

# William Cousins (Will)

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CONTACT	Email: willcousins@gmail.com Webpage: www.willcousins.com Phone: 803-730-9318	
POSITIONS	<b>Massachusetts Institute of Technology</b> ◊ <i>Postdoctoral Associate</i> - Department of Mechanical Engineering ◊ Mentor: Themistoklis Sapsis	<b>2013–2015</b>
EDUCATION	<b>Ph.D., Applied Mathematics</b> ◊ North Carolina State University (Raleigh, NC) ◊ Advisor: Pierre Gremaud ◊ Dissertation: <i>Boundary Conditions and Uncertainty Quantification for Hemodynamics</i> <b>M.S., Applied Mathematics</b> ◊ North Carolina State University (Raleigh, NC) <b>B.S., Mathematics (<i>Magna Cum Laude</i>)</b> ◊ Pepperdine University (Malibu, CA)	<b>2013</b>    <b>2011</b>  <b>2009</b>
PUBLICATIONS	<ol style="list-style-type: none"><li>1. M. Mohamad, W. Cousins, T.P. Sapsis. <i>A probabilistic decomposition-synthesis method for the quantification of rare events due to internal instabilities</i>. Journal of Computational Physics, 322, 288-308, 2016.</li><li>2. W. Cousins, T.P. Sapsis. <i>Reduced order precursors of rare events in unidirectional nonlinear water waves</i>. Journal of Fluid Mechanics, 79, 368-338, 2016.</li><li>3. W. Cousins, T.P. Sapsis. <i>The unsteady evolution of localized unidirectional deep water wave groups</i>. Phys. Rev. E., 91, 2015.</li><li>4. W. Cousins, T.P. Sapsis. <i>Quantification and prediction of extreme events in a one-dimensional nonlinear dispersive wave model</i>. Physica D., 280, 2014.</li><li>5. W. Cousins, P.A. Gremaud. <i>Impedance Boundary Conditions for General Transient Hemodynamics</i>. Int. J. Numer. Meth. Biomed. Engng., 2014.</li><li>6. W. Cousins, P.A. Gremaud, D.M. Tartakovsky. <i>A New Physiological Boundary Condition for Hemodynamics</i>. SIAM J. Appl. Math., 73(3), 1203-1223, 2013.</li><li>7. W. Cousins, P.A. Gremaud. <i>Boundary Conditions for Hemodynamics: The Structured Tree Revisited</i>. Journal of Computational Physics, 231(18), 2012.</li><li>8. K. Anderson, A. Burt, W. Cousins, B. (Hancock, D. Strong). <i>A Sinkhorn-Knopp Fixed Point Problem</i>. Pi Mu Epsilon Journal, 13(5), 2011.</li></ol>	

AWARDS AND  
FELLOWSHIPS

**Early Career Travel Award**, SIAM Conference on Dynamical Systems and its Applications, 2015

**Rose-Winton Award**, NC State University, 2013 (award given annually to one outstanding graduate student in the math department)

**Poster Prize Winner**, Poster Session, SIAM Conference on the Life Sciences, 2012 (award given to  $\approx$  top 10% of presenters)

**Student Travel Award**, SIAM Conference on the Life Sciences, 2012

**NSF East Asia and Pacific Summer Institutes Fellow**, 2010 (Awarded fellowship to work at the Centre for Bioengineering at the University of Canterbury in Christchurch, New Zealand)

**Outstanding Mathematics Graduate**, Pepperdine University, 2009

**Poster Prize Winner**, Undergraduate Poster Session, Joint Mathematics Meetings, 2009 (award given to  $\approx$  top 10% of presenters)

INVITED TALKS

1. *Prediction of Extreme Events in Nonlinear Dispersive Wave Equations*, **University of Massachusetts Amherst, Applied Analysis and Computation Seminar**, November 2014
2. *Blood Flow in Structured Arterial Trees*, **CRUNCH Group, Division of Applied Mathematics, Brown University**, May 2014
3. *Prediction of Extreme Events in Nonlinear Dispersive Wave Equations*, **SIAM & CCE Seminar Series, Massachusetts Institute of Technology, April 2014**
4. *Outflow Boundary Conditions for Hemodynamic Modeling*, **Statistical and Applied Mathematical Sciences Institute Workshop: UQ: Models with Complex and Uncertain Domains**, Durham, N.C., March 2012

TEACHING  
EXPERIENCE

Instructor, Numerical Computation for Mechanical Engineers (2.086), Fall 2014, MIT  
Instructor, Calculus for Life and Management Sciences(MA 131), Spring 2013, NC State

STUDENTS  
SUPERVISED

David Hesslink, MIT Mechanical Engineering Undergraduate, Nov 2014 - Present

Sara Falcone, MIT Mechanical Engineering Undergraduate, Oct 2014-Dec 2014

Kathryn Evans, MIT Mechanical Engineering Undergraduate, February 2014-June 2014

WORKSHOPS

IdeaLab 2014: Program for Early Career Researchers, ICERM, August 2014

UQ: Models with Complex and Uncertain Domains, SAMSI, Durham, NC, March 2012

PROFESSIONAL  
SERVICE

- ◇ Referee for Annals of Biomedical Engineering, SIAM Journal on Applied Mathematics, Journal of Computational Physics, International Ocean and Polar Engineering Conference Proceedings

- ◇ President, NC State Student Chapter of SIAM (May 2012–April 2013)