

JUSTIN T. WEBSTER, PH.D.

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EMPLOYMENT

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

EDUCATION AND TRAINING

North Carolina State University (NCSSU), 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: *Analysis of Flow-Plate Interactions: Semigroup Well-Posedness and Long-Time Behavior*
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

NSF DMS–2307538 (University Maryland, Baltimore County) 2023–2025
Self-excitation, Limit Cycle Oscillations, and Control of Large Deflection Plate Models in Engineering Applications
Amount: \$290,000. https://www.nsf.gov/awardsearch/showAward?AWD_ID=2307538&HistoricalAwards=false
Nominated: UMBC Presidential Research Professor 2023–2024
Mathematics and Statistics (CNMS) Nominee
Nominated: Blavatnik National Award for Young Scientists 2023–2024
UMBC Nominee for *Physical Sciences and Engineering*
Selected as GRIT-X 2023 Speaker (Office of Vice President of Research) October 2023
<https://www.youtube.com/watch?v=VR2ywToLVzI>
UMBC Strategic Awards for Research Transitions (START) 2023–2024
Periodic Solutions in Fluid-Structure Interaction Problems
Amount: \$20,000
UMBC College of Natural and Mathematical Sciences Early Career Faculty Excellence Award 2022
UMBC Summer Research Faculty Fellowship (SURFF) 2020–2021
Amount: \$6000; supported international researcher (B. Muha, University of Zagreb, Croatia)
Nonnominated: Blavatnik National Award for Young Scientists 2019–2020
UMBC Nominee for *Physical Sciences and Engineering*
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) Amount: \$10,000; piloting “Introduction to Mathematical Reasoning” to reduce MATH 301 DFW rates	2019–2020
NSF DMS–1412238, 1504697, Supplement 1635281 <i>Analysis and Control of Mathematical Models of Fluttering Plates</i> Amount: \$120,276 https://www.nsf.gov/awardsearch/showAward?AWD_ID=1504697	2014–2017
Virginia Space Grant Consortium (NASA) Graduate Research Fellowship Amount: \$12,000 (total); Title: <i>Flow-Plate Interactions</i>	2011–2012, 2012–2013
Barry M. Goldwater Scholarship, Mathematics	2006–2008

PROPOSALS SUBMITTED (UMBC)

DoD MURI, AFOSR Topic 25: White Paper 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 (Not funded)	2023–2027
NSF ExpandQISE: Track 2 Senior Personnel/Faculty Associate with: M. Pelton (UMBC); T. Mohsenin (UMBC); S. Deffner (UMBC); T. Pittman (UMBC); E. Waks (UMCP) <i>Quantum at UMBC (QUMBC) Architectures and Devices for Resource-Efficient Quantum Networks</i> Total Amount: \$5,000,000 (Not funded)	2023–2027
NSF-NIGMS Track 2: White paper 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 (Not funded)	2023–2025
NSF Focused Research Group, DMS–2150790 with: S. Čanić, University of California, Berkeley; L. Bociu, North Carolina State University; and M. Bukać, Notre Dame University <i>Moving boundary problems in flow-poroelasticity interactions</i> UMBC Amount: \$381,884 (Not funded)	2022–2025
NSF DMS–1812094 (University Maryland, Baltimore County) <i>Flow-induced Instability of Nonlinear Plates: Transitional Regimes</i> Amount: \$204,695 (Not funded)	2018–2021
NSF Focused Research Group, DMS–1760446 with: E. Dowell, Duke University and J. Howell, Carnegie Mellon University <i>The Nonlinear Dynamics of a Fluttering Cantilever with Application to Energy Harvesting</i> Amount: \$580,403 (Not funded)	2018–2021

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 I. Benson) Resonance and Periodic Solutions for Harmonic Oscillators with General Forcing, *to be submitted* 8/2024.
<https://arxiv.org/abs/2407.17144>.
- (with B. Muha, and S. Schwarzacher) Dissipation, Resonance, and Periodicity in Coupled Systems of PDEs, *to be submitted* 8/2024.

(with G. Avalos) Uniqueness of Weak Solutions for Biot-Stokes Interactions, *to be submitted* 8/2024.

