

JUSTIN T. WEBSTER, PH.D.

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EMPLOYMENT

University of Maryland, Baltimore County (UMBC), Dept. Math. and Stat.	
Professor	2026
Associate Professor with Tenure	2022–2026
Assistant Professor	2017–2022
College of Charleston (CofC), Department of Mathematics	2014–2017
Assistant Professor	

EDUCATION AND TRAINING

North Carolina State University (NCSU), Department of Mathematics	2014–2015
Postdoctoral Research Scholar, Mentor: Lorena Bociu	
Oregon State University (OSU), Department of Mathematics	2012–2014
Postdoctoral Scholar, Mentors: Ralph Showalter and Malgorzata Peszynska	
University of Virginia (UVA), Ph.D., Mathematics	2008–2012
Dissertation: <i>Analysis of Flow-Plate Interactions: Semigroup Well-Posedness and Long-Time Behavior</i> Advisor: Irena Lasiecka, Now: University of Memphis, Dept. of Mathematical Science	
University of San Diego (USD), B.A., Mathematics, Minor in Physics	2004–2008
Valedictorian, GPA: 4.0, Summa Cum Laude, Phi Beta Kappa (Phi of California), Inducted 2008	

AWARDS, FUNDED PROPOSALS, AND FELLOWSHIPS

The Ingenuity Project Honoree, 2026 Mathematics Partner of the Year	May 2026
UMBC BreakingGround Award, Grant from UMBC Center for Democracy and Civic Life Amount: \$2,500 to be used in funding Mathematics and Statistics Ingenuity Outreach	2025–2026
UMBC Career Connector Recognition (UMBC Career Center)	2024–2025
UMBC College of Natural and Mathematical Sciences Mid-Career Faculty Excellence Award	2025
Selected as the College of Natural and Mathematical Sciences 2025 Science Discovery Series Speaker https://cnms.umbc.edu/discovery-series/	April 2024
NIST – <i>UMBC Quantum Science Institute</i> Senior Personnel (Math&Stat Lead); PI: T. Pittman (Physics) Total Amount: \$1,500,000	2024–2026
NSF DMS–2307538 (University Maryland, Baltimore County) <i>Self-excitation, Limit Cycle Oscillations, and Control of Large Deflection Plate Models in Engineering Applications</i> Amount: \$290,000. https://www.nsf.gov/awardsearch/showAward?AWD_ID=2307538&HistoricalAwards=false	2023–2026
Nominated: UMBC Presidential Research Professor Mathematics and Statistics (CNMS) Nominee	2023–2024
Nominated: Blavatnik National Award for Young Scientists UMBC Nominee for <i>Physical Sciences and Engineering</i>	2019–2020, 2023–2024
Selected as GRIT-X 2023 Speaker (Office of Vice President of Research) https://www.youtube.com/watch?v=VR2ywToLVzI	October 2023
UMBC Strategic Awards for Research Transitions (START) <i>Periodic Solutions in Fluid-Structure Interaction Problems</i> , Amount: \$20,000	2023–2024
UMBC College of Natural and Mathematical Sciences Early Career Faculty Excellence Award	2022

NSF DMS–1907620 (University Maryland, Baltimore County) 2019–2023
Collaborative Research: Aeroelastic Limit Cycle Oscillations for Energy Harvesting Applications
 UMBC Amount: \$233,000, Total Amount: \$738,000
 DMS–1907620 (UMBC), DMS–1907500 (Duke), DMS–1908033 (Carnegie Mellon)
https://www.nsf.gov/awardsearch/showAward?AWD_ID=1907620&HistoricalAwards=false

UMBC Hrabowski Innovation Grant Proposal (with Kathleen Hoffman and Kal Nanes) 2019–2020
 Amount: \$10,000; piloting “Introduction to Mathematical Reasoning” to reduce MATH 301 DFW rates

NSF DMS–1412238, 1504697, Supplement 1635281 2014–2017
Analysis and Control of Mathematical Models of Fluttering Plates
 Amount: \$120,276 https://www.nsf.gov/awardsearch/showAward?AWD_ID=1504697

Virginia Space Grant Consortium (NASA) Graduate Research Fellowship 2011–2012, 2012–2013
 Amount: \$12,000 (total); Title: *Flow-Plate Interactions*

Barry M. Goldwater Scholarship, Mathematics 2006–2008

PROPOSALS UNDER CONSIDERATION (UMBC)

NSF DMS—2606567 Applied Mathematics 2026–2029
 with: G. Avalos, University of Nebraska, Lincoln
Collaborative Research: Regularity, Stability, and Control of Poroelastic Filtrations
 UMBC Amount: \$296,147

PROPOSALS NOT AWARDED (SINCE 2021)

American Association of University Women Community Action Grant 2026–2029
 In partnership with the Ingenuity Project of Baltimore
 Letter of Intent: *UMBC-Ingenuity Partnership for Women in STEM*
 Amount: \$75,000

NSF DMS–2150790 2025–2028
 with: G. Avalos, University of Nebraska, Lincoln; S. Čanić, University of California, Berkeley
Collaborative Research: Mathematical Foundations of Fluid-Poroelastic-Structure Interactions
 UMBC Amount: \$245,599; Total Amount: \$757,215

DoD MURI, AFOSR Topic 25: White Paper 2023–2027
 Lead PI: Webster, with: L. Bridgeman (Duke), S. Deffner (UMBC), E. Dowell (Duke),
 F. Udawadia (Univ. South. CA), W. Zhu (UMBC), M. Zavalatos (Duke)
 Total Amount: \$7,500,000

