

## EDUCATION

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**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

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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

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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

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1. **W. Wu** and C.J. Earls, (2021) "Towards a Generalized Engineering Theory for Hydrodynamic Slamming Emanating from Partitioned Fluid-Structure Interaction Analysis," 16<sup>th</sup> *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," 15<sup>th</sup> *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," 13<sup>th</sup> 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," 14<sup>th</sup> 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," 14<sup>th</sup> U.S. National Congress on Computational Mechanics, Montreal, Canada.

## RESEARCH EXPERIENCE

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**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

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**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

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## HONORS AND AWARDS

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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

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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

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