Bogdan G. Nita, PhD

Department of Mathematics, Montclair State University, 1 Normal Avenue, Montclair, NJ 07043
Phone: (973)-655-7261 Fax: (973)-655-7686 E-mail: nitab@montclair.edu

Employment History

2017-present	Professor, Department of Mathematics, Montclair State University, Montclair, NJ.
2010-2017	Associate Professor, Dept. of Mathematical Sciences, Montclair State University, Montclair, NJ.
2005-2010	Assistant Professor, Dept. of Mathematical Sciences, Montclair State University, Montclair, NJ.
2001-2005	Visiting/Research Assistant Professor, Dept. of Physics, University of Houston, Houston, TX.
1997-2001	Teaching Assistant, Dept. of Mathematics, University of Texas at Dallas, Richardson, TX.

Editorships and other professional appointments

2023-present	Editor-in-Chief, LASER Journal.
2007-present	Editor, *International Journal of Imaging and Robotics.*
2006-present	Editor, *International Journal of Tomography and Simulation.*
2005-present	Editor, *International Journal of Applied Mathematics and Statistics.*
2005-present	Adjunct Professor, Department of Physics, University of Houston, Houston, TX.

Education

PhD Applied Mathematics, University of Texas at Dallas, Richardson, TX, Dec 2001
Dissertation: Pure gravitational radiation with twisting rays
Committee: Ivor Robinson (Advisor), Ali Hooshyar, Wolfgang Rindler, Istvan Ozsvath.

MS Applied Mathematics, University of Texas at Dallas, Richardson, TX, Aug. 1998

BS Mathematics, University of Bucharest, Bucharest, Romania, Aug. 1997
Thesis: On the geometry of Schwarzschild spaces
Advisers: Ieronim Mihaila and Varujan Pambuccian.

Publications - Refereed Journals

Cellar, J. and Nita, B.G: Analysis of The Art of Fugue: capturing Bach's style with mathematical patterns and transformations. *to appear* 2026.

Nita, B.G. and Vaidya, A.: Editorial: Emotion, Aesthetics, and Truth in the Age of Interdisciplinarity. *LASER Journal* 2024, 2(1).

Nita B.G., Nita S.O., Robila V. and Cho J.: Composing in Bach's Style Using Mathematical Transformations. *The UMAP Journal* 2024, 45(1), 41–56.

Greenstein S. and Nita B.G.: The Harp Project: Collective Learning at the Intersection of the Mathematical and Musical Arts. *Primus* 2023, 34(3), 284-301.

Nita, B.G. and Vaidya, A.: Editorial: Rediscovering the Artistic Side of Mathematics. *LASER Journal* 2023, 1(1).

Robila V., Nita S.O., Cho J. and Nita B.G.: Using mathematics to enhance music education through automatic algorithmic transformed motif identification. *INTED2023 Proceedings* 2023, 8099-8108.

Carr C., Chioffi D., Glenn M., Nita S.O., Nita V.N. and Nita B.G.: The mathematics of the harp: a look at modeling the classical instrument and designing futuristic ones. *Journal of Humanistic Mathematics* 2023, 13(1), 189-205.

Chioffi D., Nita S.O., Nita V.N. and Nita B.G.: Mathematics and Music: Finding and characterizing equally tempered scales using continued fractions approximations. *Parabola* 2021, 57(2), 1.

INVITED for the Special Issue of Fluids "Teaching and Learning of Fluid Mechanics Vol II" Karlson M., Nita B.G. and Vaidya A.: Numerical Computations of Vortex Formation Length in Flow Past an Elliptical Cylinder. *Fluids* 2020, 5(3), 157.

INVITED for the Special Issue of Fluids "Teaching and Learning of Fluid Mechanics Vol I" Nita, B. and Ramanathan, S.: Fluids in Music: The Mathematics of Pan's Flutes. *Fluids* 2019, 4(4), 181.

INVITED for the Special Issue of Fluids "Mechanics of Fluid-Particles Systems and Fluid-Solid Interactions" Nita, B. and Allaire R.: On the three-dimensional interaction between flexible fibers and fluid flow. *Fluids* 2017, 2(1), 4.

Nita B., Nolan P. and Vaidya A.: Numerical study of body shape and wing flexibility in fluid structure interaction. *Computational and Applied Mathematics*. (2016) 1-14.

Smith C. and Nita B.: Imaging noisy seismic data using a one dimensional inverse scattering algorithm. *American Journal of Undergraduate Research*, 12(4) (Nov. 2015) 43-56.

Allaire R., Guerron P., Nita B., Nolan P. and Vaidya A.: On the equilibrium configurations of flexible fibers in a flow. *International Journal of Non-Linear Mechanics*, 69 (2015) 157-165.

Tasy A., Santamaria G.L. and Nita B.G.: Numerical evaluation of a one dimensional inverse scattering algorithm for simultaneous seismic imaging and inversion. *Applied Mathematics and Computation*, Volume 219, Issue 10, pp. 5049-5069 (2013).