NSF ExpandQISE: Track 2 2023–2027
 Senior Personnel/Faculty Associate
 with: M. Pelton (UMBC); T. Mohsenin (UMBC); S. Deffner (UMBC);
 T. Pittman (UMBC); E. Waks (UMCP)
Quantum at UMBC (QUMBC) Architectures and Devices for Resource-Efficient Quantum Networks
 Total Amount: \$5,000,000

NSF-NIGMS Track 2: White paper 2023–2025
 Collaborative research: Advancing the design of a bioartificial pancreas using mathematical approaches
 with: S. Čanić, University of California, Berkeley; L. Bociu, North Carolina State University;
 and M. Bukać, Notre Dame University

NSF Focused Research Group, DMS–2150790 2022–2025
 with: S. Čanić, University of California, Berkeley; L. Bociu, North Carolina State University;
 and M. Bukać, Notre Dame University
Moving boundary problems in flow-poroelasticity interactions
 UMBC Amount: \$381,884

BOOKS AND BOOK CHAPTERS

(with I. Lasiecka) *Flutter Stabilization For An Unstable, Hyperbolic Flow-Plate Interaction*, in **Fluids under Control**, Advances in Mathematical Fluid Dynamics. Birkhäuser. March, 2024. <https://link.springer.com/book/10.1007/978-3-031-47355-5>

(with B. Kaltenbacher, I. Kukavica, I. Lasiecka, R. Triggiani, and A. Tuffaha)
Mathematical Theory of Flow/Fluid-Structure Interactions. Oberwolfach Seminars, Volume 48, 2018.
<https://link.springer.com/book/10.1007/978-3-319-92783-1>

PEER-REVIEWED PUBLICATIONS

(with P. Lavagnino and A. Lee) Weak Solutions and Inertial Limits for Quasi-static Filtrations, *submitted* May 2026. <http://arxiv.org/abs/2605.15007>

(with P. Galdi and B. Muha) From polynomial stability to periodic well-posedness in partially dissipative systems, *submitted* May 2026. <https://arxiv.org/abs/2605.12892>

(with B. Muha, Š. Nečasová, M. Pokorný, Srdjan Trifunović) Steady Weak Solutions for A Plate Coupled to Compressible Viscous Flow with Inflow-Outflow Boundary Conditions, *submitted* March 2026. <http://arxiv.org/abs/2603.26421>

(with S. Mosný, B. Muha, and S. Schwarzacher) Time-Periodic Solutions for Hyperbolic-Parabolic Systems, *J. European Mathematical Society* *accepted* May 2026. <https://arxiv.org/abs/2412.18801>

(with M. Deliyianni and I. Lasiecka) Large Deflections of A Flow-Driven Cantilever with Kutta-Joukowski Flow Conditions, *Discrete and Continuous Dynamical Systems-S*, Volume 26, 2026, pp. 153–187. <https://www.aims sciences.org/article/doi/10.3934/dcdss.2026125>.

(with G. Avalos and G. Richard) Semigroup Generation for Multilayered Filtrations, *Contemporary Mathematics*, *accepted* March 2026. <https://arxiv.org/abs/2602.01403>

(with I. Benson) Resonance and Periodic Solutions for Harmonic Oscillators with General Forcing, *SIAM Review* (Education Section), *accepted* Dec. 2025. <https://arxiv.org/abs/2407.17144>.

(with G. Avalos) Uniqueness of Weak Solutions for Biot-Stokes Interactions, *Pure and Applied Analysis*, Vol. 7 (4), 2025, pp. 1111–1139. <https://msp.org/paa/2025/7-4/p05.xhtml>

(K. Hoffman, T. Williams, J.T. Webster, J. Harrison, K. Nanes) Assessing the Impact of A Interventional Proof-Writing Course, *International Journal of Mathematical Education in Science and Technology*, Vol. 57 (3), 2026, pp. 466–490. <https://www.tandfonline.com/doi/full/10.1080/0020739X.2025.2454604>

(with A. Falocchi) Analysis of a nonlinear fish-bone model for suspension bridges with rigid hangers in the presence of flow effects, *Discrete and Continuous Dynamical Systems*, Vol. 45 (7), 2025, pp. 2241–2280. <https://www.aims sciences.org/article/doi/10.3934/dcds.2024164>

(with V. Pata) An Observation About Weak Solutions of Linear Differential Equations in Hilbert Spaces, *Applied Mathematics and Optimization*, Vol. 90, 2024. <https://doi.org/10.1007/s00245-024-10180-z>

(with G. Avalos and E. Gurvich) Weak and Strong Solutions for a Fluid-Poroelastic-Structure Interaction via a Semigroup Approach, *Mathematical Methods in the Applied Sciences*, Vol. 48 (4), 2024, pp.4057–4089. <https://onlinelibrary.wiley.com/doi/10.1002/ma.10533>

(with L. Bociu and B. Muha) Mathematical Effects of Linear Visco-elasticity in Quasi-static Biot Models, *J. Mathematical Analysis and Application*, Vol. 527 (2), 2023. [https://authors.elsevier.com/sd/article/S0022-247X\(23\)00465-1](https://authors.elsevier.com/sd/article/S0022-247X(23)00465-1)

(with A. Balakrishna and I. Lasiecka) Strong Stabilization of a 3D Potential Flow via a Weakly Damped von Karman Plate, *Mathematical Models and Methods in Applied Sciences*, Vol. 33 (3), 2023, pp. 505–545. <https://www.worldscientific.com/doi/10.1142/S0218202523500124>

(with L. Bociu and B. Muha) Weak Solutions in Nonlinear Poroelasticity with Incompressible Constituents, *Nonlinear Analysis Real World Applications*, Vol. 67, 2022. <https://www.sciencedirect.com/science/article/pii/S1468121822000323>

(with M. Deliyianni, K. McHugh, and E. Dowell) Dynamic Equations of Motion for Inextensible Beams and Plates, *Archives of Applied Mechanics*, 92(6), 2022, pp. 1929–1952. <https://link.springer.com/article/10.1007/s00419-022-02157-7>

