

CURRICULUM VITAE

Steven Senger

CONTACT:

University of Delaware
313 Ewing Hall
Newark, DE 19716

DATE OF BIRTH: May 19, 1982

CITIZENSHIP: United States of America

EDUCATION:

- BS in Electrical Engineering, University of Missouri - Columbia, 2005
- BS in Computer Engineering, University of Missouri - Columbia, 2005
- BS in Mathematics, University of Missouri - Columbia, 2005
- MA in Mathematics, University of Missouri - Columbia, 2009
- PhD in Mathematics, University of Missouri - Columbia, 2011

PUBLICATIONS:

1. *A note on the multiplicative structure of an additively shifted product set, $AA+1$* , INTEGERS: The Electronic Journal of Combinatorial Number Theory, A34, (2013).
2. *Distance graphs in vector spaces over finite fields, coloring and pseudo-randomness*, with Derrick Hart, Alex Iosevich, Doowon Koh, and Ignacio Uriarte-Tuero, Recent Advances in Harmonic Analysis and Applications, Volume 25, 139–160, (2013).
3. *Swarm Interpolation Using an Approximate Chebyshev Distribution*, with Joshua Kirby, Marco A. Montes de Oca, Louis F. Rossi, and Chien-Chung Shen, Swarm Intelligence: Lecture Notes in Computer Science: 7461, pp. 324–331, (2012).
4. *On sets of directions and angles determined by subsets of \mathbb{R}^d* , with Alex Iosevich and Mihalis Mourgoglou, Journal D'Analyse, 116 no. 1, 355–369, (2012).

5. *The Erdős Distance Problem*, (BOOK) with Julia Garibaldi and Alex Iosevich, AMS Student Library Series, 56, (2011).
6. *A Furstenberg-Katznelson-Weiss type theorem on $(d+1)$ -point configurations in sets of positive density in finite field geometries*, with David Covert, Derrick Hart, Alex Iosevich, and Ignacio Uriarte-Tuero, Discrete Math. 311, no. 6, 423–430, (2011).
7. *A low complexity replacement scheme for erased frame coefficients*, with Bernhard Bodmann, Peter G. Casazza, and Gitta Kutyniok, Proceedings of SPIE, Wavelets XIII, San Diego (2009) pp. 744600-1-10.
8. *Error correction for erasures of quantized frame coefficients*, with Bernhard Bodmann, Peter G. Casazza, and Gitta Kutyniok, Proceedings of SAMPTA (2009), <http://www.latp.univ-mrs.fr/SAMPTA09>.
9. *Orthogonal systems in vector spaces over finite fields*, With Alex Iosevich, Electronic Journal of Combinatorics, Volume 15, (2008).
10. *Acquiring and maintaining abstract landmark chunks for cognitive robot navigation*, with R. H. Luke, J. M. Keller, and M. Skubic, Intelligent Robots and Systems, 2005. (IROS 2005). 2005 IEEE/RSJ International Conference on.
11. *On the number of distinct values of a class of functions with finite domain*, with Robert Coulter, (to appear soon in Annals of Combinatorics).
12. *Sharpness of Falconer's estimate in continuous and arithmetic settings, geometric incidence theorems, and distribution of lattice points in convex domains*, with Alex Iosevich, (to appear soon in the CANT 2011 proceedings).

TALKS:

1. May 21, 2008, CUNY - Combinatorial and Additive Number Theory Conference
Orthogonal systems in vector spaces over finite fields.
2. May 27, 2010, CUNY - Combinatorial and Additive Number Theory Conference
Sharpness of Falconer's estimate, geometric incidence theorems, and distribution of lattice points in convex domains, II.

3. October 14, 2010, CUNY
Some connections between discrete and continuous geometric combinatorics, with recent illustrative results– hinge estimates.
4. October 15, 2010, CUNY - Graduate Seminar
Elementary proof of Elekes’s sums and products result.
5. November 10, 2010, University of Rochester
Geometric interactions with some problems in additive number theory.
6. December 6, 2010, University of British Columbia - CMS Meeting
Some connections between discrete and continuous geometric combinatorics, with recent illustrative results– sharpness examples.
7. December 10, 2010, Rochester Institute of Technology - IEEE Meeting
From design to implimentation: Vision and VLSI
8. March 24, 2011, Indiana University
On the relationships between several problems in geometric combinatorics
9. May 27, 2011, CUNY - Combinatorial and Additive Number Theory Conference
Consequences and connections of recent results in geometric combinatorics
10. October 20, 2011, Gettysburg College - Math Colloquium
Brothers and laser beams: a brief peek at incidence geometry via graph theory
11. May 23, 2012, CUNY - Combinatorial and Additive Number Theory Conference
Combinatorial estimates of the size of an image set

POSTERS:

1. February 2009, University of Maryland, Norbert Wiener Center - February Fourier Talks
Orthogonal systems in vector spaces over finite fields,

2. February 2012, University of Maryland, Norbert Wiener Center - February Fourier Talks

Reliability of swarming algorithms for mobile sensor network applications

TEACHING EXPERIENCE:

1. *Discrete Mathematics*, University of Delaware
2. *Calculus III (Multivariable)*, University of Missouri - Columbia
3. *Elements of Calculus*, University of Missouri - Columbia
4. *Finite Mathematics*, University of Missouri - Columbia, University of Delaware
5. *College Algebra for Non-Calculus Bound Students*, University of Missouri - Columbia
6. *College Algebra for Calculus Bound Students*, University of Missouri - Columbia
7. *Canoes, Cabs, and the French Railroad*, (An introduction to geometric combinatorics) - Missouri Scholars Academy, summer program for gifted high-school students
8. *When Does a Sound Become a Song?* (The math and science behind music) - Missouri Scholars Academy, summer program for gifted high-school students

OTHER QUALIFICATIONS:

1. Research assistantship under the direction of Alex Iosevich at the University of Rochester, Fall 2010.
2. Research assistantship under the direction of Pete Casazza for the Frame Research Center, University of Missouri - Columbia, Fall 2008–Fall 2009.
3. Employee of the Year, Facilities (Climbing Wall), University of Missouri Recreation Complex, 2010.
4. Familiarity with C, Java, Matlab, and assembly programming—specifically for mathematics, engineering, automata, and music.
5. Teaching Assistant training course under Sandi Athanassiou, Summer 2005.
6. Experience with Sakai, WebWork, and Blackboard educational tools.