Soriano K., Oonlamom T. and Nita B.G.: Imaging Seismic Data Using Inverse Scattering Theory. *International Journal of Tomography and Simulation*, Volume 23, Issue No. 2, pp. 1-9 (2013).

Chatterjee, N. and Nita B.G.: The hanging cable problem for practical applications. *Atlantic Electronic Journal of Mathematics*, Volume 4, Number 1, Winter (2010).

Nita B.G.: An algorithm for imaging and amplitude correction derived from scattering theory. *International Journal of Tomography and Statistics*, Volume 11, Issue No. FA9, pp. 3-18 (2009).

Nita B.G. and Weglein A.B.: Pseudo-depth/intercept-time monotonicity requirements in the inverse scattering algorithm for predicting internal multiple reflections. *Communications in Computational Physics*, Vol. 5, No. 1, pp. 163-182 (2009).

Korlie M. S., Mukherjee A., Nita B. N., Stevens J. G., Trubatch A. D. and Yecko P.: Analysis of flows of ferrofluids under simple shear. *Magnetohydrodynamics* 44, No. 1, pp. 51-60 (2008).

Korlie M. S., Mukherjee A., Nita B. N., Stevens J. G., Trubatch A. D. and Yecko P.: Modeling bubbles and droplets in magnetic fluids. *J. Phys.: Condens. Matter*, 20 pp. 204143 (2008).

INVITED Nita B.G.: Forward scattering series and Padé approximants for acoustic wavefield propagation in a vertically varying medium. *Communications in Computational Physics* special issue on Computational Geophysics, Vol. 3, No. 1, pp. 180-202 (2007).

Nita B.G. and Weglein A.B.: Inverse scattering internal multiple attenuation algorithm: an analysis of the pseudo-depth and time monotonicity requirements. Society of Exploration Geophysicists Expanded Abstracts, No 26, pp. 2461-2465.

Liu F., Weglein A.B., Innanen K.A., Nita B.G., and Zhang J.: A comprehensive strategy for removing multiples and depth imaging without subsurface information: direct horizontal common image gathers without the velocity or "ironing". Society of Exploration Geophysicists Expanded Abstracts, No 26, pp. 2210-2214.

Weglein A.B., Amundsen L., Liu F., Innanen K.A., Nita B.G., Zhang J., Ramirez A.C. and Otnes E.: Inverse scattering sub-series direct removal of multiples and depth imaging and inversion of primaries without subsurface information: strategy and recent advances. Society of Exploration Geophysicists Expanded Abstracts, No 26, pp. 2456-2460 (2007).

Nita B.G.: Analytic continuation of perturbative solutions of acoustic 1D wave equation by means of Padé approximants, *Journal of Applicable Analysis*, 86, No 1, pp. 41-58 (2007).

Nita B.G.: A comparison of the imaging conditions and principles in depth migration algorithms. *International Journal of Tomography and Statistics*, **4**, No. FO6, pp. 5-16 (2006).

Liu F., Weglein A.B., Innanen K. and Nita B.G.: Multi-dimensional seismic imaging using the inverse scattering series. Society of Exploration Geophysicists Expanded Abstracts, No 25, pp. 3026-3030 (2006).

INVITED Weglein A.B., Nita B.G., Innanen K.A, Otnes E., Shaw S.A., Liu F., Zhang H., Fan C. and Pavlis G: An inverse scattering method for constructing the wavefield at depth and the transmission response from reflection data. *Geophysics*, vol.71, No. 4, pp. SI125-SI137 (2006).

INVITED Fan C., Pavlis G.L., Weglein A.B., Nita B.G.: Exploiting the free surface effect separate forward and back scattered teleseismic wavefields. *Geophysics*, vol.71, No. 4, pp. SI71-SI78 (2006).

Nita B.G., MacAlevey P., Downes P.T.: Pure gravitational radiation with twisting rays in the linear approximation. *Journal of Mathematical Physics*, Vol. 46, pp. 12501, (2005).

Liu F, Weglein A.B., Innanen K.A. and Nita B.G.: Extension of the non-linear depth imaging capability of the inverse scattering series to multidimensional media: strategies and numerical results. *SBGf (Sociedade Brasileira de Geof?sica)* Expanded Abstracts, (2005).

Nita B.G. and Weglein A.B.: Imaging with $t = 0$ versus $\tau = 0$: implications for the inverse scattering internal multiple attenuation algorithm. Society of Exploration Geophysicists Expanded Abstracts, No 23, pp. 1289-1293 (2004).

Nita B.G., Matson K.H., and Weglein A.B.: Forward scattering series and seismic events: far field approximations, critical and post-critical events, *SIAM Journal on Applied Mathematics*, Vol. 64, No. 6, pp. 2167-2185, (2004).

Nita B.G.: Note on Invariants of the Weyl tensor. *General Relativity and Gravitation*, Vol. 35, No. 10, pp. 1865-1868, (2003).

Robinson I, Downes P., MacAlevey P., Nita B.G.: Approximate Solutions of types (3,1) and (4). *International Journal of Modern Physics A*, Vol. 17, No. 20, pp. 2733-2734, (2002).