(with E. Gurvich) Weak Solutions for a Poro-elastic Plate System, *Applicable Analysis*, Vol. 101 (5), 2022, pp. 1617–1636. <https://www.tandfonline.com/doi/full/10.1080/00036811.2021.1953483>

(with L. Bociu, S. Čanić, and B. Muha) Multilayered Poroelasticity Interacting with Stokes Flow, *SIAM J. Mathematical Analysis*, Vol. 53 (6), 2021, pp.6243–6279. <https://epubs.siam.org/doi/abs/10.1137/20M1382520>

(with L. Bociu) Nonlinear Quasi-static Poroelasticity, *J. Differential Equations*, Volume 296 (25), 2021, pp. 242–278. <https://www.sciencedirect.com/science/article/abs/pii/S0022039621003703>

(with D. Bonheure, F. Gazzola, and I. Lasiecka) Long-time dynamics of a hinged-free plate driven by a non-conservative force, *Annales de l'Institut Henri Poincaré, Analyse Non Lineaire*, Vol. 39 (2), 2022, pp. 457–500. <https://ems.press/journals/aihpc/articles/4758345>

- (with M. Deliyianni) Theory of solutions for an inextensible cantilever, *Applied Mathematics and Optimization*, Volume 84, 2021, pp. 1345–1399. <https://link.springer.com/article/10.1007/s00245-021-09798-0>
- (with A. Balakrishna) Large Deflections of A Structurally Damped Panel in A Subsonic Flow, *Nonlinear Dynamics*, Volume 103, 2021, pp. 3165–3186. <https://link.springer.com/article/10.1007/s11071-020-05805-1>
- (with M. Deliyianni, V. Gudibanda, and J. Howell) Large Deflections of Inextensible Cantilevers: Modeling, Theory, and Simulation, *Mathematical Modelling of Natural Phenomena*, 15 (44), 2020. <https://www.mmnp-journal.org/articles/mmnp/abs/2020/01/mmnp190148/mmnp190148.html>
- Attractors and Determining Modes for a Panel Flutter Model: Finite Dimensionality Out of Thin Air, *Pure and Applied Functional Analysis*, Volume 5, 1, 2020, pp. 85–119. <http://www.ybook.co.jp/online2/oppafa/vol5/p85.html>
- (with K. Huneycutt, J. Howell, and S. Wilder) A Thorough Look at the (In)stability of Piston-Theoretic Beams, *Mathematics in Engineering*, Volume 1, 3, 2019, pp. 614–647. <https://www.aimspress.com/article/10.3934/mine.2019.3.614>
- (with G. Avalos and P.G. Geredeli) A Linearized Viscous, Compressible Flow-Plate Interaction with Non-dissipative Coupling, *J. Mathem. Anal. Appl.*, Volume 477, 1, 2019, pp. 334–356. <https://www.sciencedirect.com/science/article/pii/S0022247X19303476?via%3Dihub>
- (with J. Howell and D. Toundykov) A Cantilevered Extensible Beam in Axial Flow: Semigroup Solutions and Post-flutter Regimes, *SIAM J. Math. Anal.*, Volume 50, 2, 2018, pp. 2048–2085. <https://epubs.siam.org/doi/abs/10.1137/17M1140261>
- (with G. Avalos and P.G. Geredeli) Semigroup Well-posedness of A Linearized, Compressible Fluid with An Elastic Boundary, *Discrete Contin. Dyn. Syst. Ser. B*, Volume 23, 3, 2018, pp. 1267–1295. <http://aimsciences.org/article/doi/10.3934/dcdsb.2018151>
- (with J. Howell and I. Lasiecka) Quasi-stability and Exponential Attractors for A Non-Gradient System—Applications to Piston-Theoretic Plates with Internal Damping, *Evol. Eqns. Control Theory*, Volume 5, 4, 2016, pp. 567–603. <https://aimsciences.org/journals/displayArticlesnew.jsp?paperID=13192>
- (with G. Avalos and P.G. Geredeli) Finite Dimensional, Smooth Attractors for A Non-rotational Berger Plate with Dissipation Acting on...the Boundary, *Comm. Pure Appl. Anal.*, Volume 15, 6, 2016, pp. 2301–2328. <http://aimsciences.org/journals/displayArticlesnew.jsp?paperID=13047>
- (with E. Dowell, I. Chueshov, and I. Lasiecka) Mathematical Aeroelasticity: A Survey, *Mathem. Engin. Sci. Aerosp.*, Volume 7, 2016, pp. 1–26. <http://nonlinearstudies.com/index.php/mesa/article/view/1283>
- (with E. Dowell, I. Chueshov, and I. Lasiecka) Nonlinear elastic plate in a flow of gas: Recent results and conjectures, *Appl. Math. Optim.*, Volume 73, 2016, pp. 475–500. <http://link.springer.com/article/10.1007/s00245-016-9349-1>
- (with L. Bociu, G. Guidoboni, R. Sacco) Analysis of nonlinear poro-elastic and poro-visco-elastic models, *Arch. Rational Mech. Anal.*, Volume 222, 3, 2016 pp. 1445–1519. http://link.springer.com/article/10.1007/s00205-016-1024-9?wt_mc=Internal.Event.1.SEM.ArticleAuthorOnlineFirst
- (with P.G. Geredeli) Qualitative Results on the Dynamics of A Berger Plate with Nonlinear Boundary Damping, *Nonlin. Anal. B*, 31, 2016, pp. 227–256; published online, February 2016: DOI:10.1016/j.nonrwa.2016.02.002. <http://www.sciencedirect.com/science/article/pii/S1468121816000195>
- (with I. Lasiecka) Feedback stabilization of a fluttering panel in an inviscid subsonic potential flow, *SIAM J. Math. Anal.*, 48, 3, 2016, pp. 1848–1891. <http://epubs.siam.org/doi/abs/10.1137/15M1040529>
- (with M. Peszynska and R.E. Showalter) Advection of methane in the hydrate zone: Model, analysis, and examples, *Math. Meth. Appl. Sci.*, Volume 38, 18, 2015, pp. 4613–4629. <http://onlinelibrary.wiley.com/doi/10.1002/mma.3401>
- (with I. Lasiecka) Eliminating flutter in clamped von Karman plates immersed in subsonic flows, *Comm. Pure Appl. Anal.*, Volume 13, 5, 2014, pp. 1935–1969. <https://www.aimsciences.org/journals/displayArticlesnew.jsp?paperID=9987>
- (with I. Lasiecka) Kutta-Joukowski flow conditions in flow-plate interactions: subsonic case, *Nonlinear Anal. B*, Volume 7, 2014, pp. 171–191. <http://www.sciencedirect.com/science/article/pii/S1468121813001235>
- (with I. Chueshov and I. Lasiecka) Flow-plate interactions: Well-posedness and long-time behavior, *Discrete Contin. Dyn. Syst. Ser. S, Special Volume: New Developments in Mathematical Theory of Fluid Mechanics*, Volume 7, 5, 2014, pp. 925–965. <http://aimsciences.org/journals/displayArticlesnew.jsp?paperID=9873>
- (with P.G. Geredeli) Decay rates to equilibrium for nonlinear plate equations with geometrically constrained, degenerate dissipation, *Appl. Math. Optim.*, Volume 68, 2013, pp. 361–390. <http://link.springer.com/article/10.1007/s00245-013-9210-8>
- (with I. Chueshov and I. Lasiecka) Attractors for delayed, non-rotational von Karman plates with applications to flow-structure interactions without any damping, *Comm. PDE*, Volume 39, 11, 2014. http://www.tandfonline.com/eprint/ARUs3wgC9ih2hzZBGjs3/full#.U_5H3rywLV5
- (with I. Chueshov and I. Lasiecka) Evolution semigroups in supersonic flow-plate interactions, *J. Diff. Eqns.*, Volume 254, Issue 4, 2013, pp. 1741–1773, ISSN 0022-0396, 10.1016/j.jde.2012.11.009. <http://www.sciencedirect.com/science/article/pii/S0022039612004342>

