

Eric Stachura | Curriculum Vitae

✉ estachur@kennesaw.edu • facultyweb.kennesaw.edu/estachur

Employment

Kennesaw State University
Kennesaw, GA

Assistant Professor
August 2018-present

Haverford College
Haverford, PA

Visiting Assistant Professor
July 2016-June 2018

Visiting Positions

Basque Center for Applied Mathematics
Bilbao, Spain

Visiting Fellow
January 2021-May 2021

Education

Temple University

Ph.D. in Mathematics

Advisor: Cristian E. Gutiérrez

Philadelphia, PA

July 2016

Temple University

Teaching in Higher Education Certificate

Philadelphia, PA

May 2016

University of Illinois

B.S. in Mathematics

Cum Laude and with honors. Minor: Physics.

Chicago, IL

May 2011

Universidad Autónoma de Madrid

Semester Abroad

Also conducted research at Instituto de Ciencias Matemáticas (ICMAT).

Madrid, Spain

Spring 2013

Eidgenössische Technische Hochschule (ETH)

Semester Abroad

Studied mathematics and physics while conducting High Energy Physics research.

Zürich, Switzerland

Spring 2010

Funding

KSU Summer Research Fellowship, 2020: KSU Office of Research, \$10,000

KSU Seed Grant, 2019-2020: Mathematical Analysis of Optical Phenomena in Exotic Materials, \$9,128

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

Submitted Papers

1. D. R. Adhikari and **E. Stachura**. *Eigenvalue problems for p -div-curl systems*.

Publications

1. **E. Stachura**, *Acoustic Wave propagation in Anisotropic Media with applications to Piezoelectric materials*. *Applicable Analysis*, 101 (3), pp. 994-1010, 2022.
2. **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.
3. N. Hancock and **E. Stachura**. *Bound states and energy eigenvalues of a radial screened Coulomb potential*. *Journal of Physics Communications*, 5(6), 065004, 2021.
4. 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.
5. 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.
6. 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.
7. 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.
8. **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.
10. **E. Stachura**. *Existence of Propagators for Time Dependent Coulomb-like Potentials*. *Rocky Mountain Journal of Mathematics*, 49 (7), 2347-2374, 2019.
11. 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.
12. **E. Stachura**. *Existence of weak solutions to Refraction Problems in Negative Refractive Index Materials*. *Nonlinear Analysis*, Vol. 157, 76-103, 2017.
13. **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.
14. C. E. Gutiérrez and **E. Stachura**. *Metamaterial Lens Design*. *Journal of the Optical Society of America A*, Vol. 33(10), 2020-2026, 2016.

15. 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.
16. 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 Tamara 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

Temple University.....

Precalculus: Fall 2013, Fall 2014, Fall 2015.

Mathematical Patterns: Summer 2014.

Integral Calculus: Summer 2015.

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.

Kennesaw State University.....

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

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

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

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

Awards

MAA Project NExT Fellow: 2019-2020

SIMIODE DeMarc Fellow: July 2019

SIMIODE MInDE Fellow: July 2018

Select 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*

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

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

Invited Talks

The Arctic Quasiperiodic Workshop 2023	Luleå, Sweden 5 June 2023
Drexel University joint Mathematics-ECE Colloquium	Philadelphia, PA 1 March 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
Temple University Analysis Seminar , cancelled due to COVID-19	Philadelphia, PA 20 March 2020
University of Utah Applied Math Seminar	Salt Lake City, UT 2 March 2020
University of West Georgia Applied Math Seminar	Carrollton, GA 6 November 2019
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