

Eyvindur Ari Palsson

CONTACT INFORMATION

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Virginia Tech
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APPOINTMENTS

Associate Professor,
Assistant Professor,
Virginia Tech

August 2022 – Present
August 2016 – August 2022

Assistant Professor,
Williams College

July 2014 – July 2016

Visiting Assistant Professor,
University of Rochester

July 2011 – June 2014

LONG TERM VISITS

Visiting Scholar,
Cornell University

August 2023 – December 2023

EDUCATION

Cornell University, Ithaca, New York

August 2006 – May 2011

- Ph.D. in Mathematics
- M.S. in Mathematics
- Advisor: Dr. Camil Muscalu, Department of Mathematics

Awarded May 2011

Awarded May 2009

University of Iceland, Reykjavík, Iceland

August 2003 – May 2006

- B.S. in Mathematics
- Icelandic equivalent of Summa Cum Laude

RESEARCH INTERESTS

Harmonic Analysis; Geometric Measure Theory; Combinatorics; Additive and Analytic Number Theory; Partial Differential Equations.

SUBMITTED

1. E. A. Palsson, E. Yu, *On optimal point sets determining distinct triangles*, (2023), submitted, [arXiv:2308.13107](https://arxiv.org/abs/2308.13107).
2. T. C. Anderson, A. V. Kumchev, E. A. Palsson, *A framework for discrete bilinear spherical averages and applications to ℓ^p -improving estimates*, (2023), submitted, [arXiv:2305.14346](https://arxiv.org/abs/2305.14346).
3. J. Gaitan, A. Greenleaf, E. A. Palsson, G. Psaromiligkos, *On restricted Falconer distance sets*, (2023), submitted, [arXiv:2305.18053](https://arxiv.org/abs/2305.18053).
4. Z. Boone, E. A. Palsson, *A pinned Mattila-Sjölin type theorem for product sets*, (2022), submitted, [arXiv:2210.00675](https://arxiv.org/abs/2210.00675).
5. E. A. Palsson, F. Romero Acosta, *A Mattila-Sjölin theorem for simplices in low dimensions*, (2022), submitted, [arXiv:2208.07198](https://arxiv.org/abs/2208.07198).
6. E. A. Palsson, S. R. Sovine, *Sparse bounds for maximal triangle averaging operators*, (2021), submitted, [arXiv:2110.08928](https://arxiv.org/abs/2110.08928).
7. E. Boldyriev, E. Kim, S. J. Miller, E. A. Palsson, S. Sovine, F. T. Suárez, J. Zhao, *Tinkering with Lattices: A New Take on the Erdős Distance Problem*, (2020), submitted, [arXiv:2009.12450](https://arxiv.org/abs/2009.12450).
8. A. Iosevich, E. A. Palsson, *An improved dimensional threshold for the angle problem*, (2018), submitted, [arXiv:1807.05465](https://arxiv.org/abs/1807.05465).

9. R. F. Durst, M. Hlavacek, C. Huynh, S. J. Miller, E. A. Palsson, *Classification of crescent configurations*, (2016), submitted, [arXiv:1610.07836](https://arxiv.org/abs/1610.07836).
10. A. Greenleaf, A. Iosevich, B. Liu, E. A. Palsson, *An elementary approach to simplexes in thin subsets of Euclidean space*, (2016), submitted, [arXiv:1608.04777](https://arxiv.org/abs/1608.04777).

ACCEPTED

11. B. Cook, K. Hughes, E. A. Palsson, *Supercritical discrete restriction estimates for forms in many variables*, (2020), accepted for publication in Proceedings of the Edinburgh Mathematical Society, [arXiv:2004.02301](https://arxiv.org/abs/2004.02301).