(with P.G. Geredeli and I. Lasiecka) Smooth attractors of finite dimension for von Karman evolutions with nonlinear frictional damping localized in a boundary layer, *J. Diff. Eqns*, Volume 254, Issue 3, 2013, pp. 1193–1229, ISSN 0022-0396, 10.1016/j.jde.2012.10.016. <http://www.sciencedirect.com/science/article/pii/S0022039612004093>

(with I. Lasiecka) Generation of bounded semigroups in nonlinear subsonic flow-structure interactions with boundary dissipation, *Math. Meth. Appl. Sci.*, Volume 36, 2013, pp. 1995–2010. <http://onlinelibrary.wiley.com/doi/10.1002/ma.1518/full>

Weak and strong solutions of a nonlinear subsonic flow-structure interaction: Semigroup approach, *Nonlinear Analy. A*, Volume 74, Issue 10, July 2011, pp. 3123–3136, ISSN 0362-546X, 10.1016/j.na.2011.01.028. <http://www.sciencedirect.com/science/article/pii/S0362546X11000459>

(with D. P. Sheehan and L.M. Baird) Orthogonally-oriented nanotube arrays: Experiment I, *J. Nanosci. Nanotech.*, Volume 7, Issue 10, 2007, pp. 3653–3661. <http://www.ingentaconnect.com/content/asp/jnn/2007/00000007/00000010/art00048>

PROCEEDINGS, GENERAL AUDIENCE PIECES, POSTERS

(with G. Richard) Fluid and Multilayer Poroelastic Structure Interaction Well-Posedness, Poster, Workshop for Research and Workforce Development in Fluid Mechanics, University of Nebraska-Lincoln, May 2025. (Presenter: Richard)

(with E. Sheldon) Periodic Solutions and Resonance in Wave-Heat Systems, Poster, URCAD, UMBC, April 2025. (Presenter: Sheldon)

(with Kathleen Hoffman, Kal Nanes, Justin Webster, Jennifer Harrison, Kerrie Kephart, Tory Williams) Assessing the Impacts of An Interventional Proof-Writing Course, Poster for UMBC Provost’s Teaching and Learning Symposium, October 2024

(with Kathleen Hoffman, Kal Nanes, Justin Webster, Jennifer Harrison, Kerrie Kephart, Tory Williams) Impact of an Interventional Proof-writing Course, Poster for UMBC Provost’s Teaching and Learning Symposium, April 2023

Virtual Poster (Student Presenter: K. Lilly), JMM, January 2021 and February 2021 (won best poster)

(with J. Howell and V. Gudibanda) Dynamics of the Inextensible Inverted Flag with Piston-Theoretic Forcing Term, Poster, JMM, Baltimore, MD, January 2019. (Presenter: V. Gudibanda; won best poster)

The invisible power of ‘flutter’ — from plane crashes to snoring to free energy, *The Conversation*, March 2018. <https://theconversation.com/the-invisible-power-of-flutter-from-plane-crashes-to-snoring-to-free-energy-91796>
Featured in: *Scientific American*, *Los Angeles Times*, *Chicago Tribune*, *San Francisco Chronicle*, 7500 reads

(with I. Lasiecka and I. Chueshov) Nonlinear Flow-Structure Interactions, *Nonlinear World—Journal of Interdisciplinary Nature*, 1(1), December 2017, pp. 31–50.

