

# LAUREN LAZARUS MELFI

Assistant Professor of Applied Mathematics  
Wentworth Institute of Technology

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## EDUCATION:

**Cornell University** 2010 - 2016  
*Ph.D. in Theoretical and Applied Mechanics – Advisor: R. H. Rand*

**University of New Hampshire** 2006 - 2010  
*B.S. in Physics with University Honors; B.A. in Classics – Summa Cum Laude*

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## ACADEMIC POSITIONS:

**Wentworth Institute of Technology** 2020 – present  
*Assistant Professor, Dept. of Applied Mathematics*

**Trinity College** 2017 - 2020  
*Harold L. Dorwart Visiting Assistant Professor, Dept. of Mathematics*

**Harvey Mudd College** 2016 - 2017  
*Visiting Assistant Professor, Dept. of Mathematics*

**Cornell University** Spring 2016  
*Teaching Associate, Dept. of Mathematics*

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## PUBLICATIONS:

M. J. Panaggio, M.-V. Ciocanel, **L. Lazarus**, C. M. Topaz, and B. Xu: Model reconstruction from temporal data for coupled oscillator networks. *Chaos* **29**, 103116 (2019).

**L. Lazarus**, M. Davidow, and R. Rand: Periodically Forced Delay Limit Cycle Oscillator. *International Journal of Non-Linear Mechanics*, **94**, pp. 216-222 (2017).

**L. Lazarus**, M. Davidow, and R. Rand: Dynamics of an oscillator with delay parametric excitation. *International Journal of Non-Linear Mechanics*, **78**, pp. 66-71 (2016).

**L. Lazarus**, M. Davidow, and R. Rand: Dynamics of a delay limit cycle oscillator. *Nonlinear Dynamics*, **82**, pp. 481-488 (2015).

**L. Lazarus** and R. H. Rand: Dynamics of a System of Two Coupled Oscillators Driven by a Third Oscillator. *Journal of Applied Nonlinear Dynamics*, **3** (3), pp. 271-282 (2014).

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## **AWARDS AND FELLOWSHIPS:**

Fellow, Center for Teaching and Learning, Trinity College	2018 – 2019
Participant, AMS Mathematics Research Community, Agent-Based Modeling	June 2018
Blue '17 Fellow, MAA Project NExT	2017 – 2018
H. D. Block Teaching Prize, Cornell University	2016
Phi Beta Kappa Honor Society, Beta of New Hampshire	2010

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## **PRESENTATIONS:**

### ***Invited Conference Talks:***

SIAM/CAIMS Annual Meeting	July 17, 2020
“Model Reconstruction for Coupled Oscillator Networks from Temporal Data.” with M. J. Panaggio, M.-V. Ciocanel, C. Topaz, and B. Xu.	(virtual)
Joint Mathematics Meetings	January 17, 2019
“Network reconstruction from temporal data for coupled oscillators.” with H. Adams, M.-V. Ciocanel, K. Houston-Edwards, M. J. Panaggio, C. Topaz, and B. Xu.	Baltimore, MD

### ***Colloquium Talks:***

Yale Undergraduate Mathematics Society Seminar	October 16, 2020
“System Delay as a Feature, Not a Bug”	(virtual)
Rose-Hulman Institute of Technology Mathematics REU Colloquium	July 16, 2020
“Modeling Oscillations with Delayed Feedback”	(virtual)
University of Hartford Mathematics Undergraduate Colloquium	September 14, 2018
“System Delay as a Feature, Not a Bug.”	
Claremont Center for the Mathematical Sciences Colloquium	November 30, 2016
“Delay in the System: Oscillations caused by non-trivial response time.”	

