

Eric Stachura | Curriculum Vitae

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Employment

Kennesaw State University <i>Kennesaw, GA</i>	Associate Professor <i>August 2024-present</i>
Kennesaw State University <i>Kennesaw, GA</i>	Assistant Professor <i>August 2018-July 2024</i>
Haverford College <i>Haverford, PA</i>	Visiting Assistant Professor <i>July 2016-June 2018</i>

Visiting/Administrative Positions

Basque Center for Applied Mathematics <i>Bilbao, Spain</i>	Visiting Fellow <i>January 2021-May 2021</i>
Immersive Visualization Environments Research Cluster <i>Coles College of Business at KSU, Kennesaw</i>	Co-director <i>August 2024-present</i>

Education

Temple University <i>Ph.D. in Mathematics</i> Advisor: Cristian E. Gutiérrez	Philadelphia, PA <i>July 2016</i>
Temple University <i>Teaching in Higher Education Certificate</i>	Philadelphia, PA <i>May 2016</i>
University of Illinois at Chicago <i>B.S. in Mathematics</i> <i>Cum Laude and with honors. Minor: Physics.</i>	Chicago, IL <i>May 2011</i>
Universidad Autónoma de Madrid <i>Semester Abroad</i> Also conducted research at Instituto de Ciencias Matemáticas (ICMAT).	Madrid, Spain <i>Spring 2013</i>
Eidgenössische Technische Hochschule (ETH) <i>Semester Abroad</i> Studied mathematics and physics while conducting High Energy Physics research.	Zürich, Switzerland <i>Spring 2010</i>

Funding

Internal.....

- KSU First Year Scholars program, 2024-2025:** KSU Office of Undergraduate Research
- KSU Birla Carbon student mentor, 2023:** Birla Carbon, \$3,400
- KSU Summer Research Fellowship, 2020:** KSU Office of Research, \$10,000
- KSU Seed Grant, 2019-2020:** Mathematical Analysis of Optical Phenomena, \$9,128

External.....

American-Scandinavian Foundation Fellowship, 2019-2020: Mathematical Analysis of Nonlinear Maxwell Equations on rough surfaces, \$5,000

Visiting Fellowship, 2021: Basque Center for Applied Mathematics, \$7,363

AMS-Simons Research Enhancement Grants for PUI Faculty, 2023-2026: Mathematical Analysis of Liquid Crystal optics, \$9,000

Army Research Office, 2024-2027, grant W911NF-24-1-0040: Analysis of the bi-anisotropic Maxwell equations on domains with rough boundaries, \$223,206

Army Research Office AEOP supplement, 2025: Summer Internship for students, \$11,292

Army Research Office AEOP supplement, 2026: Summer Internship for students, \$13,561

Publications

* denotes undergraduate student.

27. **E. Stachura** and I. G. Stratis. *A Differential equation framework on anisotropic fractal porous media II: The vector case and the Drude-Born-Fedorov system*. Submitted, 2026.
26. **E. Stachura** and A. Lakhtakia. *Theory of perturbation of an electrostatic field by an infinitely long, homogeneous, anisotropic, dielectric cylinder*. Submitted, 2026.
25. **E. Stachura**, M. Tanguturi, and M. Zhang. *Towards Maxwell equations on fractals*. Submitted, 2025.
24. **E. Stachura** and I. G. Stratis. *A Differential equation framework on anisotropic fractal porous media I: The scalar case*. Accepted to *Fractals: Complex Geometry, Patterns, and Scaling in Nature and Society*, 2026.
23. C. E. Gutierrez and **E. Stachura**. *A variational perspective on the generalized Snell's Law and applications to liquid crystal optics*. *Calculus of Variations and Partial Differential Equations*, 65 (41), 2026.
22. C. E. Gutierrez and **E. Stachura**. *Refraction laws in temporal media*. *Mathematics*, 13 (17), 2777, 2025.
21. **E. Stachura**. *Well-Posedness of the Time-Dependent, Bi-Anisotropic Maxwell System on Anisotropic Fractals*. 2025 URSI International Symposium on Electromagnetic Theory (EMTS), Bologna, Italy, 2025, pp. 1-4, doi: [10.46620/URSIEMTS25/KKAP2306](https://doi.org/10.46620/URSIEMTS25/KKAP2306)
20. **E. Stachura**. *Mathematical methods in liquid crystal optics and lens design*. Springer Tracts in Modern Physics, 294, 2024.
19. **E. Stachura**, N. Wellander, and E. Cherkaev. *Quantitative analysis of passive intermodulation and surface roughness*. *Studies in Applied Mathematics*, 2024; 153:e12688. doi: [10.1111/sapm.12688](https://doi.org/10.1111/sapm.12688)
18. D. R. Adhikari and **E. Stachura**. *Eigenvalue problems for p -div-curl systems*. *Journal of Mathematical Analysis and Applications*, 526 (2), 127327, 2023 .
17. **E. Stachura**, *Acoustic Wave propagation in Anisotropic Media with applications to Piezoelectric materials*. *Applicable Analysis*, 101 (3), pp. 994-1010, 2022.