(with D. Prada, R. Sacco, B. Cockburn, L. Bociu, B. Siesky, A. Harris, and G. Guidoboni) Influence of tissue viscoelasticity on the optic nerve head perfusion: a mathematical model, Poster #3558, Annual Meeting of the Association for Research in Vision and Ophthalmology, May 2016. (Presenter: D. Prada)

(with I. Lasiecka) Stabilization of a nonlinear flow-plate interaction via component-wise decomposition, XV International Conference on Hyperbolic Problems: Theory, Numerics, Applications, July 2014, IMPA, Rio de Janeiro, Brazil, *Bull. Braz. Math. Soc.*, New Series 47(2), 2016, pp. 489–506. (*peer-reviewed*)

(with I. Lasiecka) Controlling Flutter for Nonlinear Panels in Subsonic Flows via Nonlinear Mechanical Feedback, IEEE 53rd Conference on Decision and Control, Session on Control of First and Second Order PDEs, 2014, DOI: 10.1109/CDC.2014.7039443, pp. 577–582. (*peer-reviewed*)

(with I. Lasiecka) Long-time dynamics and control of subsonic flow-structure interactions, American Control Conference (ACC), 2012, pp. 658–663, 27-29 June 2012. (*peer-reviewed*) <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6315219>

POST-DOCTORAL RESEARCHERS

Arum Lee 2025–present
Professional Development and Teaching Mentor

Rasika Mahawategge 2022–2025
Professional Development and Teaching Mentor

STUDENTS

Ph.D. (UMBC)
Madison Christ, Ph.D., Applied Mathematics 2024–Present
ABD

Galen Richard, Ph.D., Applied Mathematics 2022–Present
ABD

Ellie Gurvich, Ph.D., Applied Mathematics Dissertation: “Semigroup Methods for Poroelastic Multi-physics Systems Describing Biological Tissues”	2019–2024
Abhishek Balakrishna, Ph.D., Applied Mathematics (joint with A. Biswas) Dissertation: “Infinite Dimensional Dynamical Systems In Fluid Dynamics And Fluid-Structure Interaction” UMBC Mathematics Graduate: Research Award (2022,2023); Teaching Award (2022) Now: Postdoctoral Researcher at the University of Southern California	2018–2023
Maria Deliyanni, Ph.D., Applied Mathematics Dissertation: “Modeling and PDE Theory for The Large Deflections of Elastic Cantilevers” UMBC Mathematics Graduate: Research Award (2021); Teaching Award (2021) Now: Postdoctoral Researcher at the University of Arizona Partially supported by NSF DMS–1907620	2017–2022
M.S. Peter Lavagnino, Applied Mathematics M.S. in Spring 2023 (project option) Project: “Semigroup Weak Solutions for Mildly Degenerate Linear Poro-elasticity”	2021–2023
Katelynn Huneycutt, Ph.D., Applied Mathematics <i>Qualified for Ph.D.</i> , M.S. in Spring 2020 (transferred)	2019–2020
Austin Mishoe, M.S. (CofC) Co-advised with J. Howell, Project: Beam flutter in axial flows Partially supported by NSF DMS–1635281	2016–2017
Undergraduate Research Advisor (Since 2021) Katherine Carver (UMBC) Supported by: Meyerhoff Scholars	2025–present
Evan Sheldon (UMBC) Undergraduate Thesis: <i>Periodic Solutions and Resonance in Wave-Heat Systems</i> Supported by: Vivian Thomas Scholars Initiative Sustained Research Stipend, UMBC URA Now: Ph.D. program in Physics at the University of Wisconsin-Madison	2023–2025
Isaac Benson (UMBC)	2023–2024
Rachel Dolle (Carnegie Mellon University) Co-advised with J. Howell, Project: Modal analysis of bridge flutter Supported by: NSF DMS—1907620 (UMBC), DMS–1908033 (CMU) Now: Research scientist at Edwards Air Force Base	Summer 2021, 2022
Kaitlynn Lilly (UMBC) Co-advised with J. Howell, Project: Spectral properties of non-self adjoint beam models Supported by: Meyerhoff Scholars, NSF DMS—1907620 (UMBC), DMS—1908033 (CMU) NSF GRFP, DOD SMART, DOE, Ford Fellowships Winner, 2022 Goldwater Scholar, 2021 Now: Ph.D. program in Applied Mathematics at the University of Washington	2018–2022
Benjamin Brown (UMBC) Co-advised with J. Howell, Project: Simulating piezoelectric cantilevers Supported by: NSF DMS—1907620 (UMBC), DMS–1908033 (CMU) Now: Ph.D. program in Physics at Brown University	2021–2022
Undergraduate Mentor, UMBC Students Ephraim Ruttenberg Post-graduation Applications; Teaching Now: Ph.D. program in Mathematics at the University of Pittsburgh	2023–2024
Meghan Kwon GRFP and Graduate Applications	2022–2024
Kristen Galuska Post-graduation Applications; Teaching	2022
Applied Math Bootcamp Students (UMBC) Isaac Benson, Evan Sheldon, Ben Kirn	Summer 2023

Zinedine Partipilo Cornielles (2022 CAHSS Valedictorian)	2021–2022
Graduate Applications	
Now: Pre-doctoral Program at Harvard Univ.	
Ph.D. Committee Member (non-advisor)	
Naghmeh Akhavan	4/22/2025
Carlos Barajas	4/1/2022
Guy Djokam	11/5/2021

SELECTED INVITED/SUPPORTED RESEARCH VISITS (SINCE 2021)

