linear oscillator using nonlinear and semi-active tuned mass dampers in series. *Journal of Sound and Vibration*, 2013, 332(1): 154-166.

[2] **C. Sun,** X. Wu, Y. Zhou, J. Li. Numerical Simulation of Concrete Stochastic Damage Constitutive Law[J]. *Journal of Huazhong University of Science and Technology* (Urban Science Edition), 2008, 25(4):276-279.

[1] Liu Hankun**, Sun Chao,** Li Jie. X-ray CT based Three Dimensional Numerical Simulation of Concrete in Mesoscopic Level. *Journal of Architecture and Civil Engineering*, 2010, 27(1):54-59.

Conference papers, abstracts, and presentations

[C36] H. Li, **C. Sun** (2025). PGVAE-VBAKF: a robust strategy for complex system response prediction and noise variance estimation considering modeling errors and nonstationary noises. Engineering Mechanics Institute Conferences, University of California Irvine, Anaheim, CA, May 27-30, 2025.

[C35] **C. Sun** (2025). Integrated Aero-hydro-structural-mooring dynamics modeling of floating offshore wind turbines. Engineering Mechanics Institute Conferences, University of California Irvine, Anaheim, CA, May 27-30, 2025.

[C34] H. Li, **C. Sun** (2024). Complex nonlinear system response modeling and parameter identification via a real-time updating physics-informed neural network. *Engineering Mechanics Institute Conferences*, University of Illinois Urbana-Champaign, Chicago, May 28-31, 2024.

[C33] **C. Sun,** Tianqi Ma (2024). Characterizing Coupled Wind-wave Loads on Offshore Wind Turbines. *Engineering Mechanics Institute Conferences*, University of Illinois Urbana-Champaign, Chicago, May 28-31, 2024.

[C32] C. Sun, Tianqi Ma. High-fidelity Modeling of Combined Extreme Wind-Wave Impacts on Offshore Wind Turbines, Feb. 19-22, 2024, The Gulf of Mexico Conference, Tampa, Florida.

[C31] C. Sun, Tianqi Ma. LES of wind turbulence over non-breaking and breaking waves, Feb. 1-2, 2024, NHERI Computational Symposium, University of California, Los Angeles, California.

[C30] C. Sun, Tianqi Ma. High-fidelity Modeling of Combined Extreme Wind-Wave Impacts on Offshore Wind Turbines, Feb. 19-22, 2024, The Gulf of Mexico Conference, Tampa, Florida.

[C29] C. Sun, Tianqi Ma. LES of wind turbulence over non-breaking and breaking waves, Feb. 1-2, 2024, NHERI Computational Symposium, University of California, Los Angeles, California.

[C28] C. Sun, Tianqi Ma. Large eddy simulation of nonstationary hurricane boundary layer, August 27-31, 2023, 16th International Conference of Wind Engineering, Florence, Italy.

[C27] **C. Sun,** Xiangjie Wang, Steve Cai (2023). Large-Eddy Simulation of Wind Pressure on Elevated Low-rise Buildings. *Engineering Mechanics Institute Conferences*, Georgia Tech University, Atlanta, June 6 - 9, 2023.

[C26] T. Ma, **C. Sun** (2023). Large eddy simulation of wind turbulences over non-breaking and breaking waves. *Engineering Mechanics Institute Conferences*, Georgia Tech University, Atlanta, June 6 - 9, 2023.

[C25] C. Sun. Modeling of Hurricane Winds and Its Application in Energy Infrastructure Systems, April 03-06, 2023, 2023 National Hurricane Conference, New Orleans, Louisiana.

[C24] H. Li, C. Sun. A Physics-guided Machine Learning Method for Structural Damage Identification of Pipelines, May 15-18, 2023, The 4th International Conference on Damage Mechanics, Baton Rouge, Louisiana.

[C23] C. Sun. Modeling of Hurricane Wind Impacts on Electric Power Grid Systems, September 14-16, 2022, 2022 Southeast Symposium on Contemporary Engineering Topics, Little Rock, Arkansas.

[C22] **C. Sun**, V. Jahangiri. A Novel 3D Nonlinear TMD to Reduce Vibrations of Floating Wind Turbines, Sept. 13-17, 2022, The 13th International Conference on Structural Safety and Reliability (ICOSSAR 2021), Shanghai, China.

[C21] **C. Sun**, Tiaqi Ma. Characterization of Coupled Wind-wave Flows Based on Large Eddy Simulation, Oct. 6-7, 2022, Natural Hazard Research Summit, Washington DC.

[C20] **C. Sun**, Large eddy simulation of wind-wave flows and the combined loading on offshore wind turbines, November 1st, 2022, SimCenter Symposium 2022, University of Austin, Texas.