Nita B.G. and Robinson I.: An Invariant of null spinor fields. *Classical and Quantum Gravity*, Vol. 17, 2149-2152, (2000).

Publications - Research Reports

Wilshusen C., Jefferey M. and Nita B.G.: Imaging band limited data with missing low frequency using scattering theory. *iMagine REU Montclair State University* (2012).

Soriano K., Oonlamom T. and Nita B.G.: Imaging 2D Seismic Data Using Inverse Scattering Theory. *iMagine REU Montclair State University* (2011).

Smith C and Nita B.G.: Imaging noisy seismic data using inverse scattering algorithms. *iMagine REU Montclair State University* (2010).

Nita B.G., Ramirez A.C., Weglein A.B. and Otnes E: Calculation and imaging of the non-linear 2D wavefield at depth in terms of the data and without any assumptions about the medium. *Mission-Oriented Seismic Research Program (M-OSRP) 2007 Annual Report*, pp. 221.

Ramirez A.C., Nita B.G., Weglein A.B. and Otnes E: Note on velocity independent contributions in the inverse scattering series for processing primaries. *Mission-Oriented Seismic Research Program (M-OSRP) 2007 Annual Report*, pp. 204.

Liu F., Weglein A.B., Nita B.G., Innanen K.A. and Zhang J.: The first term of the inverse scattering series: practical strategies and issues. *Mission-Oriented Seismic Research Program (M-OSRP) 2007 Annual Report*, pp. 180.

Liu F., Weglein A.B., Innanen K.A., Nita B.G. and Zhang J.: Direct horizontal common image gathers without the velocity or "ironing". *Mission-Oriented Seismic Research Program (M-OSRP) 2007 Annual Report*, pp. 160.

Nita B.G.: A comparison of the imaging conditions and principles in depth migration algorithms. *Mission-Oriented Seismic Research Program (M-OSRP) 2006 Annual Report*, pp. 199.

F. Liu, A.B. Weglein, K.A. Innanen and B.G. Nita: Multi-dimensional seismic imaging using the inverse scattering series. *Mission-Oriented Seismic Research Program (M-OSRP) 2006 Annual Report*, pp. 245.

A.B. Weglein, B.G. Nita, K.A. Innanen, E. Otnes, S.A. Shaw, F. Liu, H. Zhang, A.C. Ramirez, J.Zhang, G.L. Pavlis, and C. Fan: Using the inverse scattering series to predict the wavefield at depth and the transmitted wavefield without an assumption about the phase of the measured reflection data or back-propagation in the overburden. *Mission-Oriented Seismic Research Program (M-OSRP) 2006 Annual Report*, pp. 218.

Nita B.G. and Weglein A.B.: On acoustic reciprocity theorems and the construction of transmission response from reflection data. *Mission-Oriented Seismic Research Program (M-OSRP) 2005 Annual Report*, pp. 271.

Nita B.G. and Weglein A.B.: Internal multiples in complex multi-D media. *Mission-Oriented Seismic Research Program (M-OSRP) 2005 Annual Report*, pp. 103.

Liu F., Weglein A.B., Innanen K.H., Nita B.G.: Inverse scattering series for vertically and laterally varying media. *Mission-Oriented Seismic Research Program (M-OSRP) 2005 Annual Report*, pp. 176.

Nita B.G. and Weglein A.B.: Imaging with versus : towards including headwaves into imaging and internal multiple attenuation theory. *Mission-Oriented Seismic Research Program (M-OSRP) 2004 Annual Report*, pp. 210.

Liu F., Nita B.G., Weglein A.B and Innanen K.A.: Inverse scattering series for laterally varying media. *Mission-Oriented Seismic Research Program (M-OSRP) 2004 Annual Report*, pp. 187.

Innanen K.A., Nita B.G., and Weglein A.B: Investigating the grouping of inverse scattering series terms: simultaneous imaging and inversion I. *Mission-Oriented Seismic Research Program (M-OSRP) 2004 Annual Report*, pp. 285.

Nita B.G., Matson K.H. and Weglein A.B.: Forward scattering series and seismic events: high frequency approximations, critical and post-critical events. *Mission-Oriented Seismic Research Program (M-OSRP) 2003 Annual Report*, pp. 144.

Publications - Theses

Nita B.G.: Pure gravitational radiation with twisting rays. *PhD Thesis* (2001).

Nita B.G.: On the geometry of Schwarzschild spaces. *BS Thesis* (1997).

Grants

NSF-REU: Montclair REU Site in Imaging and Computer Vision (iMagine). Senior personnel and faculty mentor 2010-2012.

NSF MRI-R2: CSAM Acquisition of Scientific Computing Capacity (Fall 2010). Co-PI. Amount Awarded $129,000.

NSF-MRI: Acquisition of a High Performance Computer Cluster Supporting Computational Science Research and Learning (Fall 2009). Senior Personnel. Amount Awarded $190,000.

Mission-Oriented Seismic research Program (M-OSRP) Fellowship (2007): Imaging an unknown multidimensional medium using Inverse Scattering Theory. Collaborative Research with University of Houston. PI. Amount Awarded $19,700.

