

Eric Stachura

Curriculum Vitae

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Employment

- August 2018-present **Assistant Professor**, *Kennesaw State University*, Kennesaw, GA.
July 2016-June 2018 **Visiting Assistant Professor**, *Haverford College*, Haverford, PA.

Education

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

Awards

- American-Scandinavian Foundation Fellow, *2019-2020*
- SIMIODE DeMarc Fellow, *July 2019*
- MAA Project NExT Fellow, *2019-2020*
- SIMIODE MInDE Fellow, *July 2018*
- Co-PI for Mellon Trico Faculty Forum Seed Grant "Philadelphia Theoretical Chemistry Club", *2017-2018*

Graduate

- Temple University Fellowship, *2011- 2013*
- Research Assistantship, Temple University, *Summer 2012*. Spectral Properties of Singular Integral Operators. Advisor: Irina Mitrea

Undergraduate

- Recipient of UIContest Physics Internship, *Spring 2011*
- Bernard Kurtin Scholar in Mathematics, *Spring 2009*

Publications

- E. Stachura, *Acoustic Wave propagation in Anisotropic Media with applications to Piezoelectric materials*. Submitted.
- 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*. Submitted; preprint available at <https://arxiv.org/abs/1710.08515>.
- E. Stachura, *Existence of Propagators for Time Dependent Coulomb-like Potentials*. To appear in Rocky Mountain Journal of Mathematics.
- E. Stachura and R. Krueger (2018), "6-024-S-DronePackageDelivery", <https://www.simiode.org/resources/5422>
- A. Hunter and E. Stachura, *A quantitative method for choosing optimal Daubechies wavelets*. Advances in Inequalities and Applications, Vol. 2018, 12: 2018.
- 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.
- E. Stachura, *Existence of weak solutions to Refraction Problems in Negative Refractive Index Materials*. Nonlinear Analysis, Vol. 157, 76-103, 2017.
- 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.
- C. E. Gutiérrez, E. Stachura, *Metamaterial Lens Design*. Journal of the Optical Society of America A, Vol. 33(10), 2020-2026, 2016.
- E. Stachura, *On Generalized Solutions to Some Problems in Electromagnetism and Geometric Optics*. Ph.D thesis, 2016.
- 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.
- I. Mitrea, K. Ott, E. Stachura, *Spectral Properties of the Reflection Operator in Two Dimensions*. Contemporary Mathematics, Vol. 581, pp. 199-215, 2012.

Undergraduate

- C. E. Gerber, R. Horisberger, E. Stachura, *General Purpose Silicon Trigger Board for the CMS Pixel Read Out Chips*. Journal Of Undergraduate Research at the University of Illinois at Chicago 4.1 (2010). 5 Oct 2010.

Teaching Experience

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: Fall 2018, Spring 2019.
- Ordinary Differential Equations: Fall 2019

Students Supervised

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

Professional Activities

- January 2019- **KSU Chapter of Pi Mu Epsilon Faculty Advisor.**
- August 2018- **KSU Mathematical Association of America Student Chapter Advisor.**
- March 2018 **Workshop leader at Philadelphia Area Math Teacher’s Circle, Philadelphia, PA.**
- September 2017 **Organizer of workshop *Philadelphia Area Density Functional Theory Day*, Haverford College, Haverford, PA.**
- May 2017- **Reviewer for *Mathematical Reviews*, *MAA Reviews*, *ZentralblattMath*.**
- 2017,2018 **Workshop organizer for *Philadelphia Science Festival*, Philadelphia, PA.**
- February 2017 **Optical Society of America Special Program Grant Reviewer.**

- 2016-2018 **Advisor**, *Haverford College Mathematics Modeling Contest*.
Prepare students for International Mathematical Modeling Competition
- September 2016 **Optical Society of America Student Grant Reviewer**.
- 2014-2016 **Creator/organizer**, *Graduate Student Analysis Seminar*, Temple University, Philadelphia.
PA
- 2014-2017 **Organizer**, *Workshop: Hands on Geometric Optics*, STEM Scholars Program at the Franklin Institute, Philadelphia.
PA
- January 2013 **Co-organizer**, *AMS Special Session in Harmonic Analysis, Partial Differential Equations, and Geometric Measure Theory*, Joint Mathematical Meetings, San Diego.
CA