PUBLISHED

12. H. L. Fleischmann, S. J. Miller, E. A. Palsson, E. Pesikoff, C. Wolf, *Optimal point sets determining few distinct angles*, The Australasian Journal of Combinatorics, **87** (2023), no. 1, 165–181. [arXiv:2108.12034](https://arxiv.org/abs/2108.12034)
13. H. L. Fleischmann, H. B. Hu, F. Jackson, S. J. Miller, E. A. Palsson, E. Pesikoff, C. Wolf, *Distinct angle problems and variants*, Discrete & Computational Geometry, (2023) <https://doi.org/10.1007/s00454-022-00466-w>. [arXiv:2108.12015](https://arxiv.org/abs/2108.12015)
14. R. Ascoli, L. Betti, J. L. Duke, X. Liu, W. Milgrim, S. J. Miller, E. A. Palsson, F. Romero Acosta, S. Velazquez Iannuzzelli, *Distinct angles and angle chains in three dimensions*, Discrete Mathematics & Theoretical Computer Science, **25** (2023), no. 1, Paper No. 2, 19 pp. [arXiv:2208.13284](https://arxiv.org/abs/2208.13284)
15. E. A. Palsson, F. Romero Acosta, *A Mattila-Sjölin theorem for triangles*, Journal of Functional Analysis, **284** (2023), no. 6, Paper No. 109814, 20 pp. [arXiv:2109.13429](https://arxiv.org/abs/2109.13429)
16. H. L. Fleischmann, S. V. Konyagin, S. J. Miller, E. A. Palsson, E. Pesikoff, C. Wolf, *Distinct angles in general position*, Discrete Mathematics, **346** (2023), no. 4, Paper No. 113283, 4 pp. [arXiv:2206.04367](https://arxiv.org/abs/2206.04367)
17. T. C. Anderson, A. V. Kumchev, E. A. Palsson, *Discrete maximal operators over surfaces of higher codimension*, La Matematica, **1** (2022), no. 2, 442–479. [arXiv:2006.09968](https://arxiv.org/abs/2006.09968)
18. A. Iosevich, E. A. Palsson, S. R. Sovine, *Simplex averaging operators: quasi-Banach and L^p -improving bounds in lower dimensions*, Journal of Geometric Analysis, **32** (2022), no. 3, Paper No. 87, 16 pp. [arXiv:2109.09017](https://arxiv.org/abs/2109.09017)
19. T. C. Anderson, E. A. Palsson, *Bounds for discrete multilinear spherical maximal functions*, Collectanea Mathematica, **73** (2022), no. 1, 75–87. [arXiv:1910.11409](https://arxiv.org/abs/1910.11409)
20. E. A. Palsson, S. Senger, C. Wolf, *Angle chains and pinned variants*, Bulletin of the Hellenic Mathematical Society, **65** (2021), 35–53. [arXiv:2104.09960](https://arxiv.org/abs/2104.09960)
21. S. Gunter, E. A. Palsson, B. Rhodes, S. Senger, *Bounds on point configurations determined by distances and dot products*, Combinatorial and Additive Number Theory IV, 243–260, Springer Proceedings in Mathematics & Statistics, **297**, Springer, Cham, 2021. [arXiv:2011.15055](https://arxiv.org/abs/2011.15055)
22. E. A. Palsson, S. Senger, A. Sheffer, *On the number of discrete chains*, Proceedings of the American Mathematical Society, **149** (2021), no. 12, 5347–5358. [arXiv:1902.08259](https://arxiv.org/abs/1902.08259)
23. T. C. Anderson, E. A. Palsson, *Bounds for discrete multilinear spherical maximal functions in higher dimensions*, Bulletin of the London Mathematical Society, **53** (2021), no. 3, 855–860. [arXiv:1911.00464](https://arxiv.org/abs/1911.00464)
24. H. N. Brenner, J. S. Depret-Guillaume, E. A. Palsson, S. Senger, *Uniqueness of optimal point sets determining two distinct triangles*, Integers, **21** (2021), Paper No. A43, 15 pp. [arXiv:1910.00629](https://arxiv.org/abs/1910.00629)
25. Z. J. Hoelscher, E. A. Palsson, *Counting restricted partitions of integers into fractions: symmetry and modes of the generating function and a connection to $\omega(t)$* , PUMP Journal of Undergraduate Research, **3** (2020), 277–307. [arXiv:2011.14502](https://arxiv.org/abs/2011.14502)
26. S. Fish, D. King, S. J. Miller, E. A. Palsson, C. Wahlenmayer, *Crescent configurations in normed spaces*, Integers, **20** (2020), Paper No. A96, 38 pp. [arXiv:1909.08769](https://arxiv.org/abs/1909.08769)
27. E. A. Palsson, S. R. Sovine, *The triangle averaging operator*, Journal of Functional Analysis, **279** (2020), no. 8, #108671, 21 pp. [arXiv:1910.01282](https://arxiv.org/abs/1910.01282)

28. R. F. Durst, C. Huynh, A. Lott, S. J. Miller, E. A. Palsson, W. Touw, G. Vriend, *The inverse gamma distribution and Benford's law*, PUMP Journal of Undergraduate Research, **3** (2020), 95–109. [arXiv:1609.04106](#)
29. H. N. Brenner, J. S. Depret-Guillaume, E. A. Palsson, R. W. Stuckey, *Characterizing optimal point sets determining one distinct triangle*, Involve, **13** (2020), no. 1, 91–98. [arXiv:1910.00633](#)
30. J. DeWitt, K. Ford, E. Goldstein, S. J. Miller, G. Moreland, E. A. Palsson, S. Senger, *Dimensional lower bounds for Falconer type incidence theorems*, Journal d'Analyse Mathématique, **139** (2019), 143–154. [arXiv:1612.00539](#)
31. K. Cordwell, A. Epstein, A. Hemmady, S. J. Miller, E. A. Palsson, A. Sharma, S. Steinerberger, Y. N. T. Vu, *On algorithms to calculate integer complexity*, Integers, **19** (2019), Paper No. A12, 13 pp. [arXiv:1706.08424](#)
32. A. Epstein, A. Lott, S. J. Miller, E. A. Palsson, *Optimal point sets determining few distinct triangles*, Integers, **18** (2018), Paper No. A16, 17 pp. [arXiv:1609.00206](#)
33. R. Dorward, P. Ford, E. Fourakis, P. Harris, S. J. Miller, E. A. Palsson, H. Paugh, *Individual gap measures from generalized Zeckendorf decompositions*, Uniform Distribution Theory, **12** (2017), no. 1, 27–36. [arXiv:1509.03029](#)
34. R. Dorward, P. Ford, E. Fourakis, P. Harris, S. J. Miller, E. A. Palsson, H. Paugh, *A generalization of Zeckendorf's theorem via circumscribed m -gons*, Involve, **10** (2017), no. 1, 125–150. [arXiv:1508.07531](#)
35. Y. Do, R. Oberlin, E. A. Palsson, *Variation-norm and fluctuation estimates for ergodic bilinear averages*, Indiana University Mathematics Journal, **66** (2017), no. 1, 55–99. [arXiv:1504.07134](#)
36. A. Iosevich, M. Mourgoglou, E. A. Palsson, *On angles determined by fractal subsets of the Euclidean space*, Mathematical Research Letters, **23** (2016), no. 6, 1737–1759. [arXiv:1104.5160](#)
37. D. Burt, E. Goldstein, S. Manski, S. J. Miller, E. A. Palsson, H. Suh, *Crescent configurations*, Integers, **16** (2016), #A38. [arXiv:1509.07220](#)
38. B. Murphy, E. A. Palsson, G. Petridis, *The cardinality of sumsets: different summands*, Acta Arithmetica, **167** (2015), no. 4, 375–395. [arXiv:1309.2191](#)
39. A. Greenleaf, A. Iosevich, B. Liu, E. A. Palsson, *A group-theoretic viewpoint on Erdős-Falconer problems and the Mattila integral*, Revista Matemática Iberoamericana, **31** (2015), no. 3, 799–810. [arXiv:1306.3598](#)
40. L. Grafakos, A. Greenleaf, A. Iosevich, E. A. Palsson, *Multilinear generalized Radon transforms and point configurations*, Forum Mathematicum, **27** (2015), no. 4, 2323–2360. [arXiv:1204.4429](#)
41. D. Geba, A. Greenleaf, A. Iosevich, E. A. Palsson, E. Sawyer, *Restricted convolution inequalities, multilinear operators and applications*, Mathematical Research Letters, **20** (2013), no. 4, 675–694. [arXiv:1209.6574](#)
42. Y. Do, R. Oberlin, E. A. Palsson, *Variational bounds for a dyadic model of the bilinear Hilbert transform*, Illinois Journal of Mathematics, **57** (2013), no. 1, 105–120. [arXiv:1203.5135](#)
43. E. A. Palsson, *L^p estimates for a singular integral operator motivated by Calderón's second commutator*, Journal of Functional Analysis, **262** (2012), no. 4, 1645–1678. [arXiv:1110.6792](#)
44. E. A. Palsson, *L^p estimates for a singular integral operator motivated by Calderón's second commutator*, PhD Thesis, Cornell University, May 2011.