DOE Office of Basic Sciences (Sept. 2005 ? Aug. 2008): Seismic imaging and inversion beneath an unknown overburden: fundamental theory and realistic model development for testing and evaluation. Co-PI. Collaborative project with University of Houston. Amount awarded: $150,000.

University of Houston Summer Undergraduate Research Fellowship (UH-SURF) (2005): Flux conservation in a 1D layered medium. PI. Amount awarded $3,200.

NSF - CMG (Jan. 1, 2004 ? Aug. 31, 2005): Collaborative Research, Indiana University and University of Houston: CMG: Imaging Earth Structure with Elastic Waves by Application of the Inverse Scattering Series. Co-PI. Amount Awarded $420,552.

TLC^2 (Jan. 1, 2003 ? Aug. 31, 2003): Fundamental computational and conceptual issues in implementing and applying the inverse scattering imaging subseries for marine seismic data. Co-PI. Amount awarded: $50,000.

Talks and Presentations

• Math in movies: Pythagorean and Fermat's Theorems, Math and Art Day LASER 2025, Montclair State University, Montclair NJ, Apr 12, 2025.

• INVITED (with Joshua Cellar) Analysis of The Art of Fugue: capturing Bach's style with mathematical patterns and transformations, 2nd International Workshop on Mathematics and Physical Sciences, University of Évora, Colégio Luís António Verney, Portugal, July 12, 2024.

• Math of wind instruments: the straw oboe, Math and Art Day LASER 2024, Montclair State University, Montclair NJ, Apr 29, 2024.

• Math and Music Showcase, The Thongophone, Montclair State University Math and Art Event, 6 posters presentation, Montclair State University, Montclair NJ, November 29, 2023.

• INVITED Music composition in the style of Johann Sebastian Bach using mathematical transformations, International Workshop on Mathematics and Physical Sciences, University of Évora, Colégio Luís António Verney, Portugal, June 15, 2023.

• Architectural design in DESMOS, Math and Art Day LASER 2023, Montclair State University, Montclair NJ, Apr 15, 2023.

• The mathematics of the harp: a look at modeling the classical instrument and new designs, MAA MathFest 2022, Special Session on Math and Art, Philadelphia PA, Aug 5, 2022.

• The Mathematics of the Harp, Montclair State University Math and Art Event, 7 posters presentation, Alexander Kasser Theater, Montclair State University, Montclair NJ, December 17, 2021.

• The Mathematics of Pan's flutes, American Mathematical Society Spring Eastern Sectional Meeting, Hunter College, City University of New York, New York, NY, May 7, 2017.

• The interaction between fibers and fluids through experimental and numerical models. American Mathematical Society Spring Eastern Sectional Meeting, State University of New York at Stony Brook, Stony Brook, NY, March 19, 2016.

• On the three-dimensional interaction between flexible fibers and fluid flow. American Mathematical Society Fall Eastern Sectional Meeting, Rutgers University, New Brunswick, NJ, November 15, 2015.

• On the equilibrium configurations of flexible fibers in a flow, MAA Math Fest, Washington DC, August 6, 2015.

• Numerical modeling of fibers bending in fluids. American Mathematical Society Spring Eastern Sectional Meeting, Georgetown University, Washington, DC, March 7, 2015.

• An algorithm for seismic imaging and amplitude correction derived from scattering theory, New Jersey Institute of Technology, Department of Mathematical Sciences Waves Seminar, Newark, NJ, Nov 13, 2013.

• Examining a Seismic Imaging Algorithm With Band Limited Data, AMS Fall Eastern Sectional Meetings, Temple University, Philadelphia, PA, Oct 13, 2013.

• A 1D Algorithm for Seismic Imaging and Inversion: Theoretical Development and Numerical Tests, SIAM Conference on Imaging Sciences, Philadelphia, PA, May 21, 2012.

• Simultaneous Imaging and Inversion Using An Inverse Scattering Algorithm, SIAM Annual Meeting, Pittsburgh, PA, July 15, 2010.

• Seismic imaging using an inverse scattering algorithm, Montclair State University Chapter of SIAM Meeting, Montclair, NJ, Mar. 24, 2010.

• An algorithm for seismic imaging and amplitude correction derived from scattering theory, AMS/MAA Joint Meetings, Washington, DC, Jan. 8, 2009.

• Imaging with Earthquake Waves, Math and Science Day, Montclair State University, New Jersey, Jun. 6, 2008.

• Adjoint problem for the multiscale analysis of the normal field instability in a ferrofluid, Ferrofluid Frontiers, Montclair State University, New Jersey, May 9, 2008.

• Inverse scattering internal multiple attenuation algorithm: an analysis of the pseudo-depth and time monotonicity requirements, SEG 77th Annual Meeting, San Antonio, Texas, Sept. 25, 2007.

• INVITED Imaging the wavefield at depth without the velocity: forward and inverse diagrams point the way, 2006 Mission-Oriented Seismic Research Program Annual Meeting, University of Houston, TX, Jun. 7, 2007.