16. **E. Stachura** and N. Wellander. *Quantitative Trace Estimates for the Maxwell system in Lipschitz domains*. *Mathematical Methods in the Applied Sciences*, 44 (13), pp. 10635-10652, 2021.
15. **E. Stachura** and N. Hancock*. *Bound states and energy eigenvalues of a radial screened Coulomb potential*. *Journal of Physics Communications*, 5(6), 065004, 2021.
14. D. R. Adhikari, T. M. Asfaw, and **E. Stachura**. *A topological degree theory for perturbed $A_G(S^+)$ operators and applications to nonlinear problems*. *Journal of Mathematical Analysis and Applications*, 497 (2), 124912, 2021.
13. D. R. Adhikari and **E. Stachura**, *General p -curl systems and duality mappings on Sobolev spaces for Maxwell equations*. *Electron. J. Differential Equations*, Vol. 2020 (2020), No. 116, pp. 1-22.
12. C. Mayer* and **E. Stachura**. *Traveling wave solutions for a Cancer Stem Cell invasion model*. *Discrete & Continuous Dynamical Systems - B*, 26 (9), pp 5067–5093, 2021.
11. Á. Bényi, J. M. Martell, K. Moen, **E. Stachura**, and R. Torres. *Boundedness results for commutators with BMO functions via weighted estimates: a comprehensive approach*. *Mathematische Annalen*, 376 (1), 61–102, 2020.
10. **E. Stachura**. *Solving for 5G: How Math Modeling can improve modern communication systems*. Global Atlanta, June 2020, [Article Link](#).
9. **E. Stachura**. *Boundary Value problems for the Bi-anisotropic Maxwell system in Lipschitz Domains*, in *URSI International Symposium on Electromagnetic Theory (EMTS)*, 2019, 4 pp.
8. **E. Stachura**. *Existence of Propagators for Time Dependent Coulomb-like Potentials*. *Rocky Mountain Journal of Mathematics*, 49 (7), 2347-2374, 2019.
7. C. E. Gutiérrez, L. Pallucchini, and **E. Stachura**. *General Refraction Problems with Phase Discontinuity on non flat Metasurfaces*. *Journal of the Optical Society of America A*, Vol. 34(7): 1160-1172, 2017.
6. **E. Stachura**. *Existence of weak solutions to Refraction Problems in Negative Refractive Index Materials*. *Nonlinear Analysis*, Vol. 157, 76-103, 2017.
5. **E. Stachura**. *The Time Dependent Maxwell System with Measurable Coefficients in Lipschitz Domains*. *Journal of Mathematical Analysis and Applications*, Vol. 452 (2), 941-956, 2017.
4. C. E. Gutiérrez and **E. Stachura**. *Metamaterial Lens Design*. *Journal of the Optical Society of America A*, Vol. 33(10), 2020-2026, 2016.
3. **E. Stachura**, *On Generalized Solutions to Some Problems in Electromagnetism and Geometric Optics*. Ph.D Thesis, 2016.
2. C. E. Gutiérrez, **E. Stachura**. *Uniform Refraction in Negative Refractive Index Materials*. *Journal of the Optical Society of America A*, Vol. 32 (11), pp. 2110-2122, 2015.
1. I. Mitrea, K. Ott, and **E. Stachura**. *Spectral Properties of the Reflection Operator in Two Dimensions*. *Contemporary Mathematics*, Vol. 581, pp. 199-215, 2012.

