

## EDUCATION

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**Massachusetts Institute of Technology (MIT)**, Cambridge, MA, GPA: 4.8/5.0

*Ph.D.* Aeronautics and Astronautics (Expected 2013)

Thesis: A Bayesian Framework for Uncertainty Quantification in the Design of Complex Systems

Advisor: Karen E. Willcox

*S.M.* Aeronautics and Astronautics (2010)

Thesis: Development of an Income-Based Hedonic Noise Monetization Model for the Assessment of Aviation-Related Noise Impacts

Advisor: Ian A. Waitz

**Duke University Pratt School of Engineering**, Durham, NC, GPA: 3.86/4.0, *Magna cum laude*

*B.S.E.* Mechanical Engineering with Departmental Distinction (2008)

Advisor: Donald B. Bliss

*B.S.E.* Biomedical Engineering (2008)

## RESEARCH EXPERIENCE

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**Aerospace Computation Design Laboratory**, MIT (Jun. 2010 – Present)

Developing methods for uncertainty quantification and sensitivity analysis in complex system design, including strategies for complexity estimation and resource allocation.

**Partnership for AiR Transportation Noise and Emissions Reduction**, MIT (Sep. 2008 – Jun. 2010)

Developed a global model for assessing the monetary impacts of aviation noise to inform policy decision-making. Performed model testing, uncertainty assessment, and integration.

**Acoustics and Noise Reduction Laboratory**, Duke University (Jan. 2007 – Aug. 2008)

Developed innovative passive noise reduction methods for aircraft interiors using lightweight flexible panels. Created computational models to simulate the behavior of multi-panel systems.

**Orthopaedic Bioengineering Laboratory**, Duke University (Jun. 2005 – Sep. 2006)

Studied the morphology of mammalian articular cartilage in an evolutionary context.

## PUBLICATIONS

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- He, Q., Allaire, D., Deyst, J., and Willcox, K. A Bayesian Framework for Uncertainty Quantification in the Design of Complex Systems. *12<sup>th</sup> AIAA ATIO/14<sup>th</sup> AIAA/ISSMO MAO Conference*, September 17-19, 2012, Indianapolis, IN.
- Allaire, D., He, Q., Deyst, J., and Willcox, K. An Information-Theoretic Metric of System Complexity with Application to Engineering System Design. *Journal of Mechanical Design*, to appear.
- He, Q., Wollersheim, C., Locke, M., and Waitz, I.A. Estimation of the Global Impact of Aviation-Related Noise Using an Income-Based Approach. *Transport Policy*, to appear.
- Mahashabde, A., Wolfe, P., Ashok, A., Dorbian, C., He, Q., Fan, A., Lukachko, S., Mozdzanowska, A., Wollersheim, C., Barrett, S.R.H., Locke, M., and Waitz, I.A. Assessing the Environmental Impacts of Aircraft Noise and Emissions. *Progress in Aerospace Sciences*, 47(1), 2011, pp. 15-52.
- Bliss, D.B., He, Q., Franzoni, L., and Palas, C. Innovative Structural Acoustic Strategies to Reduce Sound Transmission Through Lightweight Flexible Structures. *157<sup>th</sup> Meeting of the Acoustical Society of America*, May 18-22, 2009, Portland, OR.
- He, Q., Bliss, D.B., and Franzoni, L. Noise Reduction Strategies Using Multi-Element Flexible Structures. *ASME 2008 Noise Control and Acoustics Division Conference*, July 28-30, 2008, Dearborn, MI.
- He, Q. Women in Science and Engineering: Dissuasion vs. Encouragement. *Deliberations Journal*, Duke University, 2005.

## HONORS AND DISTINCTIONS

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- Zonta International Amelia Earhart Fellowship (2012 – 2013)
- National Science Foundation Graduate Research Fellowship (2009 – 2012)
- United States Federal Aviation Administration Centers of Excellence Outstanding Student of the Year (2011)
- American Society of Mechanical Engineers John and Elsa Gracik Scholarship (2007 – 2008)
- Tau Beta Pi Engineering Honor Society
- Pi Tau Sigma Mechanical Engineering Honor Society
- Jeopardy! College Tournament Contestant (1 of 15 nationwide) (2005)

## LEADERSHIP EXPERIENCE AND AWARDS

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- Women's Graduate Association of Aeronautics and Astronautics, MIT
  - President (2011 – 2012)
  - Recipient of Vickie Kerrebrock Award, Department of Aeronautics and Astronautics (2012)
- Sidney-Pacific Graduate Community, MIT
  - Chair of Board of Trustees (2012 – Present)
  - Executive Council, Chair of the Halls (2010 – 2011)
  - Recipient of William L. Stewart, Jr. Award, MIT (2011)
- Graduate Association of Aeronautics and Astronautics, MIT
  - Co-President (2009)
  - Recipient of Vickie Kerrebrock Award, Department of Aeronautics and Astronautics (2009)
- Duke University College Bowl
  - President (2007 – 2008)
- American Society of Mechanical Engineers, Duke University Chapter
  - Co-President (2007 – 2008)

## RELEVANT COURSEWORK

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- Aircraft Systems Engineering
  - Multidisciplinary System Design Optimization
  - Air Transportation Systems Architecting
  - Mechanics of Solid Materials
  - Human Factors Engineering
  - Aerodynamics
- Aerospace Computational Engineering
  - Computational Science and Engineering
  - Introduction to Numerical Methods
  - Optimization Methods
  - Applied Probability

Citizenship: USA

References available upon request