• Imaging conditions in geophysical depth migration algorithms, AMS/MAA Joint Meetings, New Orleans, LA, Jan. 6, 2007.

• Point-Scattering Description of Reflections and Headwaves in Acoustic Media , 2006 SIAM Annual Meeting, Boston, MA, Jul. 14, 2006.

• INVITED Imaging conditions in depth migration algorithms, 2005 Mission-Oriented Seismic Research Program Annual Meeting, University of Houston, TX, May 11, 2006.

• Scattering theory algorithms in seismic exploration, CSAM/SMUG Workshop, Montclair State University, Montclair, NJ, Mar. 31, 2006.

• Inverse scattering algorithms for attenuating artifacts produced by internal multiple reflections (reverberations), AMS Contributed Paper Session, AMS/MAA Joint Meetings, San Antonio, TX, Jan. 13, 2006.

• Differential equations applied to physical sciences, Montclair State University College of Sciences and Mathematics, Montclair, NJ, Nov. 2, 2005.

• Analytic continuation of perturbative solutions of acoustic 1D wave equation by means of Pad? approximants, AMS Session on Partial Differential Equations, AMS Eastern Section Meeting, Bard College, Annandale-on-Hudson, NY. Oct. 8, 2005.

• Acoustic reciprocity and the reconstruction of transmission data from recorded reflection response, Mission-Oriented Seismic Research Program Annual Meeting, University of Houston, TX. Apr. 21, 2005.

• Internal multiples in complex media: pseudo-depth/vertical-time monotonicity and higher dimension analytic analysis, Mission-Oriented Seismic Research Program Annual Meeting, University of Houston, TX. Apr. 20, 2005.

• Scattering theory description of wave propagation, Montclair State University, Department of Mathematical Sciences Seminar, Montclair, NJ. Feb. 18, 2005.

• Scattering theory description of wave propagation, Louisiana Tech University, Department of Mathematical Sciences Seminar, Ruston, LA. Feb. 10, 2005.

• Imaging and inverting for vertically and laterally varying media using an inverse scattering series method, AMS Special Session on Differential Equations, 2005 Joint AMS/MAA Annual Meeting, Atlanta, GA. Jan. 7, 2005.

• Forward scattering series and Padé approximants for 1D wavefield propagation in an acoustic medium, AMS Special Session on Partial Differential Equations, 2005 Joint AMS/MAA Annual Meeting, Atlanta, GA. Jan. 7, 2005.

• Multiple reflections in a complex multi-D medium: definition and an inverse scattering series attenuation algorithm, University of Houston, Department of Physics Seminar, Houston, TX. Nov. 16, 2004.

• Scattering theory description of wave propagation, Texas Southern University, Department of Mathematical Sciences Seminar, Houston, TX. Nov. 11, 2004.

• Scattering theory description of wave propagation, University of Houston - Downtown, Department of Mathematical Sciences Seminar, Houston, TX. Nov. 10, 2004.

• Internal multiples in a complex multi-D medium: multiples with headwaves sub-events, SEG 74th Annual Meeting, Denver, Colorado. Oct. 12, 2004.

• Modeling seismic events using a forward scattering series approach, Partial Differential Equations Special Session, 2004 SIAM Annual Meeting, Portland, Oregon. Jul. 15, 2004.

• Imaging with the vertical time versus the traveltime: towards including headwaves into imaging and internal multiple attenuation theory, Mission-Oriented Seismic Research Program Annual Meeting, University of Houston, TX. Mar. 31, 2004.

• Including headwaves in imaging and internal multiple attenuation theory, Amerada Hess Seminar, Houston, TX. Mar. 19, 2004

• Forward scattering series and seismic events, Mission-Oriented Seismic Research Program Annual Meeting, University of Houston, TX. Feb. 17, 2003.

• INVITED Regular Approximate Type III Solutions of Einstein's Field Equations, annual Gheorghe Vranceanu Seminar, Bucharest, Romania. Jan. 9, 2001.

• Using Lyx to typeset Latex documents, Department of Mathematics Graduate Student Seminar, University of Texas at Dallas, Dallas, Texas. Apr. 14, 2000.

• An invariant of null spinor fields, Department of Mathematics Weekly Seminar, University of Texas at Dallas, Dallas, Texas. Apr. 11, 2000.

Student Presentations

• Mathematical model for vowels in singing poster presented by Ryan Avallone, CSAM Sigma Xi Student Research Symposium, Montclair State University, Montclair NJ, April 25, 2025.

• Musical Composition Through Mathematical Transformations poster presented by Lora Lynch, CSAM Sigma Xi Student Research Symposium, Montclair State University, Montclair NJ, April 26, 2023.

• Using mathematics to enhance music education through automatic algorithmic transformed motif identification, (presented virtually by Victor Robila) INTED 2023, 17th annual International Conference of Education, Research and Innovation Valencia (Spain).

• The mathematics of the harp, poster presented by Cristina Carr, CSAM Sigma Xi Student Research Symposium, Montclair State University, Montclair NJ, April 23, 2022.

