

CONTACT INFORMATION	Golomb Visiting Assistant Professor Department of Mathematics Purdue University 150 N. University St West Lafayette, IN, 46907-2067	E-MAIL dkellehe@purdue.edu URL http://www.math.purdue.edu/~dkellehe
EMPLOYMENT	Golomb Visiting Assistant Professor – PURDUE UNIV. West Lafayette, IN 2014-Present	
EDUCATION	Ph.D. Mathematics – UNIVERSITY OF CONNECTICUT, Storrs, CT Doctoral Adviser: Alexander Teplyaev Thesis Title: Geometric Methods in Analysis on Fractals	2014
	M.Sc. Mathematics – UNIVERSITY OF CONNECTICUT, Storrs, CT	2010
	B.Sc. with honors in mathematics – TRINITY COLLEGE, Hartford, CT	2007
PUBLICATIONS	<p>[1] with Jessica Hyde, Jesse Moeller, Luke Rogers, and Luis Seda. Magnetic Laplacians of locally exact forms on the Sierpinski gasket, <i>To appear Commun. Pure Appl. Anal.</i> arXiv1604.02520</p> <p>[2] with Antoni Brzoska, Hugo Panzo, Alexander Teplyaev. Dual graphs and modified Barlow–Bass resistance estimates for repeated barycentric subdivisions, <i>conditionally accepted in Discrete and Continuous Dynamical Systems — Series S: Variational convergence and Degeneracies in PDEs: fractal domains, composite media, dynamical boundary conditions</i> arXiv:1505.03161</p> <p>[3] with Patricia Alonso-Ruiz and Alexander Teplyaev. Energy and Laplacian on fractal quantum graphs and Hanoi attractors, J. Phys. A. Volume 49, Number 16.</p> <p>[4] with Nihkaar Gupta, Maxwell Margenot, Jason Marsh, William Oakley, and Alexander Teplyaev. Gaps in the spectrum of the Laplacian on $3N$-Gaskets. Commun. Pure Appl. Anal. Pages: 2509 - 2533, Volume 14, Issue 6, November 2015. arXiv:1408.4294</p> <p>[5] with Michael Hinz and Alexander Teplyaev. Metrics and spectral triples for Dirichlet and resistance forms, Journal of Noncommutative Geometry 9 (2015), no. 2, 359390 arXiv1309.5937</p> <p>[6] with Michael J. Ignatowich, Catherine E. Maloney, David J. Miller, Khrystyna Serhiyenko. Computation of resistance scaling of the pillowcase and fractalina fractals, Fractals Vol No.23, Issue No. 2. arXiv1204.5815</p> <p>[7] with Michael Hinz and Alexander Teplyaev. Measures and Dirichlet forms under the Gelfand transform, Journal of Mathematical Science, 2012, Vol. 408, Pages 303–322.</p> <p>[8] with Matt Begue, Aaron Nelson, Hugo Panzo. Ryan Pellico and Alexander Teplyaev. Random walks on barycentric subdivisions and the Strichartz hexacarpet. Experimental Mathematics. 21(4) 2012, pp 402-417 arXiv1106.5567</p> <p>[9] with Tyler Reese, Dylan Yott, Toni Brzoska. Analyzing self-similar and fractal properties of the <i>C. elegans</i> neural network. PLoS ONE 7(10), (2012).</p> <p>[10] with Ben Steinhurst, Mike Wong. From self-similar Structures to self-similar groups. International Journal of Algebra and Computation Vol. 22, No. 07 (2012)</p>	

- PREPRINTS [11] Differential forms for fractal subsets and finite energy coordinates. *Submitted* arXiv1701.02684
- [12] with Fabrice Baudoin. Differential forms on Dirichlet spaces and Bakry-Émery estimates on metric graphs, *Submitted*. arXiv1604.02520
- [13] with Sara Chari, Joshua Frisch, Luke Rogers. Harmonic coordinates on higher dimensional Sierpinski gaskets. *Submitted* arXiv1703.03380
- WORKS IN PREPARATION [14] with Daniel Fontaine and Alexander Teplyaev. Green's function and eigenfunctions on random Sierpinski gaskets.
- [15] with Eva Curry, Luke Rogers and Alexander Teplyaev. Low pass filters and Martin boundary.
- UNDERGRAD RESEARCH **REU** *University of Connecticut* **Summers 2010–2013**
<http://www.mathreu.uconn.edu>
 Research Coordinator & Organizer
 - Advised 16 students across 6 research projects
 - Students have produced 3 articles, a preprint, 4 conference talks, and 4 poster presentations
 - Received and Reviewed applications
 - Organized seminars, accommodations, career development events, conference trips
 - Designed webpage and promotional materials**Directed Reading Program** *University of Connecticut* **2011–2014**
 Program pairs undergraduates with graduate students for reading in advanced topics.
 - Mentor to 3 students on topics in spectral graph theory and dynamical systems
 - Taught students with interactive methods involving experiments and visualizations in Mathematica and MatLab
 - Coordinated applications, promotion, assignments, end of semester presentations
- FELLOWSHIPS & AWARDS 2017 **Ruth and Joel Spira Faculty Teaching Award** Purdue University Math Dept. *Excellence in Undergraduate Teaching*
- 2014 **Connie Strange Graduate Community Award** University of Connecticut Math Dept.
- 2013 **Dissertation Fellowship** College of Liberal Arts and Science, Univ. Connecticut.
- 2012 **Open Access Author Fund** University of Connecticut Library. *Funding for publication of [9]*
- 2009 **Graduate Fellowship** Department of Mathematics, Univ. Connecticut. *Summer funding for graduate students.*
- TEACHING **Purdue University** *Department of Mathematics* **Fall 2014 – Present**
 3 Courses, 12 Sections ~400 students — *Spira Faculty Teaching Award*
 - Ordinary Differential equations (6 sections) From Boyce–DiPrima.
 - Linear Algebra (4 sections) From Hall.
 - Probability (2 sections) From Sheldon Ross *A First Course in Probability*.**University of Connecticut** *Department of Mathematics* **Fall 2008 – Spring 2014**
 Instructor: 3 courses (Preps), 8 sections ~200 students
 - Differential Equations (1 section) From Blanchard–Devaney–Hall.
 - Discrete Mathematics (1 section) Voting & apportionment methods, basic financial math, basic probability, basic graph theory
 - Problem solving (6 sections) General education course with a focus on critical thinking, logical reasoning, and technical writing