BOOKS

Punktur og Tölur, by Askill Hardarson, Eyvindur Ari Palsson and Stefan Freyr Gudmundsson. We published three volumes intended for middle school students interested in math competitions. These three books covered material not traditionally taught in Iceland.

EDITORIAL

Managing Editor for the Online Journal of Analytic Combinatorics.
Assistant Editor for the Problem Section in Mathematics Magazine.

2021 – Present
 2019 – Present

EXTERNAL GRANTS	Simons Foundation Collaboration Grant for Mathematicians, \$35,000 available for collaboration, travel, and research expenses to be used within the next five years (extended by two years due to Covid). #360560	2016 - 2023
	National Science Foundation Conference Grant, \$21,500 to defray the expenses of participants in the Mid-Atlantic Analysis Meeting that was held on November 9-11, 2018, on the campus of Virginia Tech. DMS-1838476	2018 - 2019
	AMS Simons Travel Grant, \$4,000 available for travel to be used within the next two years.	2012 - 2014
	MRC Additional Collaboration Funding, Applied for and received leftover funding from the MRC that allowed Yen Do, Richard Oberlin and myself to visit Christoph Thiele at UCLA for a week.	2011
INTERNAL GRANTS	Faculty Mentoring Proposal, \$1,500 competitive grant for new Assistant Professors from Virginia Tech.	2017
	University of Rochester Researcher Mobility Travel Grant, \$5,000 available for travel.	2013
	Conference Travel Grant, a competitive grant from Cornell University.	2010, 2011
	Research Travel Grant, a competitive grant from Cornell University.	2009
AWARDS	Cornell Mathematics Department Graduate Student Teaching Award, Cornell University, for excellence in teaching	2009
	Bronze Medal at the International Mathematical Olympiad, Tokyo, Japan.	2003
RECOGNITIONS	Thank a Teacher, Virginia Tech, recognition by students, alumni, or parents.	2017, 2019, 2023
CONFERENCES ORGANIZED	Harmonic Analysis and Fractal Sets, March 24 - March 26 at The Ohio State University co-organized with Alex McDonald (OSU) and Krystal Taylor (OSU)	2023
	Mid-Atlantic Analysis Meeting, Seminar series Fridays 3-5 PM Fall 2020 online due to COVID-19 Conference October 16 - October 18 online due to COVID-19 co-organized with Mahya Ghandehari (Delaware), Philip Gressman (UPenn), Benjamin Jaye (Georgia Tech), Yumeng Ou (UPenn) and Krystal Taylor (Ohio State)	2020
	Mid-Atlantic Analysis Meeting, November 9 - November 11 at Virginia Tech co-organized with Mahya Ghandehari (Delaware) and Benjamin Jaye (Clemson)	2018
WORKSHOPS ORGANIZED	On the Interface of Geometric Measure Theory and Harmonic Analysis, Banff International Research Station, June 9-14 in Banff, Canada co-organized with Benjamin Jaye (Georgia Tech), Krystal Taylor (The Ohio State University) and Alexia Yavicoli (University of British Columbia).	2024

- SPECIAL SESSIONS ORGANIZED
- The Interface of Geometric Measure Theory and Harmonic Analysis, **AMS Spring Central Sectional Meeting**, 2023
 April 15-16 at the University of Cincinnati
 co-organized with Krystal Taylor (The Ohio State University)
- Distance Problems in Continuous Discrete and Finite Field Settings, **Joint Mathematics Meetings**, 2023
 January 4-7 in Boston, Massachusetts
 co-organized with Abdul Basit (Iowa State) and Steven J. Miller (Williams)
- Distance Problems in Continuous Discrete and Finite Field Settings, **Joint Mathematics Meetings**, 2022
 January 5-8 in Seattle, Washington
 co-organized with Abdul Basit (Iowa State), Steven J. Miller (Williams), Sean Sovine (Virginia Tech) and Charles Wolf (University of Rochester)
 Cancelled due to COVID-19.
- The Interface of Harmonic Analysis and Analytic Number Theory, **AMS Spring Central Sectional Meeting**, 2022
 April 4-5 at Purdue University
 co-organized with Theresa Anderson (Purdue) and Robert Lemke Oliver (Tufts)
 Cancelled due to COVID-19 in 2020. Ran online March 26 - March 27, 2022.
- Recent Advances in Harmonic Analysis, **AMS Spring Southeastern Sectional Meeting**, 2020
 March 13-15 at the University of Virginia
 co-organized with Amalia Culiuc (Amherst College) and Yen Do (University of Virginia)
 Cancelled due to COVID-19.
- COLLOQUIUM TALKS
- How many points do you need to guarantee many patterns?*,
 Colloquium, **UMass Lowell**, March 30, 2021.
- Falconer type theorems: How many points do you need to guarantee many patterns?*,
 Colloquium, **The Ohio State University**, April 16, 2020.
- How many points do you need to guarantee many patterns?*,
 Physics and Math Colloquium, **Universidad de Colima**, May 30, 2019.
- Estimates for a singular integral operator motivated by Calderón's second commutator*,
 Colloquium, **TIFR Bangalore**, January 10, 2017.
- Finite point configurations*,
 Department of Mathematics Colloquium, **Virginia Tech**, November 11, 2016.
- Multilinear phenomena in analysis and related areas*,
 Department of Mathematics Colloquium, **University of Illinois at Urbana-Champaign**,
 December 10, 2015.
- A look at the distinct distance problem and crescent configurations*,
 Mathematics Colloquium, **Bard College**, December 8, 2015.
- Going the distance*,
 Mathematics and Statistics Department Colloquium, **Williams College**, October 14, 2015.
- Point configurations and the Erdős distinct distance problem*,
 Mathematics and Statistics Department Colloquium, **Williams College**, July 1, 2015.