• The mathematics of the harp, (presented by Cristina Carr), 13th Annual GS-LSAMP/NNJ-B2B STEM Research Conference, 2022.

• Numerical Computation of Vortex Length for a Flow past a Cylinder, (presented by Matt Karlson), 8th Annual GS-LSAMP Research Conference, Rutgers University-New Brunswick, 2016.

• Measuring vortex length through numerical simulation of a flow channel, (presented by Matt Karlson), Montclair State University 10th Annual Student Research Symposium, Poster Presentation, Montclair NJ, 2016.

• On the 3-dimensional fluid-structure interaction of flexible fibers in a flow (presented by Ryan Alaire), Montclair State University 9th Annual Student Research Symposium, Contributed Talks Session, Montclair NJ, 2015.

• Numerical study of body shape and wing flexibility in fluid structure interaction (presented by Peter Nolan), Montclair State University 9th Annual Student Research Symposium, Contributed Talks Session, Montclair NJ, 2015.

• Discharge and transport of pollutants in the lower Passaic River and Newark Bay (presented by Giorgi Nasrashvili), Montclair State University 7th Annual Student Research Symposium, Poster Session, Montclair NJ, 2013.

• Numerical Analysis of Biological Fibers in Flow (presented by Chris Berghout), Montclair State University 7th Annual Student Research Symposium, Poster Session, Montclair NJ, 2013.

• Equilibrium configurations of fibers in a flow (presented by Pamela Guerron), Montclair State University 7th Annual Student Research Symposium, Poster Session, Montclair NJ, 2013.

• Biomechanics of Cilia and Wings (presented by Danny Barry and Pamela Guerron), Montclair State University 6th Annual Student Research Symposium, Poster Session, Montclair NJ, 2012.

• Testing the Stability of an Inverse Scattering Seismic Imaging Algorithm against Noisy Data (presented by Christopher Smith), Consortium for Computing Sciences in Colleges, 26th Annual Eastern Conference, Juniata College, Huntingdon, PA, October 15, 2010.

• Numerical Tests of An Algorithm for Seismic Imaging and Inversion (Presented by Ashley Ciesla), SIAM Annual Meeting, Pittsburgh, PA, July 12, 2010.

• Numerical methods for solving partial differential equations using MATLAB (presented by Amir Golnabi), MAA Poster Competition, AMS/MAA Joint Meetings, New Orleans, LA, Jan. 6, 2007.

Student research

• Graduate Research Advisor: Roland Hutchinson(2022-2026), Edward Czudak (2024-2026), RJ Chandler (2023-2024), Joshua Cellar (2023-2025), Juanita Adelund (2023), Amanda Leigh Phillips (2018), Tevin Rouse (2016-2017), Ryan Allair (2013-2016), Blas Ortega (2013-2016), Andrew Huth (2010-2015), Chris Berghout (2012-2013), Ashley Ciesla (2009-2010), Daniela Kitanska (2007-2009).

• Undergraduate Research Advisor: Ryan Avallone (2025), Kiki Couchman, (2025), Lora Lynch (2023), Miguel Zegarra (2023) Cristina Carr(2022), Kimberley Maldonado (2020), Michelle Castillio (2017), Sajan Ramanathan (2017-2018), Matt Karlson (2015-2017), Giorgi Nasrashvili (2012-2013), Pamela Guerron (2012-2014), Catherine

Wilshusen (2012), Marcus Jeffrey (2012), Kristin Soriano (2011), Theerapan Oonlamom (2011), Neil Chatterjee (2010), Chris Smith (2010), Amir Golnabi (2006).

• Faculty Mentor for the REU program iMagine between 2010 and 2012. Performed research with 5 students over a period of 3 years.

• Faculty Advisor for Montclair State University Chapter of SIAM (7 graduate students, 11 undergraduate students enrolled in 2008 and 2009).

• PhD Thesis Committee: Chengliang Fan (Department of Geological Sciences, Indiana University, 2005), Fang Liu (Physics Department, University of Houston, 2006).

Honors and Awards

• 2015 - Montclair State University CSAM Award of Excellence: Graduating Masters Graduate Research Award: Ryan Allaire.

• 2015 - Montclair State University Department of Mathematical Sciences: Best Graduating Master Student Research: Ryan Allaire.

• 2009 - Society of Exploration Geophysicists J. Clarence Karcher Award. The award is given in recognition of significant contributions to the science and technology of exploration geophysics by a young geophysicist (under 35) of outstanding abilities.

• 2007 - 2010 Faculty Advisor for Montclair State University Chapter of SIAM (Society for Industrial and Applied Mathematics). The Chapter was awarded $500 each year for its 2007, 2008 and 2009 activities.

• 2007 - 2009 Research Advisor in the NSF funded GK-12 program in the Department of Mathematics at Montclair State University.

• 2007 - M-OSRP Travel Grant to participate in the Society of Exploration Geophysicists International Exposition and 77th Annual Meeting, San Antonio, TX

• 2007 - M-OSRP Travel Grant to participate in the 2007 M-OSRP Annual Meeting, Houston, TX.