[C19] **C. Sun,** Wei Song, Vahid Jahangiri (2022). A Real-Time Hybrid Simulation Framework for Floating Offshore Wind Turbines. *Engineering Mechanics Institute Conferences*, John Hopkins University, Baltimore, Maryland, May 31 – June 3, 2022.

[C18] T. Ma, **C. Sun** (2022). Characterization of Coupled Turbulent Wind-wave Flows Based on Large Eddy Simulation. *Engineering Mechanics Institute Conferences*, John Hopkins University, Baltimore, Maryland, May 31 - June 3, 2022.

[C17] **C. Sun,** V. Jahangiri, (2021). Vibration Reduction of Wind Turbine Blade Using a Two-dimensional Nonlinear TMDI. 8th World Conference of Structural Control and Health Monitoring, University of Central Florida, Orlando, Florida, June 6-9, 2021.

[C16] V. Jahangiri, **C. Sun** (2021). Three-dimensional Vibration Control of Offshore Floating Wind Turbines using 3DOF Controllers. *Engineering Mechanics Institute Conferences*, Columbia University, New York City, May 26-29, 2021.

[C15] T. Ma, **C. Sun** (2021). Large eddy simulation of hurricane boundary layer turbulences and its application for power transmission systems. *Engineering Mechanics Institute Conferences*, Columbia University, New York City, May 26-29, 2021.

[C14] Z. Zhang, **C. Sun** (2021). Application of Physics-Guided Machine Learning in Structural Damage Identification. *Engineering Mechanics Institute Conferences*, *Engineering Mechanics Institute Conferences*, Columbia University, New York City, May 26-29, 2021.

[C13] V. Jahangiri, **C. Sun** (2019). Semi-active Vibration Control of a Spar-type Offshore Floating Wind Turbine Subjected to Wind, Wave and Current Loading. *Engineering Mechanics Institute Conferences*, CalTech, Pasadena, California, June 18-21, 2019.

[C12] Z. Zhang, **C. Sun** (2019). Multi-Site Structural Damage Identification using Constrained Independent Component Analysis and Pattern Recognition. *Engineering Mechanics Institute Conferences*, CalTech, Pasadena, California, June 18-21, 2019.

[C11] T. Correa, J. Gong, A. Kennedy, J. Womble, C. Cai, J. Cleary, T. Dao, F. Leite, D. Liang, K. Peterman, **C. Sun,** A. Taflanidis, R. Wood. Performance of Low-Rise Construction under Wind and Coastal Hazards during the Landfall of Hurricane Harvey. Forging Forensic Frontiers, ASCE Forensic Engineering 8th Congress, Austin, Texas, Nov, 2018. (*Note: author names are listed alphabetically in terms of last name*)

[C10] **C. Sun**, V. Jahangiri, H. Sun, Bi-directional response mitigation of offshore wind turbines under multiple hazards, 7th World conference on Structural Control and Monitoring, 2018, Qingdao, China.

[C9] **C. Sun**, V. Jahangiri. Response mitigation of offshore wind turbines under multiple hazards, Engineering Mechanics Institute Conference, 2018, MIT, Boston, Massachusetts.

[C8] Z. Zhang, **C. Sun**. A data-driven method for damage identification using a data augmentation technique, Engineering Mechanics Institute Conference, 2018, MIT, Boston, Massachusetts.

[C7] **C. Sun,** V. Jahangiri, Integrated Vibration Control and Energy Harvesting of Offshore Wind Turbines Subjected to Misaligned Wind and Wave Loading, Structures Congress, 2018, Fort Worth, Texas, USA.

[C6] **C. Sun**, V. Jahangiri. Semi-active Control of offshore wind turbines under multiple hazards, Engineering Mechanics Institute Conference, 2017, San Diego, CA.

[C5] **C. Sun**, V. Jahangiri, Mitigation of mono-pile offshore wind turbines under wind and wave loading, Americas Conference on Wind Engineering 2017, Gainesville, Florida, USA.

[C4] **C. Sun**. Dynamics modeling and control of offshore wind turbines under misaligned wind and wave loading", Engineering Mechanics Institute Conference, 2016, Nashville, TN, USA.

[C3] **C. Sun**. Complex dynamics of offshore wind turbines under wind and wave loading", BOEM Workshop on Offshore Wind Turbines, 2016, DC, USA.

[C2] **C. Sun**, S. Nagarajaiah. STFT Based Real-time Control with Variable Stiffness and Damping of Smart Tuned Mass Damper for Seismic Protection. [C]. 15th World Conference on Earthquake Engineering, Lisbon, Portugal.

[C1] R. P. Eason, **C. Sun,** A. J. Dick., S. Nagarajaiah. Using a Semi-Active Tuned Mass Damper to Limit the Motion of a Nonlinear Absorber and Attenuate Structural Vibrations. 2012 IMECE, ASME 2012 Congress.