Finite point configurations and multilinear Radon transforms,
Department of Mathematics Undergraduate Colloquium, **Trinity College**, October 9, 2014.

Multilinear phenomena in analysis and related areas,
Department of Mathematics Colloquium, **The University of Alabama**, February 18, 2014.

Finite point configurations and multilinear Radon transforms,
Mathematics and Statistics Department Colloquium, **Williams College**, January 28, 2014.

Finite point configurations and multilinear generalized Radon transforms,
Maths Colloquium, **University of Queensland Brisbane**, June 3, 2013.

Finite point configurations and multilinear generalized Radon transforms,
Sydney-UNSW Joint Colloquium, University of Sydney, May 31, 2013.

Finite point configurations and multilinear generalized Radon transforms,
Colloquium, **University of Rochester**, May 2, 2013.

SEMINAR
TALKS

Distance problems and geometric averaging operators,
Analysis Seminar, **Brown University**, October 16, 2023.

A restricted Falconer distance problem,
Analysis Seminar, **University of Rochester**, September 22, 2023.

Abundance of triangles in thin fractal sets,
One World Fractals, Online, September 20, 2023.

Distance problems and their many variants,
Analysis Seminar, **Cornell University**, September 11, 2023.

Point configurations and geometric averaging operators,
Analysis Seminar, **University of Tennessee, Knoxville**, March 29, 2023.

On the Erdős distinct distance problem and its many variants,
NYC Geometry Seminar, **NYU's Courant Institute and CUNY's Graduate Center**,
March 21, 2023.

On the Erdős distinct distance problem and its many variants,
Seminar, **Missouri State University**, April 5, 2022.

Triangles and triangle averaging operators,
International Seminar Series on Harmonic Analysis & Applications, March 27, 2022.

Triangles and triangle averaging operators,
Korea-Taiwan-Vietnam joint seminar in Combinatorics and Analysis, March 24, 2022.

Multilinear geometric averaging operators and point configurations,
Analysis & Math Physics Seminar, **Virginia Tech**, May 5, 2021.

Bounds for a discrete variant of the bilinear spherical maximal operator,
Analysis Seminar, **University of Rochester**, April 10, 2020.

Geometric averaging operators and point configurations,
Analysis Seminar, **Georgia Tech**, February 26, 2020.

Geometric averaging operators and point configurations,
Seminar, **Missouri State University**, January 28, 2020.

On the number of discrete chains,
Combinatorics Seminar, **University of Rochester**, November 7, 2019.

Falconer type theorems and integral operators,
Caltech/UCLA joint Analysis Seminar, **UCLA**, October 18, 2019.

A group-theoretic viewpoint on Falconer type theorems,
Harmonic Analysis and PDE Seminar, **University of Virginia**, April 9, 2019.

On the number of discrete chains,
Combinatorics, Algebra and Geometry Seminar, **George Mason University**, April 5, 2019.

A group-theoretic viewpoint on Falconer type theorems,
Analysis and PDE Seminar, **Purdue University**, December 6, 2018.

A group-theoretic viewpoint on Falconer type theorems,
Analysis Seminar, **Cornell University**, October 22, 2018.

A group-theoretic viewpoint on Falconer type theorems,
Analysis and Math Physics Seminar, **Virginia Tech**, September 26, 2018.

A group-theoretic viewpoint on Falconer type theorems,
Pure Mathematics Seminar, **University of Queensland Brisbane**, June 19, 2018.

Falconer type theorems for simplices,
Analysis, Logic, and Physics Seminar, **Virginia Commonwealth University**, January 26, 2018.

Restricted convolution inequalities, multilinear operators and applications,
Analysis and Math Physics Seminar, **Virginia Tech**, October 25, 2017.

Falconer type theorems for simplices,
Analysis Seminar, **Georgia Tech**, April 12, 2017.

Falconer type theorems for simplices,
Inverse Problems and Analysis Seminar, **University of Delaware**, March 3, 2017.

Finite point configurations,
Seminar, **Indian Institute of Science, Bangalore**, January 9, 2017.

Finite point configurations,
Analysis and Arithmetic Combinatorics Seminar, **University of Georgia**, October 24, 2016.

Variational bounds for the bilinear Hilbert transform,
Applied Analysis Seminar, **Virginia Tech**, August 24, 2016.

Crescent configurations and sharpness examples for triangles,
Faculty Seminar, **Williams College**, April 8, 2016.

Finite point configurations in thin sets,
Combinatorics Seminar, **University of Rochester**, February 2, 2016.

Finite point configurations and multilinear Radon transforms,
Analysis Seminar, **Yale University**, December 1, 2015.

Finite point configurations and multilinear Radon transforms,
Mathematics Department Seminar, **Colgate University**, October 15, 2015.

Variational bounds for a dyadic model of the bilinear Hilbert transform,
Analysis Seminar, **Brown University**, March 9, 2015.

Variational bounds for the bilinear Hilbert transform,
Faculty Seminar, **Williams College**, February 27, 2015.

Variational bounds for a dyadic model of the bilinear Hilbert transform,
Analysis Seminar, **State University of New York Albany**, November 12, 2014.

Finite point configurations and multilinear Radon transforms,
Trimester Seminar, **Hausdorff Research Institute for Mathematics**, Bonn, Germany, July 29, 2014.

Multilinear phenomena in analysis and related areas,
Analysis Seminar, **University of Rochester**, November 8, 2013.

Restricted convolution inequalities, multilinear operators and applications,
Pure Mathematics Seminar, **University of Queensland Brisbane**, June 4, 2013.

Multilinear generalized Radon transforms,
Analysis Seminar, **Brown University**, November 19, 2012.

Multilinear generalized Radon transforms,
Analysis Seminar, **Indiana University Bloomington**, October 25, 2012.

Multilinear generalized Radon transforms,
Analysis Seminar, **University of Rochester**, October 19, 2012.