• 2007 - First place in the 2007 Students Research Symposium organized by CSAM at Montclair State University with the poster entitled "Numerical Methods for Solving Partial Differential Equation Using Matlab" presented by the undergraduate student Amir Golnabi.

• 2006 - M-OSRP Travel Grant to Participate in the 2006 M-OSRP Annual Meeting, Houston, TX.

• 2006 - IBM Travel Grant to Participate in the Cell Processor Workshop, Palisades, NY.

• 2004 - present Marquis Who's Who in Science and Engineering.

• 2000 - 2001 Selden Levell Scholarship while at University of Texas at Dallas (merit based).

• 1997 - 2001 Teaching Assistantship while at University of Texas at Dallas (merit based).

• 1997 Soros Foundation for an Open Society Travel Award.

• 1992-1997 Romanian Ministry of Education Scholarship and Fellowship, Bucharest, Romania.

Teaching Experience

2005-present Department of Mathematical Sciences, Montclair State University

• Spring 2026: Math and Music (MATH 365)
• Fall 2025: Real Variables I (MATH 521)
• Spring 2025: Transitions to Advanced Math (MATH 320), Calculus I (MATH 122)
• Fall 2020: Calculus III (MATH 222), Advanced Calculus I (MATH 425/515)
• Spring 2020: Calculus I (MATH 122), Calculus A (MATH 116)
• Fall 2019: Calculus I (MATH 122), Math and Music (MATH 365)
• Spring 2019: Linear Algebra (MATH 335), Advanced Calculus I (MATH 425/515)
• Fall 2018: Calculus I (MATH 122), Advanced Calculus I (MATH 425/515)
• Spring 2018: Calculus I (MATH 122), Partial Differential Equations (MATH 566)
• Fall 2017: Linear Algebra (MATH 335), Math and Music (MATH 365), Real Variables I (MATH 521)
• Spring 2017: Linear Algebra (MATH 335), Advanced Calculus I (MATH 425/515)
• Fall 2016: Linear Algebra (MATH 335), Advanced Calculus I (MATH 425/515)
• Spring 2016: Calculus I (MATH 122), Calculus III (MATH 222)
• Fall 2015: Calculus III (MATH 222), Calculus I (MATH 122), Real Variables I (MATH 521)
• Spring 2015: Calculus III (MATH 222), Adv. Calculus II (MATH 426/516)
• Fall 2014: Calculus III (MATH 222), Adv. Calculus I (MATH 425/515)

- Spring 2014: Calculus I (MATH 122), Abstract Algebra (MATH 431/518), Math and Music (MATH 495).
- Fall 2013: Calculus III (MATH 222), Real Variables I (MATH 521)
- Fall 2012: Calculus III (MATH 222), Abstract Algebra (MATH 431/518).
- Spring 2012: Calculus III (MATH 222), Linear Algebra (MATH 335).
- Fall 2011: Real Variables I (MATH 521), Calculus I (MATH 122).
- Spring 2011: Applied Pre-calculus (MATH 111), Calculus I (MATH 122), Adv. Calculus I (MATH 425/515).
- Fall 2010: Calculus I (MATH 122), Introduction to applied mathematics (MATH 460).
- Spring 2010: Calculus III (MATH 222), Adv. Calculus I (MATH 425), Intermediate Analysis I (MATH 515)
- Fall 2009: Linear Algebra (MATH 335), Real Variables I (MATH 521)
- Spring 2009: Linear Algebra (MATH 335), Vector Calculus (MATH 398).
- Fall 2008: Linear Algebra (MATH 335), Numerical Analysis (MATH 564).
- Spring 2008: Foundations of Modern Algebra (MATH 431/518), Intermediate Algebra (MATH 100).
- Fall 2007: Vector Calculus (MATH 398), Intermediate Algebra (MATH 100), Pre-calculus (MATH 112).
- Spring 2007: Partial Differential Equations (MATH 566).
- Fall 2006: Intermediate Algebra (MATH 100), Calculus II (MATH 221), Partial Diff. Equations (MATH 421).
- Spring 2006: Calculus II (MATH 221), Vector Calculus (MATH 398)
- Fall 2005: Applied Pre-calculus (MATH 112)

2001-2005 Department of Physics, University of Houston

- Spring 2003 - Introductory Astronomy - Stellar and Galactic Systems (PHYS 1306)
- Spring 2002: General Relativity (PHYS 8VVV)
- Fall 2002: Introductory General Physics (PHYS 1302)
- Spring 2001: University Physics I (PHYS 1321)
- Fall 2001: Introductory Astronomy - Stellar and Galactic Systems (PHYS 1306)

1997-2001 Department of Mathematical Sciences, University of Texas at Dallas

- Summer 2001: Methods of Applied Mathematics (MATH 2V90)
- Spring 2001: Abstract Algebra II (MATH 3312)
- Fall 2000: Abstract Algebra I (MATH 3311)
- Fall 1997 - Summer 2000: Teaching Assistant for: Differential Equations with Applications (MATH 2420), Calculus I (MATH 2417), Calculus II (MATH 2419), Multi-variable Calculus with Applications (MATH 2451), Linear Algebra (MATH 2418).