(with A. Falocchi) Analysis of a nonlinear fish-bone model for suspension bridges with rigid hangers in the presence of flow effects, *submitted* 7/2024. <https://arxiv.org/abs/2407.06710>

(with V. Pata) An Observation About Weak Solutions of Linear Differential Equations in Hilbert Spaces, *submitted* 6/2024. <https://arxiv.org/abs/2406.02474>

(K. Hoffman, T. Williams, J.T. Webster, J. Harrison, K. Nanes) Assessing the Impact of A Interventional Proof-Writing Course, *under revision* as of 5/2024.

(with G. Avalos and E. Gurvich) Weak and Strong Solutions for a Fluid-Poroelastic-Structure Interaction via a Semigroup Approach, *provisionally accepted* 6/2024. <http://arxiv.org/abs/2401.03897>

(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 Linéaire*, 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/vol15/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. Analy. 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. Analy.*, 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://aims sciences.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. Equns. 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. Analy.*, 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. Analy.*, 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. Analy. 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. Analy.*, 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. Analy.*, 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 Analy. 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. Equns.*, 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. Equns*, 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/mma.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 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

(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)

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

Rasika Mahawategge 2022–Present
Career and Teaching Mentor

STUDENTS

Ph.D. (UMBC)
Galen Richard, Ph.D., Applied Mathematics 2022–Present
Reading

Ellie Gurvich, Ph.D., Applied Mathematics 2019–2024
Dissertation: “Semigroup Methods for Poroelastic Multi-physics Systems Describing Biological Tissues”

Abhishek Balakrishna, Ph.D., Applied Mathematics (joint with A. Biswas) 2018–2023
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

Maria Deliyianni, Ph.D., Applied Mathematics 2017–2022
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

M.S.
Peter Lavagnino, Applied Mathematics 2021–2023
M.S. in Spring 2023 (project option)
Project: “Semigroup Weak Solutions for Mildly Degenerate Linear Poro-elasticity”

Katelynn Huneycutt, Ph.D., Applied Mathematics 2019–2020
Qualified for Ph.D., M.S. in Spring 2020 (transferred)

Austin Mishoe, M.S. (CofC) *2016–2017*
 Co-advised with J. Howell, Project: Beam flutter in axial flows
 Partially supported by NSF DMS–1635281

Undergraduate Research Advisor (Since 2019)

Evan Sheldon (UMBC) *2023–present*
 Supported by: Vivian Thomas Scholars Initiative Sustained Research Stipend

Isaac Benson (UMBC) *2023–2024*

Rachel Dolle (Carnegie Mellon University) *Summer 2021, 2022*
 Co-advised with J. Howell, Project: Modal analysis of bridge flutter
 Supported by: NSF DMS—1907620 (UMBC), DMS–1908033 (CMU)

Kaitlynn Lilly (UMBC) *2018–2022*
 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

Benjamin Brown (UMBC) *2021–2022*
 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

Anna Moskaleva (Carnegie Mellon University) *Summer 2021*
 Co-advised with J. Howell, Project: Finite Difference models for elastic plates
 Supported by: NSF DMS—1907620 (UMBC), DMS–1908033 (CMU)

Anrey Peng (Carnegie Mellon University) *Summer 2020*
 Co-advised with J. Howell, Project: Cantilever limit cycles
 Supported by: NSF DMS—1907620 (UMBC), DMS–1908033 (CMU)

Varun Gudibanda (Carnegie Mellon University) *2018–2019*
 Co-advised with J. Howell, Project: Inextensible beams, inverted flags
 Supported by: Carnegie Mellon University Summer Undergraduate Research Fellowship (2018)
 Now: Ph.D. program in Applied and Computational Mathematics at the University of Wisconsin-Madison

Undergraduate Mentor, UMBC Students

Meghan Kwon *2022–2024*
 GRFP and Graduate Applications

Kristen Galuska *2022*
 Post-graduation Applications; Teaching

Applied Math Bootcamp Students (UMBC) *Summer 2023*
 Isaac Benson, Evan Sheldon, Ben Kirn

Zinedine Partipilo Cornielles (2022 CAHSS Valedictorian) *2021–2022*
 Graduate Applications
 Now: Pre-doctoral Program at Harvard Univ.