On multilinear generalized Radon transforms,
Analysis Seminar, **Cornell University**, March 26, 2012.

On multilinear generalized Radon transforms,
Analysis and PDE Seminar, **University of California Los Angeles**, January 13, 2012.

On multilinear generalized Radon transforms and angles,
Analysis Seminar, **University of Rochester**, December 9, 2011.

L^p estimates for a singular integral operator motivated by Calderón's Commutators,
Analysis Seminar, **Georgia Tech**, December 8, 2010.

L^p estimates for a singular integral operator motivated by Calderón's Commutators,
Analysis Seminar, **Cornell University**, October 25, 2010.

L^p estimates for a singular integral operator motivated by Calderón's Commutators,
Analysis Seminar, **University of Rochester**, October 22, 2010.

L^p estimates for a singular integral operator motivated by Calderón's Commutators,
Calderón-Zygmund Analysis Seminar, **University of Chicago**, May 3, 2010.

CONFERENCE
TALKS

Distance problems and their many variants,
Workshop in Analysis, Georgia Tech, Atlanta, Georgia, December 9, 2023.

Distance problems and geometric averaging operators,
Virginia Operator Theory and Complex Analysis Meeting (VOTCAM), University of Richmond, Richmond, Virginia, October 14, 2023.

Distance problems and their many variants,

The Korea-Taiwan-Vietnam Joint Meeting on Discrete Geometry and Geometric Measure Theory, Vietnam Institute for Advanced Study in Mathematics, Hanoi, Vietnam, July 17, 2023.

Distance problems and their many variants, Lecture 2,
Modern trends in Harmonic Analysis, International Centre for Theoretical Sciences, Bengaluru, India, July 4, 2023.

Distance problems and their many variants, Lecture 1,
Modern trends in Harmonic Analysis, International Centre for Theoretical Sciences, Bengaluru, India, July 3, 2023.

Abundance of triangles in thin fractal sets,
AMS Special Session on Discrete Analysis, Spring Southeastern Sectional Meeting, Atlanta, Georgia, March 19, 2023.

The triangle averaging operator,
AMS Special Session on Harmonic Analysis, Spring Southeastern Sectional Meeting, Atlanta, Georgia, March 18, 2023.

Point configurations and geometric averaging operators,
Conference on topics in microlocal analysis, harmonic analysis, and inverse problems. Celebrating the work of Allan Greenleaf, University of Rochester, August 15, 2022.

Triangles and triangle averaging operators,
Canadian Mathematical Society Winter Meeting Special Session: Harmonic Analysis and Fractal Geometry, Online, December 5, 2021.

Geometric averaging operators motivated by point configurations,
Fourier Restriction Online 2021 Workshop, Online, March 13, 2021.

Discrete operators in harmonic analysis,
AIM Workshop: Arithmetic statistics, discrete restriction, and Fourier analysis, Online, February 19, 2021.

Bounds for singular integral operators motivated by Calderón's commutators,
AMS Special Session on Recent Progress on Singular and Oscillatory Integrals, Spring Southeastern Sectional Meeting, Charlottesville, Virginia, March 14, 2020.
Cancelled due to COVID-19.

Bounds for a discrete variant of the bilinear spherical maximal operator,
AMS Special Session on Recent Developments in Harmonic Analysis, Fall Central Sectional Meeting, Madison, Wisconsin, September 14, 2019.

An improved threshold for the Falconer angle problem,
AMS Special Session on Analysis and Geometry of Fractals, Fall Western Sectional Meeting, San Francisco, California, October 27, 2018.

A group-theoretic viewpoint on Falconer type theorems,
AMS Special Session on Interplay between Analysis and Combinatorics, Fall Eastern Sectional Meeting, Newark, Delaware, September 29, 2018.

Falconer type theorems for higher order point configurations,
Southeastern Analysis Meeting, Georgia Tech, March 24, 2018.

Falconer type theorems for higher order point configurations,
Spring Mini Courses in Analysis and Geometry, Louisiana State University, February 9,

2018.

Dimensional lower bounds for Falconer type incidence theorems,
Northeast Analysis Network Conference, Syracuse University, September 23, 2017.

Falconer type theorems for simplices,
Harmonic Analysis And Geometry Of Fractal Sets, The Ohio State University, February 4, 2017.

On a problem of Erdős and some related questions,
Paper Presentation in Geometry and Cosmology, International Conference of TIMC in cooperation with AMS, Banaras Hindu University, Varanasi, India, December 14, 2016.

Finite point configurations,
Northeast Analysis Network Conference, University of Rochester, September 9, 2016.

Finite point configurations,
Summer Analysis Workshop, Oberlin College, July 9, 2016.

Finite point configurations,
Special Session on Geometric Aspects of Harmonic Analysis, Joint Meeting of the AMS, EMS and SPM, Porto, Portugal, June 12, 2015.

Finite point configurations,
International Conference on Harmonic Analysis and Applications, The Graduate Center of City University of New York, June 1, 2015.

Restricted convolution inequalities, multilinear operators and applications,
Harmonic Analysis to celebrate Michael Cowling's 65th, Segovia, Spain, July 2, 2014.

Falconer type theorems for simplices,
Special Session on Harmonic Analysis and Applications, Joint Meeting of the AMS and the RMS, Alba Iulia, Romania, June 29, 2013.

Variational bounds for a dyadic model of the bilinear Hilbert transform,
AMS Special Session on Harmonic Analysis and Convexity, Fall Central Sectional Meeting, Akron, Ohio, October 21, 2012.

Variational bounds for a dyadic model of the bilinear Hilbert transform,
AMS Special Session on Wavelet and Frame Theoretic Methods in Harmonic Analysis and Partial Differential Equations in Memory of Daryl Geller, Fall Eastern Sectional Meeting, Rochester, New York, September 29, 2012.

On multilinear generalized Radon transforms,
AMS Special Session on Radon Transforms and Geometric Analysis (in honor of Sigurdur Helgason's 85th birthday), Joint Mathematics Meetings, Boston, Massachusetts, January 7, 2012.