University and professional service

Departmental Service

- 2025 - present Departmental Chairperson
- 2021-2025 Calculus Coordinator
- 2020 Student Recruitment Committee
- 2020 Math Jobs and Internship Committee
- 2018 - 2020: Assessment Committee
- 2018 - 2020: Budget Committee
- 2016 - 2018: Scheduling Committee
- 2014 - 2015: MATH 100 Revision Committee.
- 2013 - 2018: Scholarship Committee.
- 2010 - 2015 Undergraduate Curriculum Committee.
- 2010, 2011, 2014, 2015, 2017-2021, 2023-2025: DPAC Committee.
- 2010, 2013, 2017, 2018: Search Committee Applied Math.
- 2007 - 2009: Chair of the Pure and Applied Math SIG.
- 2005 - 2011: Organizer of the Department of Mathematical Sciences bi-weekly seminar.
- 2005 - 2009: PhD Committee.
- 2005 - 2007: Editor of the Departmental Newsletter.
- 2005 - 2007: Undergraduate Research Committee.
- 2006 - 2012: participated in activities related to the Assessment Committee.
- Academic Advisor to 10 undergraduate students, each semester at Montclair State University.

College Service

• 2023-present: CSAM Research Task Force
• 2019-2020: CSAM Mentoring and Student Research Oversight Committee
• Spring 2011, 2012, 2013: CSAM committee to the Distinguished Teacher Program
• Fall 2010: Search Committee for the Director of Career Services for CSAM.
• Mar. 2006: CSAM-SMUG Workshop entitled Inverse Scattering Algorithm for Seismic Processing.
• Jan. 2006: Co-authored the Math Section problems for the 2006 Northern New Jersey Regional Science Olympiad.

University Service

• 2025 - present SEEDS Advisory Committee
• 2007 - 2010: Faculty Advisor Montclair State University Chapter of SIAM.
• Spring 2007: Judge in the World's Fair Exhibits at Montclair State University.
• 2005 - 2011: Doctoral Faculty at Montclair State University.
• Spring 2006: Hiring Committee for the Assistant Director for International Office at Montclair State University.

Professional Service

• 2023-present Founder and Editor in Chief for LASER Journal
• 2005-present: Invited reviewer for the Grant Competition at King Fahd University of Petroleum and Minerals.
• 2007-present: Editor, *International Journal of Imaging and Robotics.*
• 2006-present: Editor, *International Journal of Tomography and Simulation (IJTS).*
• 2005-present: Editor, *International Journal of Applied Mathematics and Statistics (IJAMAS).*
• 2009-2017: Editor, *International Journal of Mathematics and Statistics.(IJMS)*
• 2015-2016: Editor, *Journal of Tomography and Simulation.*
• 2010-2014: Editor, *Journal of Mathematics and Technology (JMT).*
• 2009-2013: Advisory and Review Board, *International Journal of Academic Research (IJAR).*
• Jan. 2007: Judge for the Undergraduate Poster Competition at Joint AMS/MAA Meeting, New Orleans LA.
• Jan. 2006: Judge for the Undergraduate Poster Competition at Joint AMS/MAA Meeting, San Antonio TX.
• 2004-2005: Reviewer for NSF Collaborations in Mathematical Sciences and Geosciences (CMG) competition.
• Referee for Geophysics, Inverse Problems, Physica Scripta, Journal of Physics A: Mathematical and Theoretical, Journal of Optics A: Pure and Applied Optics, Applied Mathematics E-Notes, Electronic Journal of Differential Equations, Communications in Computational Physics, Applied Mathematics and Computation, Journal of Geophysics and Engineering, Fluids, Water, European Journal of Physics.
• Reviewer for Mathematical Reviews and Zentralblatt MATH

Book and Tests Review Panels

• 2012: Michael Sullivan, Calculus 4/e
• 2009: Otmar Scherzer et. al: Variational Methods in Imaging.
• 2006: Thomas W. Hungerford's *Contemporary Precalculus: A Graphing Approach*, 4th Ed, Brooks-Cole.
• 2006: Nate Ritchey's *Calculus*, 1st Ed, Chapters 12 and 13.

Other Research Activities

• 2007 - 2010 Faculty Advisor for Montclair State University Chapter of SIAM.
• INVITED participation in the 2007 Mission-Oriented Seismic Research Program Annual Meeting, June, 2007.
• 2005-2010: Faculty in the Doctor in Environmental Management Program, Montclair State University.
• Participant in ROCS (Research Opportunities for Commuter Students) program at Montclair State University.
• Program Committee member for the International Conference on Imaging Theory and Applications, Lisboa, Portugal 5-9 February 2009.
• Associated Faculty, Mission-Oriented Seismic Research Program, University of Houston, Houston, TX.
• INVITED participation in the 2006 Mission-Oriented Seismic Research Program Annual Meeting, May, 2006.
• INVITED Participation in the IBM Cell Processor Workshop, March, 2006.
• INVITED Participation in the Imaging Workshop, Rice University, May 2002.