Invited Talks

- 3 April 2019 **Geometric Optics and Invisibility: A mathematician's perspective**, *Winthrop University Colloquium*, Rock Hill, SC.
- 7 September 2018 **Boundary Value Problems for the Anisotropic Maxwell system in Lipschitz Domains**, *Kennesaw State University Analysis & Applied Math Seminar*, Marietta, GA.
- 8 November 2017 **On Weak Solutions to Refraction Problems in Metamaterials**, *West Chester University Applied Math Seminar*, West Chester, PA.
- 5 May 2017 **Existence of Propagators for Coulomb-Like Potentials in Density Functional Theory**, *Hunter College of CUNY Department of Physics and Astronomy, Maitra group meeting*, New York, NY.
- 23 February 2017 **Existence of Propagators for Coulomb-Like Potentials in Density Functional Theory**, *Drexel University PDE/Applied Math Seminar*, Philadelphia, PA.
- 9 December 2016 **Existence of Propagators for Coulomb-Like Potentials in Density Functional Theory**, *Temple University Center for the Computational Design of Functional Layered Materials-Perdew Research Group*, Philadelphia, PA.
- 14 November 2016 **Existence of Propagators for Coulomb-Like Potentials in Density Functional Theory**, *Temple University Analysis Seminar*, Philadelphia, PA.
- 3 October 2016 **Metamaterial Lens Design**, *Bryn Mawr-Haverford Mathematics Colloquium*, Bryn Mawr College, PA.

20 May 2016 **On the Runge Gross Theorem of Density Functional Theory**, *Temple University Center for the Computational Design of Functional Layered Materials–Perdew Research Group*, Philadelphia, PA.

Graduate

18 March 2016 **Geometric optics and Invisibility: A Mathematician's Perspective**, *Haverford College*, Haverford, PA.

30 Nov. 2015 **Weak Solutions of Refraction Problems in Metamaterials**, *Temple University Analysis Seminar*, Temple University, Philadelphia, PA.

29 September 2015 **Mathematics of Negative Refractive Index Materials**, *Start Talking Science!*, Drexel University, Philadelphia, PA.

19 November 2012 **Spectral Properties of Singular Integral Operators in Two Dimensions**, *Temple University Analysis Seminar*, Temple University, Philadelphia, PA.

Conference Talks

- *69th Midwest Partial Differential Equations Seminar*, University of Illinois at Chicago. April 2012

- *9th International Conference on Harmonic Analysis and Partial Differential Equations*, El Escorial, Madrid, Spain. 11-15 June 2012

- *Harmonic Analysis, PDEs, and Geometry: A joint workshop of the ANR-Harmonic Analysis at its boundaries and the ICMAT*, Instituto de Ciencias Matemáticas, Madrid, Spain. 27-31 May 2013

- *Fall Southeastern Sectional Meeting of the American Mathematical Society*, University of Louisville, Louisville, Kentucky. 5-6 Oct. 2013

- *Young Researcher's Symposium for XVIII International Congress on Mathematical Physics*, Pontificia Universidad Católica de Chile, Santiago de Chile. 24-25 July 2015

- *SIAM Conference on Analysis of Partial Differential Equations*, Scottsdale, Arizona. 7-10 December 2015

- *15th New Mexico Analysis Seminar*, University of New Mexico, Albuquerque, New Mexico. 19-21 February 2016

- *The 6th Ohio River Analysis Meeting*, University of Kentucky, Lexington, Kentucky. 12-13 March 2016

- *SIAM Conference on Mathematical Aspects of Materials Science*, Philadelphia, PA. 8-12 May 2016 (2 short talks)
- *Southeastern-Atlantic Regional Conference on Differential Equations*, Florida Gulf Coast University. 5-6 November 2016
- *The 7th Ohio River Analysis Meeting*, University of Cincinnati, Cincinnati, Ohio. 25-26 March 2017
- *AMS Spring Eastern Sectional Meeting*, Hunter College. 6-7 May 2017
- *Great Lakes Mathematical Physics Meeting*, Michigan State University. 23-25 June 2017
- *SIAM Conference on Industrial and Applied Geometry*, Pittsburgh, PA. 10-12 July 2017
- *AMS Joint Mathematics Meetings*, San Diego, CA. 10-13 January 2018
- *Southeastern-Atlantic Regional Conference on Differential Equations*, University of North Georgia. 6-7 October 2018
- *Kennesaw Mountain Undergraduate Mathematics Conference*, Kennesaw State University. 3 November 2018.
- *AMS Joint Mathematics Meetings*, Baltimore, MD. 16-19 January 2019
- *Materials Research Society Spring Meeting*, Phoenix, AZ. 22-26 April 2019
- *URSI Commission B International Symposium on Electromagnetic Theory*, San Diego, CA. 27-31 May 2019

Professional Memberships

- American Mathematical Society
- Mathematical Association of America
- Society for Industrial and Applied Mathematics
- American Physical Society
- Optical Society of America