L^p estimates for a singular integral operator motivated by Calderón's Commutators,
Incompressible Fluids, Turbulence and Mixing. In honor of Peter Constantin's 60th birthday., Carnegie Mellon University, Pittsburgh, Pennsylvania, October 15, 2011.

L^p estimates for a singular integral operator motivated by Calderón's Commutators,
AMS Session on Topics in Analysis, Joint Mathematics Meetings, New Orleans, Louisiana, January 9, 2011.

Harmonic Analysis and Applications - A Conference in honor of the 70th birthday of Richard Wheeden, University of Seville, Spain, June 14 - June 18, 2010.

EXPOSITORY
TALKS

On the Erdős distinct distance problem and its many variants, **Math Club**, Virginia Tech, April 7, 2022.

The Erdős distinct distance problem, **CoronaVirus Lecture Series**, University of Rochester, May 28, 2020.

The Erdős distinct distance problem, **Virtual Math Circle**, April 16, 2020.

Crescent configurations, **Math Club**, Virginia Tech, October 23, 2019.

Crescent configurations, **Math Club**, Virginia Tech, October 4, 2018.

Optimal point sets determining few distinct triangles, **Math Club**, Virginia Tech, October 31, 2017.

Patterns and algorithms, **MathBlast**, Williams College, December 14, 2015.

Patterns and algorithms, **MathBlast**, Williams College, December 8, 2014.

Finite point configurations and calculus, **Irondequoit Calculus Classes Field Trip**, University of Rochester, May 22, 2014.

Salem sets and restriction properties of Fourier transforms (two 50-minute lectures), **Summer school on Harmonic Analysis, Geometric Measure Theory and Additive Combinatorics**, Catalina Canyon Resort (California), June 25 - June 29, 2012.

A $T(1)$ theorem on product spaces (two 60-minute lectures), **Internet Analysis Seminar**, Georgia Tech (Georgia), June 11 - June 15, 2012.

Tangential boundary behavior of functions in Dirichlet-type spaces (two 60-minute lectures), **Internet Analysis Seminar**, Sea Palms Resort on St. Simon's Island (Georgia), June 13 - June 17, 2011.

The water wave problem, **Olivetti Club**, Cornell University, April 20, 2010.

WKB asymptotic behavior of almost all generalized eigenfunctions for one-dimensional Schrödinger operators with slowly decaying potentials (two 45-minute lectures), **Summer School on Harmonic Analysis, Carleson Theorems and Multilinear Analysis**, Snowbird Resort (Utah), June 27 - July 3, 2009.

Singular integral operators, **Olivetti Club**, Cornell University, March 31, 2009.

An inverse theorem for the Gowers $U^3(G)$ norm (two 60-minute lectures), **Summer School on Additive Combinatorics**, Catalina Canyon Resort (California), August 10 - August 15, 2008.

The Waiting Time Paradox, **Mathematical Seminar**, University of Iceland, February 27, 2006.

OTHER
CONFERENCES
ATTENDED

Northeast Analysis Network, University of Rochester, Rochester, New York, September 23 - September 24, 2023.

Combinatorial and Additive Number Theory, online due to COVID-19, June 1 - 5, 2020.

Madison Lectures in Fourier Analysis, University of Wisconsin, Madison, Wisconsin, May

13 - May 17, 2019. (Funded by the conference.)

Mid-Atlantic Seminar On Numbers, James Madison University, Harrisonburg, Virginia, February 23 - February 24, 2019.

Women's Intellectual Network Research Symposium, University of Virginia, Charlottesville, Virginia, September 15, 2018.

Frame Theory and Exponential Bases, The Institute for Computational and Experimental Research in Mathematics, Providence, Rhode Island, June 4 - June 8, 2018. (Partial funding from ICERM.)

Georgia Discrete Analysis Conference, University of Georgia, Athens, Georgia, May 14 - May 17, 2018. (Partial funding from the conference.)

Analysis and Applications, A conference in honor of Elias M. Stein, University of Wroclaw, Wroclaw, Poland, September 4 - September 8, 2017.

Harmonic analysis and its interactions: in honour of Tony Carbery, International Centre for Mathematical Sciences, Edinburgh, Scotland, July 17 - July 21, 2017.

Recent Developments at the Harmonic Analysis semester program, Mathematical Sciences Research Institute, Berkeley, California, May 15 - May 19, 2017. (Funded by MSRI.)

February Fourier Talks 2017, University of Maryland, College Park, Maryland, February 16 - February 17, 2017.

Introductory Workshop at the Harmonic Analysis semester program, Mathematical Sciences Research Institute, Berkeley, California, January 23 - January 27, 2017. (Funded by MSRI.)

Integers Conference 2016, University of West Georgia, Carrollton, Georgia, October 6 - October 9, 2016.

10th International Conference on Harmonic Analysis and Partial Differential Equations, El Escorial, Madrid, Spain, June 12 - June 17, 2016.

Conference in Harmonic Analysis in Honor of Michael Christ, University of Wisconsin, Madison, Wisconsin, May 16 - May 20, 2016.

FrankFest 2016, Conference on Isoperimetric Problems, Williams College, Williamstown, Massachusetts, February 5 - February 6, 2016.

Joint Mathematics Meetings, Seattle, Washington, January 6 - January 9, 2016.

Joint Mathematics Meetings, San Antonio, Texas, January 10 - January 13, 2015.

Joint Mathematics Meetings, Baltimore, Maryland, January 15 - January 18, 2014.

Joint Mathematics Meetings, San Diego, California, January 9 - January 12, 2013.

Workshop on Geometric Analysis on Euclidean and Homogeneous Spaces, Tufts University, Medford, Massachusetts, January 8 - January 9, 2012.

Conference in Harmonic Analysis and Partial Differential Equations in honour of Eric Sawyer, Fields Institute, Toronto, Canada, July 26 - July 29, 2011.

Analysis and Applications: A Conference in Honor of Elias M. Stein, Princeton University, Princeton, New Jersey, May 16 - May 20, 2011.

AMS Fall Eastern Sectional Meeting, Syracuse University, Syracuse, New York, October 2 - October 3, 2010.