MS j denotes (peer reviewed) Mathematical Modeling scenario j .

- (MS5) E. Stachura and T. Lozano (2022). 3-061-ChemEngApps-ModelingScenario. SIMIODE, QUBES Educational Resources. doi: [10.25334/61T9-4648](https://doi.org/10.25334/61T9-4648)
- (MS4) E. Stachura. (2022). 9-010-TravelingWave-ModelingScenario. SIMIODE, QUBES Educational Resources. doi: [10.25334/JEKM-0J14](https://doi.org/10.25334/JEKM-0J14)
- (MS3) E. Stachura. (2022). 9-005-InvasiveSpeciesModel-ModelingScenario. SIMIODE, QUBES Educational Resources. doi: [10.25334/ZPFB-YT32](https://doi.org/10.25334/ZPFB-YT32)
- (MS2) R. Krueger and E. Stachura. (2022). 6-024-DronePackageDelivery-ModelingScenario. SIMIODE, QUBES Educational Resources. doi: [10.25334/22SC-AQ03](https://doi.org/10.25334/22SC-AQ03)
- (MS1) R. Krueger and E. Stachura (2019). 10-001-TilingHallway-ModelingScenario. SIMIODE, QUBES Educational Resources. doi: [10.25334/2MZW-W214](https://doi.org/10.25334/2MZW-W214)

Teaching experience

Basque Center for Applied Mathematics.....

Optimal Transport and Geometric Optics in complex media: 10 hour course, February 2021

Kennesaw State University.....

Differential Calculus (Math 1190): Fall 2018, Spring 2019, Fall 2021.

Ordinary Differential Equations (Math 2306): Fall 2020, Fall 2022, Spring 2023

Calculus IV (Math 3204): Spring 2022, Fall 2022

Partial Differential Equations (Math 4310): Fall 2021, Spring 2023

Intro to Calculus of Variations (Math 4490): Fall 2020, Spring 2023 (directed study)

Haverford College.....

Calculus: Dynamics and Integration: Fall 2016.

Advanced Topics in Applied Mathematics–PDE: Fall 2016.

Linear Algebra: Spring 2017.

Multivariable Calculus: Spring 2017, Fall 2017, Spring 2018.

Ordinary Differential Equations: Spring 2018.

Temple University.....

Precalculus: Fall 2013, Fall 2014, Fall 2015.

Mathematical Patterns: Summer 2014.

Integral Calculus: Summer 2015.

Undergraduate students supervised

Kennesaw State University.....

Jerry Liu and Nischal Regmi (2025-2026): "A variable coefficient Helmholtz equation associated with fractal measures"

Andrew Chincea (2024-2025): "Spectral properties of a fractal Laplacian"
Elizabeth Iaryguine (Fall 2024): "Neumann problems for the fractal Laplacian"
Elizabeth Ehme (2022-2024): "Mathematical analysis of liquid crystal optics"
Thomas Muzzillo (2021): "Nearly absolute instruments"
Jessie Chen (2020): "Variational problems for the 2D Maxwell system"
Nick Hancock (2019-2020): "Bound states and other properties of a new class of screened Coulomb potentials"

Haverford College.....

