

## Maciej Balajewicz

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CONTACT INFORMATION	University of Illinois at Urbana-Champaign Department of Aerospace Engineering 321C Talbot Laboratory Urbana, Illinois 61801	phone: 217-607-6060 email: mbalajew@illinois.edu web: mbalajew.ae.illinois.edu
ACADEMIC POSITIONS	<b>Assistant Professor</b> Department of Aerospace Engineering University of Illinois at Urbana-Champaign, Urbana, Illinois	2015 – present
	<b>Adjunct Assistant Professor</b> Department of Mechanical Engineering and Materials Science Duke University, Durham, North Carolina	2014 – present
	<b>Visiting Senior Researcher</b> French National Center for Scientific Research, Poitiers, France	2013
EDUCATION	<b>Stanford University</b> , Stanford, California Postdoctoral Research Fellow, Department of Aeronautics and Astronautics Advisor: Charbel Farhat	2012 – 2015
	<b>Duke University</b> , Durham, North Carolina Ph.D., Mechanical Engineering and Materials Science Advisor: Earl H. Dowell	2008 – 2012
	<b>Carleton University</b> , Ottawa, Canada M.A.Sc., Mechanical and Aerospace Engineering B.A.Sc., Mechanical and Aerospace Engineering	2005 – 2007 1999 – 2004
GRANTS, AWARDS, & HONORS	National Science Foundation (NSF) Research Grant, 2014-2017, \$479,493 (co-PI) <i>Reduced Order Models of the Navier-Stokes Equations of Fluid Flows</i> Natural Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Fellowship, \$42,000, 2010–2012 USNCCM12 Travel Award, National Congress on Computational Mechanics, 2012 SIAM Travel Award, Computational Science and Engineering Conference, 2012 Center for Human Science Residential Fellowship, 2008–2011 CESAer European Aerospace Exchange, 2007 Carleton University Entrance Scholarship, 2000	
JOURNAL PUBLICATIONS	8. Balajewicz M, Tezaur I, Dowell E. Minimal subspace rotation on the Stiefel manifold for stabilization and enhancement of projection-based reduced order models for the compressible Navier-Stokes equations. <i>Journal of Computational Physics</i> . Submitted for review. 7. Balajewicz M, Amsallem D, Farhat C. Projection-based model reduction for contact problems. <i>International Journal for Numerical Methods in Engineering</i> . Accepted for publication.	

6. Balajewicz M, Farhat C. Reduction of nonlinear embedded boundary models for problems with evolving interfaces. *Journal of Computational Physics*. 274:489–504. 2014.
  5. Balajewicz M, Dowell E, Noack B. Low-dimensional modeling of high-Reynolds-number shear flows incorporating constraints from the Navier-Stokes equation. *Journal of Fluid Mechanics*. 729:285–308. 2013.
  4. Cordier L, Noack B, Tissot G, Lehnasch G, Delville J, Balajewicz M, Daviller G, Niven R. Identification strategies for model-based control. *Experiments in Fluids*. 54(8):1–21. 2013.
  3. Balajewicz M, Dowell E. Reduced order modeling of flutter and limit-cycle oscillations using the sparse Volterra series. *Journal of Aircraft*. 49(6):1803–1812. 2012.
  2. Balajewicz M, Dowell E. Stabilization of projection-based reduced order models of the Navier-Stokes equations. *Nonlinear Dynamics*. 70(2):1619–1632. 2012.
  1. Balajewicz M, Nitzsche F, Feszty D. Application of multi-input Volterra theory to nonlinear, multi-degree-of-freedom aerodynamic systems. *AIAA Journal*. 48(1):56–62. 2010.
- CONFERENCES, MEETINGS, & PRESENTATIONS
19. Tezaur I, Balajewicz M. Minimal subspace rotation approach for obtaining stable and accurate low-order projection-based reduced order models for nonlinear compressible flow. *WCCM, World Congress on Computational Mechanics*, 24–29, July 2016.
  18. Tezaur I, Balajewicz M. Minimal subspace rotation approach for obtaining stable and accurate low-order projection-based reduced order models for nonlinear compressible flow. *ECCOMAS Congress, European Congress on Computational Methods in Applied Sciences and Engineering*, 5–10, June 2016.
  17. Toivanen J, Balajewicz M. Reduced order models for pricing American options under stochastic volatility and jump-diffusion models. *International Conference on Computational Science*, 6–8, June 2016.
  16. Tezaur I, Balajewicz M. A minimal subspace rotation approach for stabilizing and fine-tuning projection-based reduced order models for fluid applications. *West Coast ROM Workshop*, November 19, 2015.
  15. Balajewicz M, Tezaur I. A subspace projection-based method for stabilization and enhancement of projection-based ROMs of the Navier-Stokes equations. *MoRePaS 2015, Model Reduction of Parametrized Systems*, October 13–16, 2015.
  14. Balajewicz M, Tezaur I. Stabilization and fine-tuning of projection-based reduced order models for compressible flow via minimal subspace rotation on the Stiefel manifold. *International Congress on Industrial and Applied Mathematics*, August 10–14, 2015.
  13. Balajewicz M, Amsallem D, Farhat C. Projection-based model reduction for contact problems. *Pan-American Congress on Computational Mechanics*, April 25–29, 2015.
  12. Balajewicz M, Dowell E, Noack B. Constrained orthogonal decomposition for reduced-order modeling of high-Reynolds-number shear flows. *SIAM Conference on Uncertainty Quantification*, March 31–April 3, 2014.
  11. Balajewicz M, Dowell E, Noack B. Low-dimensional modeling of high-Reynolds-number shear flows incorporating constraints from the Navier-Stokes equation. *66th Annual Meeting of the APS Division of Fluid Dynamics*, November 24–26, 2013.
  10. Balajewicz M, Farhat C. Nonlinear reduction of embedded boundary computational fluid dynamics. *66th Annual Meeting of the APS Division of Fluid Dynamics*, November 24–26, 2013.