Ph.D. Committee Member (non-advisor)

Carlos Barajas *4/1/2022*
 Guy Djokam *11/5/2021*

SELECTED INVITED/SUPPORTED RESEARCH VISITS (SINCE 2019)

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) Research Group of Jakub Both	<i>July 2022</i>
University of Zagreb, Croatia (one week) Department of Mathematical Sciences, Boris Muha	<i>July 2018, 2019, March 2022</i>
Czech Academy of Sciences (one week) Institute of Mathematics, Sarka Necasova (Eminent Scholar Mentor)	<i>July 2019, March 2022</i>
Iowa State University (one week) Scott Hansen and Pelin Geredeli (and G. Avalos, University of Nebraska-Lincoln)	<i>September 2021</i>
Penn State University (one week, with student M. Deliyianni) Anna Mazzucato	<i>September 2021</i>
NYU Abu Dhabi, UAE (one week) Anna Mazzucato (on leave from Penn State University)	<i>February 2020</i>
Politecnico di Milano, Italy (one week) Department of Mathematics, Filippo Gazzola	<i>March 2019</i>

PRESENTATIONS (SINCE 2019)

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

Local Talk, UMBC Differential Equations Seminar, November 2021

Local Talk (virtual), UMBC Applied Mathematics Colloquium, October 2021

Invited Talk (virtual), IFIP TC 7 Conference on System Modelling and Optimization, August 2021
Special Session: Qualitative and quantitative analysis of nonlinear evolutionary partial differential equation

Invited Talk (virtual), 8th European Conference of Mathematics, Special Session on Analysis, Control and Inverse problems for Partial Differential Equations, June 2021, Portoroz, Slovenia

Invited Talk (virtual), Western Kentucky University, SIAM Undergraduate Student Chapter, April, 2021

Invited Talk (virtual), University of California, Riverside PDE and Applied Mathematics Seminar, January 2021

Invited Talk (virtual), Baylor University, Mathematics Colloquium, October 2020

Invited Talk (virtual), Universität Würzburg, Institut für Mathematik, Oberseminar Mathematik in den Naturwissenschaften, July 2020

Invited Talk, Duke University Mechanical Engineering, Aeroelasticity Group, March 2020

Invited Talk, The Third International MathStat Conference, American University of Sharjah, UAE, February 2020

Invited Talk, NYU (Abu Dhabi) Mathematics Seminar, February 2020

Invited Talk, SIAM PDE: Special Session on Applicable and Numerical Analysis and Control Theory for FSI, La Quinta, CA, December 2019

Invited Talk, University of San Diego Department of Mathematics Colloquium, San Diego, CA, December 2019

Invited Talk, Croatian Mathematical Society Colloquium (University of Zagreb), June 2019

Invited Talk, Workshop for Fluid-Structure Interactions, Politecnico di Milano, March 2019

Invited Talk, AMS Southeastern Sectional Meeting: Special Session on Mathematical Analysis and Control Theory of Coupled Partial Differential Equation Models, Auburn, AL, March 2019

In-session Talk, JMM: Special Session on Flow-Induced Stability of Elastic Structures, Baltimore, MD, January 2019

STUDENT PRESENTATIONS (SINCE 2019)

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. Deliyanni), Northwestern University Applied Mathematics Seminar, February 2022

Local Talk (Student: E. Gurvich), UMBC Differential Equations Seminar, November 2021

Invited Talk (Student: A. Balakrishna), University of Memphis, PDE Seminar, July, 2021

Local Talk (virtual) (Student: K. Lilly), UMBC Differential Equations Seminar, October 2020

Local Talk (Student: A. Balakrishna), UMBC Differential Equations Seminar, October 2019

Invited Talk (Student: M. Deliyanni), SIAM Central States Section, Ames, IA, October 2019

Local Talk (Student: K. Huneycutt), UMBC Differential Equations Seminar, September 2019

WORKSHOPS PARTICIPANT (SINCE 2019)

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

December 4–8th, 2023

Workshop on Fluid-Structure Interactions (*Invited principal lecturer (1 hour)*)
Politecnico di Milano, Italy