University of Pittsburgh (three days)	April 2025
Paolo Galdi	
Politecnico di Milano, Italy (sabbatical visit)	March–April 2024
Vittorino Pata, Filippo Gazzola, Alessio Falocchi, Riccardo Sacco, Paolo Zunino	
Politecnico di Milano, Italy (one week)	March 2023
Vittorino Pata and Filippo Gazzola	
University of Bergen, Norway (two days)	July 2022
Research Group of Jakub Both	
University of Zagreb, Croatia (one week)	July 2018, 2019, March 2022
Department of Mathematical Sciences, Boris Muha	
Czech Academy of Sciences (one week)	July 2019, March 2022
Institute of Mathematics, Sarka Necasova (Eminent Scholar Mentor)	

PRESENTATIONS (SINCE 2021)

Invited Talk, AMS SE Sectional, Savannah, 2026

Invited Talk, Czech Academy of Sciences Institute of Mathematics, Prague, 2026

Invited Talk, SIAM Analysis of PDEs, Pittsburgh, 2025

In-session Talk, SIAM Analysis of PDEs, Pittsburgh, 2025

In-session Talk, SIAM Central Sectional, Fayetteville, Arkansas, 2025

Invited Talk, Loyola University Chicago Mathematics Colloquium, September 2025

Invited Talk, Brijuni Applied Mathematics Workshop (Croatia), June 2025

Invited Talk Mathematics with Applications 2025 (Madeira, Portugal), June 2025

Invited Tutorial Lecture, Workshop for Research and Workforce Development in Fluid Mechanics, University of Nebraska-Lincoln, May 2025

Invited Talk, AMS Western Sectional Meeting, San Luis Obispo, CA, May 2025

Invited Talk, Special Seminar, University of San Diego, April 2025

CNMS Scientific Discovery Series Speaker, April 15, 2025

Invited Talk, Mathematics Seminar, Georgetown University, March 2025

Local Talk, UMBC Applied Differential Equations Seminar, March 2025

Invited Talk, Mathematics Colloquium, Morgan State University, September 2024

Local Talk, UMBC Applied Mathematics Colloquium, September 2024

Invited Talk, Carnegie Mellon University, Center for Nonlinear Analysis Seminar, September 2024

Invited Talk, Notre Dame University, Applied Mathematics Seminar, September 2024

Invited Talk, Equadiff 2024, Karlstadt, Sweden, June 2024

Invited Talk, First Year Graduate Seminar, Oregon State University, May 2024

Contributed Talks, Ingenuity STEM Leadership Conference, Morgan State University, May 2024

Invited Talk, Seminar Bogoljub Stanković, Novisad University, Serbia, April 2024

Invited Talk, Baylor University, Applied Mathematics Colloquium, February 2024
Invited Talk, University of Maryland, College Park, PDE Seminar, November 2023
Grit-X 2023 Invited Speaker, UMBC Homecoming Weekend, October 14, 2023
Invited Talk, Panelist (virtual), University of Arizona Graduate Student Seminar, September 26, 2023
Invited Talk, 10th International Congress on Industrial and Applied Mathematics, Tokyo, Japan, August 2023
Special Session: Numerical methods for fluid-structure interaction and poroelasticity
Invited Talk, Drexel University PDE/Applied Mathematics Seminar, April 2023
Invited Talk, Reflections on Mathematical Fluid Dynamics, University of Virginia, March 2023
Invited Talk, ApplMath22, Briuny, Croatia, September 2022
Invited Talk, EQUADIFF 15, Brno, Czech Republic, July 2022
Invited Talk, University of Bergen, Special Seminar, July 2022
Invited Talk, First Year Graduate Seminar, Oregon State University, May 2022
Invited Presentation, UMBC President's Research Council (invitation: VPR Karl Steiner), March 2022
Invited Talk, Georgetown University Mathematics and Statistics Colloquium, March 2022
Invited Talk, Faculty of Mathematics, University of Zagreb, Croatia, March 2022
Invited Talk (virtual), University of Nebraska-Lincoln PDE Seminar, March 2022
Invited Talk (virtual), State University of Londrina (Brazil) Summer Lecture Series, March 2022

STUDENT PRESENTATIONS (SINCE 2021)

Local Talk (Student: M. Christ), UMBC Differential Equations Seminar, April 2026
Local Talk (Students: E. Sheldon), UMBC Differential Equations Seminar, May 2025
Local Talk (Student: G. Richard), UMBC Differential Equations Seminar, March 2025
Contributed Talk (Student: E. Gurvich), GeMTRAK, UPenn, April 2024
Local Talk (Students: E. Sheldon and I. Benson), UMBC Differential Equations Seminar, May 2024
Local Talk (Student: E. Gurvich), UMBC Differential Equations Seminar, March 2024
Local Talk (Student: E. Gurvich), UMBC Differential Equations Seminar, December 2023
Local Talk (Student: A. Balakrishna), UMBC Differential Equations Seminar, May 2023
Local Talk (Student: P. Lavagnino), UMBC Differential Equations Seminar, May 2023
Invited Talk (Student: A. Balakrishna), University of Virginia PDE Seminar, November 2022
Invited Talk (virtual) (Student: A. Balakrishna), University of California-Berkeley, Applied PDE Seminar, November 2022
Invited Talk (Student: E. Gurvich), AMS Sectional Meeting, Chattanooga, TN, October 2022
Invited Talk (Student: A. Balakrishna), AMS Sectional Meeting, Salt Lake City, UT, October 2022
Invited Talk (Student: A. Balakrishna), SAYAS Conference, UMBC, Baltimore, September 2022
Invited Talk (virtual) (Student: E. Gurvich), University of Nebraska-Lincoln PDE Seminar, May 2022
Invited Talk (Student: A. Balakrishna), U.S. Naval Academy Applied Mathematics Seminar, April 2022
Contributed Talk, (Student: E. Gurvich), Shanks PDE, Vanderbilt University, February 2022
Invited Talk (Student: M. Deliyianni), Northwestern University Applied Mathematics Seminar, February 2022