Caleb Mayer (2018): Senior Thesis "Exploring the dynamics of a Cancer Cell model".
Claire Sargent (2018): Senior Thesis "A Mathematical Model for Diffusion of Innovations".
Caroline Steliotes (2018): Senior Thesis "Nonuniqueness for Calderon's Inverse Problem".
Amy Zamora (2018): Senior Thesis "A generalized PDE model for motor induced microtubule organization".
Andrew Hunter (2017): Senior Thesis "The Daubechies Wavelet".
Amanda Glavin (2017): Senior Thesis "Generalized Bass Diffusion Model for Discrete Data".

Awards

KSU Outstanding Scholarship and Creativity Award: 2024-2025
KSU College of Science and Mathematics Outstanding Scholarship and Creativity Award: 2024-2025
KSU Researcher of the year: 2023-2024
MAA Project NExT Fellow: 2019-2020
SIMIODE DeMarc Fellow: July 2019
SIMIODE MInDE Fellow: July 2018

Some recent invited talks

15th AIMS conference at Athens, Greece	Athens, Greece <i>July 2026</i>
AMNS 2026	Kathmandu, Nepal <i>May 2026</i>
Workshop on Metamaterials with extra dimensions	Imperial College, London <i>April 2025</i>
University of Minnesota Applied Mathematics Colloquium	Minneapolis, MN <i>16 September 2024</i>
SIAM Materials Science	Pittsburgh, PA <i>21 May 2024</i>
Applied Analysis and PDE Seminar at U. Athens (Greece)	Virtual <i>17 May 2024</i>
NMS-ANMA Talk series	Virtual <i>3 May 2024</i>

Georgia Southern Mathematics Colloquium	Statesboro, GA 9 February 2024
The Arctic Quasiperiodic Workshop 2023	Luleå, Sweden 5 June 2023
Workshop on Applications of Geometric Methods of Functional Analysis	Dallas, TX 5 May 2022
Berry College Math Colloquium	Mt. Berry, GA 2 November 2020
University of Utah Applied Math Seminar	Salt Lake City, UT 2 March 2020
Lund University Electrical and Information Technology Department	Lund, Sweden 18 June 2019
Winthrop University Colloquium	Rock Hill, SC 3 April 2019
West Chester University Applied Math Seminar	West Chester, PA 8 November 2017
Hunter College of CUNY Department of Physics and Astronomy	New York, NY 5 May 2017
Drexel University PDE/Applied Math Seminar	Philadelphia, PA 23 February 2017
Center for the Computational Design of Functional Layered Materials	Philadelphia, PA 9 December 2016

Professional Activities

Reviewer: *Proceedings of the Royal Society A, Scientific Reviews, SN Partial Differential Equations and Applications, PLOS One, Optics Express, Optics Letters, Optics Continuum, Journal of Engineering Mathematics, Mathematics and Mechanics of Solids, Analysis Mathematica, Journal of Applied Analysis, Communications in Applied Analysis, International Journal of Mathematical Education in Science and Technology*

Reviewer: *Mathematical Reviews, MAA Reviews, ZentralblattMath*

Organizer: SIAM Analysis and PDE Mini-symposium "Mathematical Analysis Related to Wave Propagation Near Exotic Interfaces", November 2025

Organizer: SIAM Materials Science Mini-symposium "Advances in Electromagnetic scattering in complex media", May 2021

Co-organizer: Workshop on Methods in Nonlinear Analysis, Kennesaw State University, Nov. 2020

Co-organizer: MAA Special Session in Implementing Group Work: Demonstrations of Best Practices Joint Mathematics Meetings, Jan. 2020

Workshop leader: Philadelphia Area Math Teacher's Circle, March 2018

Organizer: Workshop *Philadelphia Area Density Functional Theory Day*, September 2017

Workshop Organizer: Philadelphia Science Festival, 2017, 2018

Special Program Grant Reviewer: Optical Society of America, 2017

Student Travel Grant reviewer: Optical Society of America, 2016

Co-organizer: AMS Special Session in Harmonic Analysis, Partial Differential Equations, and Geometric Measure Theory, Joint Mathematics Meetings, 2013