### ***Contributed Conference Talks:***

Joint Mathematics Meetings “Comparison and machine classification of limit cycles from ODE and delayed oscillator models”	January 17, 2020 Denver, CO
SIAM Conference on Applications of Dynamical Systems “Comparison and connection between delay oscillators and ODE oscillators.”	May 19, 2019 Snowbird, UT
Joint Mathematics Meetings “Frequency effects of various cubic resonances on a delayed oscillator.”	January 16, 2019 Baltimore, MD
SIAM Conference on Applications of Dynamical Systems “Internally delayed oscillator in coupling.”	May 24, 2017 Snowbird, UT
Joint Mathematics Meetings “Periodic forcing of a first-order delay limit cycle oscillator.” with M. Davidow and R. H. Rand.	January 5, 2017 Atlanta, GA
IUTAM Symposium, Analytical Methods in Nonlinear Dynamics “Dynamics of a delay limit cycle oscillator.” with M. Davidow and R. H. Rand.	July 8, 2015 Frankfurt, Germany
ASME International Design & Engineering Technical Conferences “Dynamics of a system of two coupled oscillators driven by a third oscillator.” with R. H. Rand.	August 20, 2014 Buffalo, NY
American Physical Society March Meeting Poster: “System dynamics of non-diffusively coupled oscillators.” with J. Tranquillo.	March 16, 2010 Portland, OR

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### **TEACHING EXPERIENCE:**

<b>Wentworth Institute of Technology</b> Differential Equations & Systems Modeling; Linear Algebra & Matrix Theory	2020 – present
<b>Trinity College</b> Intro to Mathematical Modeling; Differential Equations; Linear Algebra; Calculus II; Mathematical Pearls; Calculus III; Statistical Data Analysis	2017 - 2020
<b>Harvey Mudd College</b> Intro to Differential Equations; Intermediate Differential Equations; Intro to Linear Algebra; Differential Equations and Linear Algebra II; Multivariable Calculus	2016 - 2017

**Cornell University**

2016

Calculus I; [also see Predoctoral Teaching Experience below]

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**STUDENT RESEARCH MENTORING:**

Benjamin Liske, Trinity College '20	Summer 2019
Daniel Melesse, Trinity College '20	Summer 2019
Kalsang Sherpa, Trinity College '20	Summer 2018
<i>Outstanding Poster, MAA Student Poster Session, Joint Mathematics Meetings 2019</i>	

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**PROFESSIONAL MEMBERSHIPS AND SERVICE:**

Organizing Committee Member: Dynamics Days 2020, Hartford, CT	January 2020
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## Reviewer:

*International Journal of Systems Science* – Taylor & Francis*SN Applied Sciences* – Springer*College Mathematics Journal* – MAA, Taylor & Francis

## Member:

Mathematical Association of America (MAA)

Society for Industrial and Applied Mathematics (SIAM)

Association for Women in Mathematics (AWM)

Phi Beta Kappa Honor Society

## Past Member:

American Mathematical Society (AMS) – 2016-2019

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**SELECTED OUTREACH:**

## Panelist / Visitor:

AAUW Tech Savvy Conference at Trinity College, Hartford, CT

March 7, 2020

Women in STEM Club at Hall High School, West Hartford, CT

April 22, 2019

## **PREDOCTORAL TEACHING EXPERIENCE:**

### **Cornell University**

*Instructional Teaching Assistant*, Dept. of Mathematics  
Calculus I Sp 2014, Sp 2015

*Workshop Development Assistant*, Engineering Learning Initiatives  
[Calculus / Multivariable Calculus] for Engineers Sp/Fa 2013, Fa 2014

*Recitation Teaching Assistant*, Dept. of Mathematics Fa 2010, Sp/Fa 2011, Sp/Fa 2012, Fa 2015  
[Calculus / Multivariable Calculus / Differential Equations / Linear Algebra] for Engineers

*Instructor's Assistant*, Dept. of Mathematics Sp/Fa 2011, Sp 2012, Sp/Fa 2013, Fa 2014, Fa 2015  
[Calculus / Multivariable Calculus / Differential Equations / Linear Algebra] for Engineers

*Teaching Assistant*, Dept. of Mechanical and Aerospace Engineering Su 2011, Su 2012, Su 2013  
System Dynamics, Heat Transfer

### **University of New Hampshire**

Sp 2010

*Teaching Assistant*, Dept. of Physics

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## **PREDOCTORAL RESEARCH EXPERIENCE:**

### **Bucknell University**

Summer 2009

*Research Assistant*, NSF REU Program with J. Tranquillo – coupled oscillators

### **Lehigh University**

Summer 2008

*Research Assistant*, NSF REU Program with D. Vavylonis – modeling cell mechanics

### **University of New Hampshire**

2007 - 2009

*Research Assistant*, with P. Berglund – string theory