WORKSHOPS PARTICIPANT (SINCE 2021)

Simons Laufer Mathematical Sciences Institute (MSRI) Workshop
Hot Topics: Recent Progress in Deterministic and Stochastic Fluid-Structure Interaction

December 4–8th, 2023

PROFESSIONAL ACTIVITIES

Editor:

Evolution Equations and Control Theory, Associate Editor

June 2022–Present

Nonlinear Dynamics, Subject Editor: Nonlinear PDE

2019–2024

(Guest) *Research in the Mathematical Sciences*, 2024

Special volume on PDE-control, From Classical to Emerging Themes and Methods

<https://link.springer.com/collections/ichhffhgfe>

(Guest) *Evolution Equations and Control Theory*, Volume 5, 4, 2016

Special volume on fluid-structure interactions, SIAM Conference on Analysis of PDEs 2015

<http://www.aimsociences.org/journal/A0000-0000/2016/5/4>

Trainings and Certificates:

Active Learning, Inquiry Teaching (ALIT) Certificate Program (completed: May 2020)

2018–2020

UMBC Faculty Development Center

Green Zone Training (Supporting UMBC's Military Students)

October 9, 2018

Contact: Dr. Rick Forno, UMBC

Entrepreneurial Skillset Training Program (one week)

January 2018

Center for Leadership and Innovation, UMBC Training Centers

Professional Societies:

IFIP TC7, Working Group 7.2

2021–present

European Mathematical Society

2020–present

Society for Industrial and Applied Mathematics (SIAM)

2013–present

American Mathematical Society (AMS)

2013–present

Committee (Since 2021):

Brijuni Applied Mathematics Workshop (Croatia)

Summer 2021 and 2025, International Scientific Committee

Mathematics with Applications 2025 (Madeira, Portugal)

Summer 2025, Organizing Committee

Organizer (Since 2021):

Special Session: Applicable Analysis of Multi-physics Partial Differential Equations Systems

with G. Avalos (University of Nebraska-Lincoln), AMS 2026 SE Sectional Meeting, Savannah, Georgia, March, 2026

Minisymposium: Stability and Periodicity in PDE Systems

with D. Ambrose, SIAM PDE, Pittsburgh, November 2025

Minisymposium: Control and Stability of Fluids and Structures

with I. Kukavica, SIAM Central States Sectional, University of Arkansas, October 2025

Minisymposium on Fluids and Structures in Application at UMBC, April 2025

Supported by: NSF Grant, Department of Mathematics of Statistics, ORCA, CNMS

Special Session: Applicable Analysis of Multi-physics Partial Differential Equations Systems

with G. Avalos (University of Nebraska-Lincoln), AMS 2024 SE Sectional Meeting, Savannah, Georgia, October 5–6, 2024

Special Session: PDE Theory for Fluid-Structure Interactions

with A. Falocchi (Politecnico di Milano, Italy), AMS-UMI 2nd Joint Meeting, Palermo, Italy, July 23–26, 2024

Special Session: Analysis of PDE in Inverse Problems and Control Theory

with M. Eller (Georgetown Univ.), AMS 2023 Eastern Sectional, Howard University, Washington DC, April 6–7, 2024

Simons Laufer Mathematical Sciences Institute (MSRI) Workshop: Hot Topics: Recent Progress in Deterministic and Stochastic Fluid-Structure Interaction

with S. Canic, J. Kuan, and M. Bukac, December 4–8th, 2023

Applied Mathematics Bootcamp (at Carnegie Mellon University)

with J. Howell (CMU); 6/12–17/2023

NSF-supported intensive training for UMBC undergraduates: Isaac Benson, Evan Sheldon, Ben Kirn

Special Session: Bifurcations, periodicity and stability in fluid-structure interactions
with B. Muha and S. Schwarzacher, ICIAM 2023, Tokyo (Japan), August 20–25, 2023

Special Session: Fluid-Structure Interactions in Application
with B. Muha, S. Necasova, and A. Schlomerkemper, SIAM PDE, Berlin (Germany), March 22–29, 2022, Virtual

Special Session: Fluid-Poro-Elastic Structure Interactions
with L. Bociu, IFIP TC 7 Conference on System Modelling and Optimization, August 30–September 3, 2021, Virtual

Special Session: Mathematical Analysis: The interaction of Fluids/viscoelastic Materials and Solids
with B. Muha, 8th European Congress of Mathematics, 2021, Portoroz, Slovenia

Referee/Reviewer:

J. Functional Analysis, J. of Abstract Differential Equations and Applications, Applicable Analysis, Applied Mathematics and Computation, Applied Mathematical Modelling, Computational Optimization and Applications, Discrete and Continuous Dynamical Systems, J. Optimization Theory and Application, Mathematics in Engineering, Evolution Equations and Control Theory, Asymptotic Analysis, Indiana Univ. Mathematics J., J. of Mathematical Analysis and Applications, J. of Mathematical Physics, SIAM J. on Numerical Analysis, Mathematische Nachrichten, Nonlinear Analysis A: Theory, Method, and Application, Nonlinear Analysis B: Real World Applications, Zeitschrift für Angewandte Mathematik und Physik, Zeitschrift für Angewandte Mathematik und Mechanik, J. of Fluids and Structures, Automatica, J. of Aerospace Engineering, Applied Mathematics and Optimization, Nonlinear Dynamics, International J. of Dynamical Systems and Differential Equations, Mathematical Methods in the Applied Sciences, AMS Mathematical Reviews, SIAM J. of Mathematical Analysis, Nonlinearity, J. Optimization Theory, SIAM J. of Applied Mathematics, J. Mathematical Fluid Mechanics, J. of European Mathematics, Numerische Mathematik, Nonlinear Differential Equations and Applications, Mathematical Models and Methods in Applied Sciences, Advances in Mathematical Fluid Mechanics (series)

