

EDUCATION

Cornell University

Ithaca, New York

Ph.D., Structural Engineering

May 2021

- Research Interests: *Computational Structural/Fluid dynamics, Numerical Methods, Multiscale Multiphysics Modeling, Biological System Modeling, Physics-Informed Machine Learning*
- Dissertation: "Theoretical Formulation for Oblique Free Surface Impact Emanating from Fluid-Structure Interaction Simulations"
- Committee: Christopher Earls (chair), Peter Diamessis, Derek Warner

M.S., Structural Engineering

2018

B.S., Civil Engineering | *Magna Cum Laude*

2015

JOURNAL PUBLICATIONS

1. **W. Wu**, C.J. Earls "A new engineering theory describing oblique free surface impact by flexible plates," *Journal of Fluids and Structures*, *IN REVIEW*
2. **W. Wu***, C. Bonneville*, C.J. Earls (2020) "A principled approach to design using high fidelity fluid-structure interaction simulations," *Finite Element in Analysis & Design*, Vol. 194, Elsevier, 103562.
3. **W. Wu**, J.W. Kosianka, H.M. Reed, C.J. Stull, and C.J. Earls (2020) "CU-BENs: A structural finite element library," *SoftwareX*, Vol. 11, Elsevier, pp. 1-5.

* Denotes equal contribution

CONFERENCE PROCEEDING

1. P.J. Hughes, W. Scott, **W. Wu**, R.J. Kuether, M.S. Allen, and P. Tiso (2019) "Interface Reduction on Hurty/Craig-Bampton Substructures with Frictionless Contact", In: Kerschen G. (eds) *Nonlinear Dynamics*, Volume 1. Conference Proceedings of the Society for Experimental Mechanics Series. Springer, Cham.

CONFERENCE PRESENTATIONS

1. **W. Wu** and C.J. Earls, (2021) "Towards a Generalized Engineering Theory for Hydrodynamic Slamming Emanating from Partitioned Fluid-Structure Interaction Analysis," 16th *U.S. National Congress on Computational Mechanics*, Virtual.
2. **W. Wu** and C.J. Earls, (2019) "Tightly Coupled, Partitioned Fluid-Structure Interaction Analysis of a Horizontal Plate Impact onto a Water Free Surface: Computational Framework and Validation," 15th *U.S. National Congress on Computational Mechanics*, Austin, Texas.

3. **W. Wu** and C.J. Earls, (2018) "Open Source, Tightly Coupled, Partitioned Fluid-Structure Interaction Modeling Framework for Naval Applications: The Impact of Slamming Loads on High Speed Watercraft," 13th World Congress on Computational Mechanics, New York City, New York.
4. P.J. Hughes, W. Scott, **W. Wu**, R.J. Kuether, M.S. Allen, and P. Tiso (2018) "Interface Reduction on Hurty/Craig-Bampton Substructures with Frictionless Contact," IMAC Annual Meeting, Orlando, Florida.
5. **W. Wu**, J.W. Kosianka, and C.J. Earls, (2017) "Open Source, Tightly Coupled, Partitioned Fluid-Structure Interaction Simulation Capability for High Spatiotemporal Resolution During Study of Wave Impact Loads in High Speed Watercraft," 14th U.S. National Congress on Computational Mechanics, Montreal, Canada.
6. J.W. Kosianka, **W. Wu**, and C.J. Earls, (2017) "Condition Assessment and Prognosis using Fluid-Structure Interaction within a Reduced-Order Model Tracking Inversion Framework," 14th U.S. National Congress on Computational Mechanics, Montreal, Canada.

RESEARCH EXPERIENCE

Cornell University | Graduate Research Assistant 2015–Present

Mentor: Dr. Christopher Earls

- Developed a simple and accurate engineering theory for hydrodynamic slamming using high fidelity fluid-structure interaction analyses.

Sandia National Laboratories | Visiting Researcher Summer 2017

Mentors: Dr. Robert Kuether, Dr. Matthew Allen, and Dr. Paolo Tiso

- Implemented regularized Coulomb friction subroutine to study the influence of friction in contact interface of jointed structure.

Duke University | REU Fellow Summer 2014

Mentor: Dr. Guglielmo Scovazzi

- Studied the resulting pressure distribution of a brain model subjected to blast loading through fluid-structure interaction simulations.

University of Cincinnati | NSF REU Fellow Summer 2013

Mentors: Dr. Margaret Kupferle, Dr. George Sorial

- Conducted experiments and performed comparative studies between commercial activated carbon and in-house developed activated carbon.

TEACHING EXPERIENCE

Cornell University | Teaching Assistant Spring 2019

CEE 4740: Introduction to The Behavior of Metal Structures

Cornell University | Teaching Assistant Spring 2018

CEE 4780/6780: Structural Dynamics and Earthquake Engineering

Syracuse University | Academic Excellence Workshops Facilitator 2012–2013

MATH 295: Calculus I

MATH 296: Calculus II

Updated: May 9, 2021

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HONORS AND AWARDS

Cornell University Conference Travel Grant	2017–2019
Ve-Sing and Tseng So Koo Award	2015
NSF Sponsored Research Experiences for Undergraduates Best Overall Project	2013

LEADERSHIP EXPERIENCE

International Dreamers Scholarship Fund <i>Selection Committee</i>	2018–Present
Cornell University	
CEE Graduate Student Association <i>Vice President</i>	2020–2021
Sport Taekwondo Student Club <i>Treasurer</i>	2019–2021
Engineering TA Development Program <i>TA Development Consultant</i>	2018–2019
CEE Graduate Student Association <i>Treasurer</i>	2016–2017
Chi Epsilon National Civil Engineering Honor Society <i>Treasurer</i>	2014–2015
American Society of Civil Engineers	2013–2014
2014 ASCE Upstate NY Region Student Conference Committee	

PROFESSIONAL MEMBERSHIPS

Tau Beta Pi National Engineering Honor Society
Chi Epsilon National Civil Engineering Honor Society
American Society of Civil Engineers (ASCE)