Teaching assistant: 3 courses, 14 sections, ~235 Students

- Calculus 1 (5 sections)
- Calculus 2 (3 sections)
- Differential equations (6 Sections)

Tutor: Tutored actuarial science student in Lebesgue measure and integration theory

University of Connecticut *Center for Academic Programs* **2010, Summer**

- Precalculus: Summer program for students transitioning from inner city schools to their first year at the University of Connecticut

INVITED
LECTURES &
SHORT
COURSES

- Analysis and Probability Seminar, University of Connecticut, Jan 2017.
- Probability/Analysis Seminar, University of Cincinnati, Oct 2015.
- Probability/Analysis Seminar, University of Cincinnati, April 2015.
- Probability Seminar, University of Illinois, Urbana-Champaign. March 2015.
- Summer School on Stochastic Analysis and Geometry University Illinois Chicago, *Vector Analysis on Fractals*. September 2014.
- Fractals 5, Cornell Univ, Short Course *Resistance estimates and Harnack inequalities on fractals, part I & II*. June 2014
- Univ. Bielefeld, *From self-similar groups to intrinsic metrics on fractals*. July 2014
- Cornell Analysis Seminar, *From Self-similar groups to intrinsic metrics on fractals*. December 2013

CONFERENCE
TALKS

- Frontier Probability Days, Salt Lake City, UT, May 2016.
- AMS Spring Sectional Meeting, Stony Brook University, NY, March 2016.
- AMS Western Spring Sectional Meeting, University of Nevada, Las Vegas. April 2015.
- AMS Spring Sectional Meeting, Michigan State University, Lansing, MI, March 2015.
- Fractals 5, Cornell Univ, *Intrinsic metrics and vector analysis on fractals* June 2014
- Fractal Geometry and Stochastics 5, Jena, *From self-similar groups to intrinsic metrics on fractals*. March 2014
- Fractals 4, Cornell Univ, *Random walks on barycentric subdivisions and Strichartz hexacarpet* September 2011
- February Fourier Talks Spring 2011, *From self-similar structures to self-similar groups* (poster) February 2011
- UConn Analysis seminar, *From self-similar structures to self-similar groups* April '11

LOCAL TALKS

- Probability Seminar, Purdue University. September 2016.
- Junior analysis Seminar, Purdue University. April 2015.
- Probability Seminar, Purdue University. September 2014.
- UConn SIGMA, *The Space of metric spaces* Fall 2013
- UConn SIGMA, *Growth and the Grigorcuk Group* Fall 2012.
- UConn SIGMA, *Spectral graph theory*. Fall 2011
- UConn Math Club, *Notions of Self-similarity* October 2010
- UConn SIGMA, *Self-Similarity and You* Fall 2010

PROFESSIONAL
EXPERIENCE

Birkhäuser Boston, *Editorial assistant*

2007 – 2008

- Coordinated editorial process
- Found reviewers and editors for mathematical monographs and collected volumes
- Drafted contracts
- Maintained a database of works

RECENT
CONFERENCES
ATTENDED

- Midwestern Probability Colloquium, Northwestern University, October 2016
- Northwestern Probability Summer School, Evanston, IL, July 2016
- Probability Frontier Days, Salt Lake City, UT, May 2016
- AMS Midwestern Sectionals, Fargo, ND, April 2016

- AMS Eastern Sectional Meetings, Stony Brook, NY, March 2016
- Joint Mathematics Meetings, Seattle, WA, January 2016
- 6th Symposium on Analysis and PDEs, Purdue University, June 2015
- Conference in stochastic analysis and related topics, Purdue University, May 2015
- AMS Western Spring Sectional Meeting, Univ. Nevada Las Vegas, April 2015
- AMS Midwestern Spring Sectional Meeting, Michigan State, March 2015
- Midwest Probability Seminar, Northwestern University, 2014
- Summer School on Stochastic Analysis and Geometry, Univ. Ill. Chicago, Sept 2014
- Fractals 5, Cornell Univ, June 2014
- Fractal Geometry and Stochastics 5, March 2014.
- Joint Mathematics Meetings, Baltimore, January 2014.
- Workshop on Geometric Analysis and Nonlinear PDEs, Rutgers, NJ, May 2013
- IAG: Workshop Tutorials, 1 & 3, Non-smooth geometry, IPAM, Los Angeles, April 2013
- IAG: Workshop 1, Analysis on metric spaces, IPAM, Los Angeles, March 2013
- Interactions between analysis and geometry (IAG): Tutorials, UCLA, March 2013
- Young Mathematicians Conference, Columbus, OH, July 2012
- Cornell Probability Summer School, Ithaca, NY July 2012
- Joint Mathematics Meetings, Boston, MA, January 2012
- AMS Northeastern Sectionals, Ithaca, NY, September 2011
- Young Mathematicians Conference, Columbus, OH, August 2011
- Waves and Quantum Fields on Fractals, Haifa, Israel, June 2011
- February Fourier Talks, University of Maryland, February 2011
- AMS Eastern Sectionals, Syracuse, NY Fall 2010