

Michael Scott Balch, PhD

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Summary Research-Practitioner in model validation and uncertainty quantification (i.e. risk analysis) with 9+ years of experience.

Education **Ph.D. Aerospace Engineering** Virginia Polytechnic Institute and State University (Virginia Tech)
Graduated: December 16, 2010

M.S. Aerospace Engineering, Blacksburg, VA
Graduated: May 10, 2008

B.S. Aerospace Engineering,
Graduated: May 13, 2006

Employment History **Instructor and Chief Consultant** **June 2014 – Present**
Alexandria Validation Consulting, LLC

Technical Staff **April 2013 – April 2014**
Arctan, Inc.

Project Manager: Charles Morefield
Company Owner: Michael Morefield

Research Engineer **August 2012 – April 2013**
AFRL/RQHF at Wright-Patterson Air Force Base
contracting through Universal Technology Corporation

Project Manager: Ben Smarslok
UTC Managers: Roger Rucker, Lanny Jines

Post-Doctoral Researcher **January 2011 – June 2012**
Applied Biomathematics

Project Manager: Scott Ferson
Company Owner: Lev Ginzburg

Graduate Research Assistant **August 2006 – December 2010**
Virginia Tech, Department of Aerospace and Ocean Engineering

Adviser and project manager while on Blacksburg Campus,
August 2006 – July 2008:

Robert Walters, VP of Research, Virginia Tech

Project Manager while in residence at NASA Langley,
August 2008 – December 2010:

Robert Tolson, National Institute of Aerospace

Dissertation: Methods for Rigorous Uncertainty Quantification with Application to a Mars Atmosphere Model.

Computing **Matlab** **R** **C++** **Fortran 95** **LaTeX** **Microsoft Office**

Awards Winner of 2006 AIAA Undergraduate Team Space Design Competition
Peter and Phyllis Pruden Scholarship (2004-2005)

Memberships ΤΒΠ, Engineering Professional Fraternity
ΣΓΤ, Aerospace Engineering Honor Society
American Institute of Aeronautics and Astronautics (AIAA)
Society for Risk Analysis (SRA)

Conference and Journal Papers AIAA-2016-1445 at *18th AIAA Non-Deterministic Approaches Conference*, "A Corrector for Probability Dilution in Satellite Conjunction Analysis." **Primary Author.**

AIAA-2014-0812 at *16th AIAA Non-Deterministic Approaches Conference*, "A Pre-Validation Study on Supersonic Wind Tunnel Data Collected from Legacy Aerothermal Experiments." **Primary Author.**

"Computing with confidence." *8th International Symposium on Imprecise Probability: Theories and Applications*. Compiègne, France, 2013. Co-Author with Scott Ferson.

"Mathematical Foundations for a Theory of Confidence Structures." *International Journal of Approximate Reasoning*. v53 (7). 1003-1019. October, 2012. **Primary Author.**

"A Holistic Approach to Uncertainty Quantification with Application to Supersonic Nozzle Thrust." *International Journal of Uncertainty Quantification*. v2 (4). 363-381. 2012. Co-Author with Chris Roy.

AIAA-2008-450 at *46th AIAA Aerospace Sciences Meeting and Exhibit*, "Modeling and Propagation of Physical Parameter Uncertainty in a Mars Atmosphere Model" **Primary Author.**

AIAA-2008-729 at *46th AIAA Aerospace Sciences Meeting and Exhibit*, "Efficient Uncertainty Quantification Applied to the Aeroelastic Analysis of a Transonic Wing" Co-Author with Serhat Hosder.

AIAA-2007-1939 at *9th AIAA Non-Deterministic Approaches Conference*, "Efficient Sampling for Non-Intrusive Polynomial Chaos Applications with Multiple Uncertain Input Variables" Co-Author with Serhat Hosder.

Teaching Experience	Teaching Assistant for Senior Lab	Fall 2006
	Teaching Assistant for Aircraft Performance	Spring 2007
	Teaching Assistant for Advanced Aero/Hydrodynamics	Fall 2007
	Substitute Lecturer for Advanced Aero/Hydrodynamics	Fall 2007
	Teaching Assistant for Aircraft Performance	Spring 2008
	Teaching Assistant for High-Speed Aerodynamics	Spring 2009