Euclidean Harmonic Analysis, Nilpotent Lie Groups and PDEs, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy, March 22 - March 30, 2010. (Partial funding by the De Giorgi center.)

Joint Mathematics Meetings, San Francisco, California, January 13 - January 16, 2010. (Funded by the AMS.)

Recent Advances in Harmonic Analysis and Elliptic Partial Differential Equations, University of Virginia, May 8 - May 10, 2009. (Funded by the conference.)

24th Nordic and 1st Franco-Nordic Congress of Mathematicians, Reykjavik, Iceland, January 2005.

ADVISING

Current Ph.D. Students Advised at Virginia Tech

José Gaitan Fall 2021 - Present
Jennifer Smucker Spring 2022 - Present

Graduated Ph.D. Students Advised at Virginia Tech

Juan Francisco Romero Acosta Spring 2019 - Spring 2023
Thesis: *The Mattila-Sjölin Problem for Triangles*
First Position: Postdoc at The Australian National University
Sean R. Sovine Fall 2017 - Spring 2022
Thesis: *Bounds for Bilinear Analogues of the Spherical Averaging Operator*
First Position: Software developer at Mathematical Sciences Publishers

Graduated MS Students Advised at Virginia Tech

Zackary R. Boone Fall 2020 - Spring 2022
Thesis: *Distance Sets and Gap Lemma*
Benjamin Rhodes Spring 2019 - Spring 2020
Thesis: *On the Discrete Number of Tree Graphs*
James Depret-Guillaume Spring 2018 - Spring 2019
Thesis: *Optimal Point Sets With Few Distinct Triangles*
Matthew Crawford Fall 2018 - Spring 2019
Thesis: *On the Number of Representations of One as the Sum of Unit Fractions*

Undergraduate Research Advised at Virginia Tech

Zachary J. Hoelscher Spring 2019 - Spring 2021
Mason Stoecker Spring 2019
Robert W. Stuckey Fall 2017 - Spring 2018

Polymath Jr.

Optimal point sets determining distinct triangles Summer 2023
Edward Yu (MIT)

Experimental Math Lab at the Park City Math Institute

Crescent Configurations in 2D Summer 2018
Sean Haight (Western Washington University), James Hughes (Bowdoin),
Sam Kottler (Colorado College), Fiona Young (Harvard)

Crescent Configurations in 3D Summer 2018
Malachi Alexander (UC Santa Cruz), Yichen Wei (University of Minnesota Duluth), Cheyenne Zhang (Bryn Mawr College)

Gibbs Phenomenon Summer 2018
Steven Walton (University of Texas Dallas), Trevor Klar (California State University Northridge), Illia Hayes (Lewis & Clark College), Hong Quan Tran (Ecole Normale Supérieure), Caleb Nastasi (San Francisco State University), Juan Serrano Pinedo (Minnesota State University Mankato), Jonathon Jacobs (University of Michigan)

Optimal point configurations Summer 2018 - Summer 2020
Hazel Brenner (University of Missouri Saint Louis)

Summer Research Experience for Undergraduates Advised at Williams College
Combinatorics, Geometry and Data Science Summer 2022
Ruben Ascoli (Princeton), Livia Betti (University of Rochester), Jacob L. Duke (Williams), Xuyan Liu (University of Michigan), Wyatt Milgrim (Vassar College), Santiago Velazquez Iannuzzelli (University of Pennsylvania)

Erdős and Falconer type distance problems Summer 2021
Benjamin Baily (Williams), Henry L. Fleischmann (Michigan), Hongyi B. Hu (Carnegie Mellon), Faye Jackson (Michigan), Arian Nadjimzadeh (University of Rochester), Ethan Pesikoff (Yale)

Erdős distance type problems Summer 2020
Elzbieta Boldyriew (Colgate), Elena Kim (Pomona), Fernando Trejos Suárez (Yale), Jason Zhao (UCLA)

Crescent Configurations Summer 2019
Sara Fish (Caltech), Dylan King (Wake Forest), Catherine Wahlenmayer (Gannon)

Number Theory and Harmonic Analysis Summer 2016
Peter Cohen (Bowdoin), Katherine Cordwell (University of Maryland), Rebecca Durst (Williams), Alyssa Epstein (Williams), Oscar Gonzalez (University of Puerto Rico), Anand Hemmady (Williams), Magda Hlavacek (Harvey Mudd), Ngoc Yen Chi Huynh (Georgia Tech), Chung Hang Kwan (University of Illinois at Urbana-Champaign), Adam Lott (University of Rochester), Carsten Peterson (Yale), Aaditya Sharma (Williams), Carsten Sprunger (University of Michigan), Roger Van Peski (Princeton), Yen Nhi Truong Vu (Amherst)

Number Theory and Harmonic Analysis Summer 2015
Megumi Asada (Williams), Paula Burkhardt (Pomona), David Burt (Williams), Jonathan DeWitt (Haverford), Robert Dorward (Oberlin), Eva Fourakis (Williams), Eli Goldstein (Williams), Sarah Manski (Kalamazoo), Gwyneth Moreland (Michigan), Hong Suh (Pomona), Blaine Talbut (Chicago), Kevin Yang (Harvard)

Colloquia Advised at Williams College

Math Madness: Ranking NCAA Basketball Teams, N. Feshbach March 2016

Gomory-Hu Trees and Their Applications, D. Timilsina Winter Study 2016

Tetris is Hard, A. Savery Winter Study 2016

Density Estimation with Orthogonal Series, M. Radford Winter Study 2016

Independent Study Advised at Williams College

Escape the Room, Williamstown, O. Gouda

Winter Study 2016

Undergraduate Independent Studies Advised at the University of Rochester

Four Color Theorem, C. Fredrickson

Fall 2013

Dynamics of Zombies, A. Murray

Spring 2013

Betting and the Kelly Criterion, N. Benjamin

Fall 2012

Applications of the Radon Transform, J. Rowan

Fall 2012

MINICOURSES

Oscillations in Harmonic Analysis,

2018

July 1 - July 21 at the Park City Math Institute in Park City, Utah

Gave lectures every weekday aimed at undergraduates and held problem sessions most afternoons.