Institute of Physics (IOP), Awarded: *Distinguished Reviewer 2023, 2024, 2025; Trusted Reviewer Status May 2022*

External Examiner:

Ph.D. thesis committee in Mathematics for: Lorenzo Liverani *February 2023*
Politecnico di Milano, Italy

Ph.D. thesis committee in Mathematics for: Clara Patriarca *February 2023*
Politecnico di Milano, Italy

Ph.D. thesis committee in Mechanical Engineering for: Kevin McHugh *March 2020*
Duke University

MSc/MA thesis in Applied Mathematics for: Nicholas I-Hsien Kuo *May 2017*
University of Auckland, New Zealand

External Panelist/Ad Hoc Reviewer:

National Science Foundation DMS *2020, 2023*

TEACHING EXPERIENCE

University Maryland, Baltimore County

Semigroup Seminar (~6 students), 1 semester *2025*
Introduction to Linear Algebra (200 level), 1 semester *2024*
Partial Differential Equations (600 level), 6 semesters *2018–2024*
Introduction to Partial Differential Equations (400 level), 10 semesters *2017–2025*
Introduction to Proofs (300 level), 2 semesters *2022–2023*
Introduction to Complex Analysis (400 level), 1 semester *2021–2022*
Introduction to Analysis (300 level), 1 semester *2020–2021*
Introduction to Differential Equations (200 level), 3 semesters *2020–2024*
Special Topics in Applied Math: Semigroups and Unbounded Operators (700 level), 3 semesters *2019–2023*
Special Topics in Applied Math: Modern Methods in PDEs (700 level), 1 semester *2018–2019*
Ordinary Differential Equations (600 level), 1 semester *2017–2018*

Politecnico di Milano

Fluid and Flow Structure Interactions, 25 hours *March 2024*

SERVICE

Profession

The Ingenuity Project; High School Research Mentorship 2025–2026 Graham G.	2026–present
Goldwater Scholars Community Mentorship Program (Undergraduate Mentor) 2025–2027 Lila Fowler, University of San Diego 2024–2026 Alexis Lopez, Rice University 2024–2025 Alina Chandra, University of Washington, Columbia University	2022–present
2023–2024 Katie Traynelis, North Carolina State University NSF Graduate Fellowship recipient in 2024 Now: Ph.D. program in Biological Engineering at Massachusetts Institute of Technology	
2022–2023: Ethan Brady, Purdue University NSF Graduate Fellowship recipient in 2023 Now: Ph.D. program in Applied Mathematics at Brown University	

University of Maryland, Baltimore County

Digital Accessibility for Mathematics and L ^A T _E X Working Group	Spring 2026
CNMS Dean Search Committee	Spring 2026
UMBC Course Outcomes Data Committee (CODC)	2026–2028
UMBC Strategic Planning Subgroup (Research and Creative Achievement)	2026
Academic Success Center Advisory Board	2025–present
Provost’s Committee on Graduate Enrollment Strategy	2024–2025
Faculty Participant for the 2024 Ingenuity Conference on STEM Leadership	May 24th, 2024
Faculty Volunteer for the Science Olympiad (for CNMS; Math & Stat)	January 13th, 2024
Faculty ADVANCEment Workshop Panelist (for CNMS)	May 8th, 2023
Council of University System Faculty (CUSF) Member (UMBC Representative)	2021–2024
ΦBK Board (Vice President 2020–2023, President 2023–present)	2018–present
Local representative and Board Member of the ΦBK Greater Baltimore Alumni Association	2017–present
Faculty ADVANCEment Workshop Panelist (for CNMS)	April 19th, 2022
Letters of Recommendation Composed For UMBC Students: Undergraduate: 70 Graduate/Postdoc: 27 External: Students: 7 Faculty: 4	

University of Maryland, Baltimore County Mathematics and Statistics Department

Undergraduate Program Director	Fall 2025–present
Mathematics and Statistics Postdoctoral Mentorship Committee (five postdocs)	2025–present
Committee on Enrollment Growth and Outreach	Fall 2023–present
Co-organizer of the Applied Mathematics Colloquium	2022–present
Faculty Mentor for Tongtong Li	2024–present
Faculty Mentor for Matthew Kvalheim	2023–present
IIME (Pi Mu Epsilon) Advisor/Committee Chair	2017–2024
Mathematics and Statistics Cyber Open Rank Hiring Committee; Chair	2024–2025
Mathematics and Statistics Postdoctoral Hiring Committee	2024–2025
Mathematics and Statistics Lecturer Hiring Committee	2023–2024
Committee on DEIA Departmental Documentation	Spring 2023
Applied Mathematics Tenure Track Hiring Committee; co-Chair	2022–2023
Postdoctoral Scholar in Applied Mathematics Hiring Committee	Spring 2022
Organizer of the Differential Equations Seminar	2018–2022
Undergraduate Program Committee	2020–present
IIME Faculty Research Panel	March 30, 2022
Mentor for NSF Graduate Proposal (K. Lilly, <i>funded</i>)	Fall 2021
Departmental Recruitment Open House (COVID)	Spring 2020, 2021, 2022
SIAM Graduate Student Association Event Speaker (“How to Give A Talk”)	Spring 2020
Departmental Representative at Spring Scholar Luncheon	Spring 2020
Mentor for NSF Graduate Proposal (K. Huneycutt and E. Gurvich, unfunded)	Fall 2019
Host/planner Special Joint Seminar (with Mechanical Engineering) hosting Earl Dowell (Duke)	Fall 2019
Qualitative Measures in P&T Committee Member	Spring 2018
BOOST Post-Baccalaureate Program Committee; senior proposal personnel	2017–2018