Technical Report

13. S. Guan, **C. Sun**. Photogrammetry and LiDAR-Based Precast Concrete Railroad Crossties Abrasion Damage Detections. Technical Report submitted to Department of Transportation, December, 2024.

12. **C. Sun**. Creating Safer Offshore Wind Energy Exposed to Extreme Tropical Cyclones. Technical Report submitted to National Academies of Science, Engineering, and Medicine, Gulf Research Program, 2024.

11. **C. Sun**, T. Ma, H. Babaei. Modeling extreme winds for offshore wind development in the Gulf of Mexico. Technical Report submitted to Gulf Wind Technology, 2024.

10. **C. Sun**, X. Wang. Developing an Analysis Program for Electric Power Sub-Station Conductors Exposed to Extreme Tropical Cyclones. Technical Report submitted to Entergy Corporation, 2024.

9. **C. Sun**, T. Ma. High-fidelity modeling of coupled wind-surge-wave flows and loading on structures. Technical Report submitted to Louisiana Board of Regents, 2023.

8. **C. Sun**, Z. Zhang, H. Li. A Data-driven Framework for Online Damage Diagnosis of Oil and Natural Gas Pipelines. Technical Report submitted to Louisiana Board of Regents, 2023.

7. **C. Sun**, X. Meng, J. Ogbebor, S. Guo. Efficient, Low-cost Bridge Cracking Detection and Quantification Using Deep-learning and UAV-Images. Technical Report submitted to Department of Transportation November, 2020.

6. S. Chen, **C. Sun**, X. Wang, Z. Zhang. Efficient, Advanced Modeling and Design Methodology for Pavements Using Plasticity-Based Shakedown Theory. Technical Report submitted to Department of Transportation September, 2021.

5. **C. Sun**, Z. Zhang. An Automatic Crack Identification Methodology using Deep Learning and UAV Images. Technical Report submitted to Louisiana Transportation Research Center, June, 2020.

4. **C. Sun**, Z. Zhang. A Data-driven Framework for Damage Diagnosis of Coastal Bridges. Technical Report submitted to Louisiana Transportation Research Center, June, 2017.

3. **C. Sun**, V. Jahangiri. Modelling of a Novel Three Dimensional Pendulum Tuned Mass Damper for the

Mitigation of Offshore Wind Turbines. Technical Report submitted to Louisiana State University Faculty Research Grant, January, 2018.

2. **C. Sun**, V. Jahangiri. Three Dimensional Vibration Control of Floating Offshore Wind Turbines. Technical Report submitted to Louisiana State University Summer Stipend Program, November, 2018.

1. **C. Sun**, V. Jahangiri. Integrated Vibration Mitigation and Energy Harvesting of Offshore Wind Turbines. Technical Report submitted to Louisiana College of Engineering FIER Program, January 2019.

Selected Invited Talks

[4] **C. Sun**, High fidelity modeling of wind-wave flows and application in engineering structures, June 27, 2024, **Southeast University**, Nanjing, China.

[3] **C. Sun**, Large eddy simulation of hurricane boundary layer turbulences and application in energy infrastructure systems, March 23rd, 2022, **National Renewable Energy Laboratory**, Golden, Colorado.

[2] **C. Sun**, Complex dynamics modeling and vibration control of offshore wind turbines under multi-hazard, December 15th, 2021, Chongqing University, online seminar.

[1] **C. Sun**, Large eddy simulation of wind-wave flows and the combined loading on offshore wind turbines, November 1st, 2022, SimCenter Symposium 2022, University of Austin, Texas.

Invited Talks

[8] **C. Sun**, High fidelity modeling of wind-wave flows and application in engineering structures, June 27, 2024, Southeast University, Nanjing, China.

[7] **C. Sun**, Large eddy simulation of hurricane boundary layer turbulences and application in energy infrastructure systems, March 23rd, 2022, National Renewable Energy Laboratory, Golden, Colorado.

[6] **C. Sun**, Dynamics modeling and vibration control of offshore wind turbines under multi-hazard, December 15th, 2021, Chongqing University, Chongqing, China, online seminar.

[5] **C. Sun**, Complex dynamics modeling and vibration control of offshore wind turbines, December, 2019, Hunan University, Changsha, China.

[4] **C. Sun**, Three dimensional vibration mitigation of floating offshore wind turbines under wind-wave loading, December, 2019, Tongji University, Shanghai, China.

[3] **C. Sun**, Nonlinear dynamics and vibration control using STMD and NTMD, May, 2018, Tongji University, Shanghai, China.

[2] **C. Sun**, Semi-active vibration control of monopile offshore wind turbines under multi-hazards, July, 2018, Tianjin University, Tianjin, China.

[1] **C. Sun**, Analysis and vibration control of offshore structures, January 2015, Louisiana State University, Baton Rouge, LA, USA.