March 18–20, 2019

PROFESSIONAL ACTIVITIES

Editor:

Evolution Equations and Control Theory
Associate Editor

June 2022–Present

Nonlinear Dynamics

2019–2024

Subject Editor: Nonlinear PDE

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

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

<https://www.springer.com/journal/40687>

(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)
UMBC Faculty Development Center

2018–2020

Green Zone Training (Supporting UMBC's Military Students)
Contact: Dr. Rick Forno, UMBC

October 9, 2018

Entrepreneurial Skillset Training Program (one week)
Center for Leadership and Innovation, UMBC Training Centers

January 2018

Professional Societies:

IFIP TC7, Working Group 7.2

2021–present

Society for Industrial and Applied Mathematics (SIAM)

2013–present

American Mathematical Society (AMS)

2013–present

Sigma Xi ($\Sigma\Xi$)

2020–2023

General Professional Development (Since 2019):

Teaching STEM
UMBC Faculty Development Center Workshop

January 24, 2020

UMBC College of Natural and Mathematical Sciences NSF CAREER Workshops

February–June 2019

Teaching for Inclusive Excellence
UMBC Faculty Development Center Workshop

April 10, 2019

American Association for the Advancement of Sciences (AAAS)
Science Communication and Engagement with Religious Audiences

March 25, 2019

Active Learning in Practice
UMBC Faculty Development Center Workshop

March 7, 2019

Provost Teaching and Learning Symposium
UMBC Faculty Development Center Workshop

March 1, 2019

Committee:

Brijuni Applied Mathematics Workshop (Croatia)
Summer 2021, International Scientific Committee

AMS Southeast Sectional Meeting Local Organizing Committee
Spring 2017, College of Charleston, Charleston, SC.

Organizer (Since 2019):

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

with G. Avalos (University of Nebraska-Lincoln), AMS 2024 Southeastern 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*; *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

Partial Differential Equations (600 level), 6 semesters

2018–2024

Introduction to Partial Differential Equations (400 level), 9 semesters

2017–2024

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), 2 semesters	2020–2022
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
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SERVICE

Profession

Goldwater Scholars Community Mentorship Program (Undergraduate Mentor) 2024–2026 Alexis Lopez, Rice University	2022–Present
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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

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–Present
ΦBK Board (Vice President)	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: 52 Graduate: 20
 External: Students: 5 Faculty: 4

University of Maryland, Baltimore County Mathematics and Statistics Department

Mathematics and Statistics Lecturer Hiring Committee;	2023–2024
Committee on Enrollment Growth and Outreach	Fall 2023–Present
ΠME (Pi Mu Epsilon) Advisor/Committee Chair	2017–Present
Co-organizer of the Applied Mathematics Colloquium	2022–Present
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
ΠME Faculty Research Panel	March 30, 2022
Mentor for NSF Graduate Proposal (K. Lilly)	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)	Fall 2019
Mentor for NSF Graduate Proposal (E. Gurvich)	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
Departmental CNMS Awards Committee	2018–2019

University of Maryland, Baltimore County Recruitment/Outreach Events

UMBC Meyerhoff Scholars Program: <i>Summer Bridge Program</i> ;	July 11, 2024
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UMBC Meyerhoff Scholars Program: <i>Summer Bridge Program</i> ;	<i>July 20, 2023</i>
UMBC Majors Fair	<i>November 2023</i>
UMBC Meyerhoff Scholars Program: <i>Summer Bridge Program</i> ;	<i>June 24, 2021</i>
UMBC Majors Fair	<i>November 2022</i>
UMBC Meyerhoff Scholars Program: <i>Summer Bridge Program</i> ;	<i>June 24, 2021</i>
UMBC: <i>Reception for Academically Talented Latinx Prospective Students</i>	<i>April 25, 2019</i>
UMBC: <i>Retriever Days, Mathematics and Statistics Representative</i>	<i>November 5, 2018</i>
UMBC: <i>Reception for Academically Talented African American Prospective Students</i>	<i>April 30, 2018</i>
Virginia State University Mathematics Seminar	<i>March 2018</i>
Mary Baldwin University Mathematics Club	<i>February 2018</i>