TEACHING

Virginia Tech

Graduate Real Analysis, Instructor

Fall 2018, 2019, 2020, Spring 2019, 2021

Graduate Functional Analysis, Instructor

Fall 2021, 2022, Spring 2022

Intro to Harmonic Analysis, Instructor

Fall 2019, 2021, Spring 2018

Intro to Stochastic Analysis, Instructor

Fall 2020

Calculus of Several Variables, Instructor

Fall 2016, 2017, 2018, 2022 Spring 2020, 2023

Williams College

Harmonic Analysis, Instructor

Spring 2016

Partial Differential Equations, Instructor

Spring 2015

Wavelets and Image Processing, Instructor

Winter Study 2016

Applied Real Analysis, Instructor

Spring 2016

Differential Equations, Instructor

Spring 2015

Calculus II, Instructor

Fall 2014

Calculus I, Instructor

Fall 2015

University of Rochester

Functions of a Real Variable, Instructor

Fall 2012

Combinatorics, Instructor

Spring 2012, Fall 2013

Qualitative Theory of Ordinary Differential Equations, Instructor

Fall 2011

Introduction to Mathematical Models in the Life Sciences, Instructor

Spring 2013, 2014

Linear Algebra with Differential Equations, Instructor

Spring 2013, Fall 2011, 2013

Calculus II, Instructor

Spring 2012, 2014, Fall 2012

Cornell University

Calculus I, Assistant to the Course Coordinator

Spring 2011

Calculus II for Engineers, Instructor

Fall 2009

Calculus II, Instructor

Spring 2009

Calculus II for Engineers, Assistant to the Course Coordinator

Fall 2009, 2010

Multi-variable Calculus for Engineers, Assistant to the Course Coordinator

Fall 2007, 2008

Spring 2008

Multi-variable Calculus for Engineers, Teaching Assistant

Fall 2006, 2007, 2008

Spring 2007, 2008

University of Iceland

Real Analysis for Math Majors, Teaching Assistant

Fall 2004

SERVICE

Referee for the Journal of Fourier Analysis and Applications, Proceedings of the London Mathematical Society, Journal of the London Mathematical Society, Mathematische Zeitschrift, Journal of Geometric Analysis, Mathematical Research Letters, Canadian Journal of Mathematics, Proceedings of the American Mathematical Society, Proceedings of the Edinburgh Math Society, Journal of Number Theory, Bulletin of the Australian Mathematical Society, Glasgow Mathematical Journal, Journal of Mathematical Analysis and Applications, Springer Proceedings in Mathematics & Statistics, Banach Journal of Mathematical Analysis, Central European Journal of Mathematics, Rocky Mountain Journal of Mathematics, Integers, Random Matrices: Theory and Applications, Results in Mathematics, AMS Contemporary Mathematics, Involve, American Mathematical Monthly, Notices of the AMS and the International Symposium on Computational Geometry.

Reviewer for Mathematical Reviews and Zentralblatt MATH.

Graduate Advising Chair and member of the Graduate Program Committee at Virginia Tech Fall 2022 - Present.

Chair of the Colloquium committee at Virginia Tech Fall 2020 - Spring 2022, member Fall 2016 - Spring 2018.

Organizer of the Analysis and Math Physics Seminar at Virginia Tech Fall 2018 - Spring 2022, Co-organizer Fall 2022 - Spring 2023.

Organizer of the Analysis and Math Physics Round Table at Virginia Tech Fall 2017 - Spring 2020.

Member of the Undergraduate Program Committee at Virginia Tech Fall 2018 - Spring 2022.

Member of the Virginia Tech Regional Math Competition committee Fall 2016 - Spring 2023.

Member of tenure track hiring committees at Virginia Tech 2016-2017, 2018-2019, 2021-2022, 2022-2023.

Member of postdoc hiring committees at Virginia Tech 2020-2021, 2021-2022.

Member of Election Committee at Virginia Tech 2021-2023.

Faculty advisor to the Williams College Student Chapter of the AMS, that was formed in 2015 and was the first chapter of its kind at an undergraduate institution.

Organizer (2015-2016) and co-organizer (2014-2015) of math competitions at Williams College.

Co-organizer of the University of Rochester Math Olympiad 2012 and 2013.

OUTREACH

Lectured at the Blacksburg Math Circle (Fall 2022, 2021, 2019, 2018, 2017, 2016), the Virtual Math Circle (Spring 2020) and the University of Rochester Math Circle (Fall 2011).

Led activities (Spring 2019) and recorded videos (Spring 2021) for Career Day and Math Xperience at Virginia Tech. At these events Virginia Tech hosts middle school students (Career Day) and high school students who have taken calculus (Math Xperience) in hopes of inspiring their interest in mathematics as a career choice. [Career Day YouTube video](#) and [Math Xperience YouTube video](#).

Mentor for Math Alliance and the Virginia Tech AWM chapter. On the ally list for Spectra, the Association for LGBT mathematicians.

Recorded four 15 minute videos on Fourier Series Meets Linear Algebra in collaboration with Digital Media Services at Virginia Tech. These lectures were used at a few liberal arts colleges to enrich their Analysis program and have been made available on YouTube. [YouTube Channel](#)

Did an interview on the show Meet & Potatoes on WilliNet, the Community Television Channel for Williamstown, MA. <https://vimeo.com/160139702>

Various talks to students at all levels, including University of Rochester CoronaVirus Lecture Series for advanced high school students (2020), MathBlast for 10th graders at Williams College (2015, 2014), Iroendequoit high school calculus classes at the University of Rochester (2014) and Beverly J. Martin Elementary School in Ithaca NY (2010).

Assisted with a number of outreach events such as Kids Tech University at Virginia Tech (2018), Math Day at Virginia Tech which was aimed at bringing in middle school students to campus for a morning of math activities with the goal of encouraging girls to remain interested in mathematics (2016), Expanding Your Horizons conference for 7th-9th grade girls in mathematics, science and engineering at Cornell (2009).

MEMBERSHIP

Member of the *American Mathematical Society*; August 2006 to Present

Member of the *Mathematical Association of America*; April 2015 to Present

Member of the *Icelandic Mathematical Society*; August 2003 to Present

Last updated March 20, 2023.