9. Farhat C, Balajewicz M. Reduction of nonlinear embedded boundary models for fluid-structure interaction. *Keynote, 2nd International Workshop on Reduced Basis, POD and PGD model reduction techniques*, November 3–6, 2013.
8. Balajewicz M, Dowell E. Recent progress in Volterra series-based system identification of nonlinear aerodynamics. *12th U.S. National Congress on Computational Mechanics*, July 22–25, 2013.
7. Balajewicz M, Farhat C. Nonlinear reduction of embedded boundary models for fluid-structure interaction. *12th U.S. National Congress on Computational Mechanics*, July 22–25, 2013.
6. Balajewicz M, Dowell E, Noack B. Stabilization of projection-based reduced order models of the Navier-Stokes equations. *SIAM Conference on Computational Science and Engineering*, February 25–March 1, 2013.
5. Balajewicz M, Dowell E, Noack B. A new approach to model order reduction of the Navier-Stokes equations. *65th Annual Meeting of the APS Division of Fluid Dynamics*, November 18–20, 2012.
4. Balajewicz M. Reduced order modeling of transonic flutter and limit-cycle oscillations using the pruned Volterra series. *51st AIAA Structures, Structural Dynamics, and Materials Conference*, April 12–15, 2010.
3. Balajewicz M, Nitzsche F, Feszty D. Reduced order modeling of nonlinear transonic aerodynamics using a pruned Volterra series. *50th AIAA Structures, Structural Dynamics, and Materials Conference*, May 4–7, 2009.
2. Balajewicz M, Nitzsche F, Feszty D. On the application of multi-input Volterra theory to nonlinear multi-degree-of-freedom aerodynamic systems. *49th AIAA Structures, Structural Dynamics, and Materials Conference*, April 7–10, 2008.
1. Balajewicz M, Nitzsche F, Feszty D. A computationally efficient, Volterra series-based, ROM methodology for aeroelastic systems with stronger aerodynamic nonlinearities. *RTO-MP-AVT-154 NATO Specialists Meeting on Advanced Methods in Aeroelasticity, 2008*.

INVITED  
TALKS

- Virginia Tech, Department of Mathematics, January 2016
- University of Illinois at Urbana-Champaign, Aerospace Engineering Department, December 2014
- Oklahoma State University, Mechanical and Aerospace Engineering Department, December 2014
- Sandia National Laboratories, Computational Mathematics Department, May 2014
- Massachusetts Institute of Technology, Department of Mechanical Engineering, December 2013
- Army High Performance Computing Research Center, Workshop on Computational Methods for Problems with Evolving Domains and Discontinuities, December 2013
- University of California, Santa Barbara, Center for Interdisciplinary Research in Fluid Physics, November 2013
- French National Centre for Scientific Research, Department of Fluids, Thermal and Combustion Science, May 2013
- Mines ParisTech, Computational Mechanics and Mathematical Engineering, May 2013
- Institute PPRIME, French National Centre for Scientific Research, April 2012
- Princeton University, Department of Mechanical and Aerospace Engineering, February 2012

- California Institute of Technology, Department of Mechanical and Civil Engineering, December 2011
- Brown University, Division of Applied Mathematics, October 2011

TEACHING EXPERIENCE	University of Illinois at Urbana-Champaign, Champaign, Illinois	
	<i>Computational Aerodynamics</i>	Spring 2016
	<i>Aeroelasticity</i>	Fall 2015
	Duke University, Durham, North Carolina	
	<i>Advanced Mechanical Vibrations</i>	Fall 2011
	<i>Intermediate Dynamics</i>	Spring 2010
	Center for Human Science, Chapel Hill, North Carolina	
	<i>Irrational Choice Theory</i>	Fall 2009
STUDENTS ADVISED	• Rambod Mojgani, University of Illinois at Urbana-Champaign	2015 – present
	• Sean Abrahamson, AHPCRC Summer Institute	Summer 2014
	<i>Implementation and testing of data compression algorithms for reduction of embedded boundary simulations with evolving interfaces</i>	
	• First prize, best research project	
PEER REVIEW	Journal of Fluid Mechanics, Journal of Computational Physics, Nonlinear Dynamics, AIAA Journal, Journal of Aircraft, Finite Element Analysis and Design, Journal of Aerospace Engineering, Theoretical and Computational Fluid Dynamics, International Journal for Numerical Methods in Fluids, Fluid Dynamics Research, International Journal of Heat and Fluid Flow, CEAS Aeronautical Journal, International Journal for Numerical Methods in Engineering.	