

# MARK MAGSINO

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## EDUCATION

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<b>University of Maryland</b> Ph.D. in Mathematics	<b>May 2018</b>
<b>Carnegie Mellon University</b> B.S. in Mathematics & Japanese Studies	<b>May 2012</b>

## RESEARCH INTERESTS

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My research area is pure and applied harmonic analysis, and in particular, I study frame theory. More specifically I study optimal line packings, compressive sensing, Gabor frames, CAZAC sequences, and their applications.

## POSITIONS HELD

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The Ohio State University <i>Research Visiting Assistant Professor</i>	<b>2018 - present</b>
MITRE Corporation <i>Research Intern</i>	<b>Jun - Aug 2015</b>

## PUBLICATIONS

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### Submitted

1. M. Magsino, D.G. Mixon, H. Parshall. “Kesten-McKay law for random subensembles of Paley equiangular tight frames”. *Submitted, preprint available at <https://arxiv.org/abs/1905.04360>*.

### Journal Articles

2. M. Magsino. “Constructing Tight Gabor Frames Using CAZAC Sequences” *Sampling Theory in Signal and Image Processing*, 16:73-99, 2017.

### Book Chapters

3. J.J. Benedetto, K. Cordwell, and M. Magsino. “CAZAC Sequences and Haagerup’s Characterization of Cyclic  $N$ -roots”. *New Trends in Applied Harmonic Analysis: Sparse Representations, Compressed Sensing, and Multifractal Analysis II*. Birkhäuser, 2019.

### Conference Proceedings

4. M. Magsino, D.G. Mixon, H. Parshall. “Linear Programming bounds for cliques in Paley graphs”. *SPIE Optics + Photonics 2019*.
5. M. Magsino, D.G. Mixon. “Biangular Gabor frames and Zauner’s conjecture”. *SPIE Optics + Photonics 2019*.
6. M. Magsino, D. G. Mixon, H. Parshall. “A Delsarte-style proof of the Bukh–Cox bound”. *Sampling Theory and Applications 2019*.

## INVITED TALKS AND PRESENTATIONS

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- Wavelets and Sparsity XVIII **Aug 2019**  
*SPIE Optics + Photonics*
- Algebra, Geometry, and Combinatorics of Subspace Packings **Jul 2019**  
*SIAM Conference on Applied Algebraic Geometry*
- Special Session on Frame Theory **Jul 2019**  
*Sampling Theory in Signal and Image Processing (SampTA)*
- Special Session on Wavelets, Frames, and Related Expansions. **Apr 2018**  
*AMS Spring Western Sectional Meeting*
- AMS Special Session on Recent Advances in Packing. **Mar 2018**  
*AMS Spring Central Sectional Meeting*
- Norbert Wiener Center Seminar **Oct 2017**  
*University of Maryland*

## TEACHING

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### The Ohio State University

- Math 3345: Foundations of Higher Mathematics
- Math 2415: Ordinary and Partial Differential Equations
- Math 1172: Engineering Mathematics A

### University of Maryland

- Math 111: Introduction to Probability
- Math 113: College Algebra and Trigonometry
- Math 115: Precalculus
- Math 140: Calculus I
- Math 246: Introduction to and Classification of Differential Equations
- Stat 100: Elementary Probability and Statistics

### Carnegie Mellon University

- 21-120: Differential and Integral Calculus
- 21-122: Integration, Differential Equations, and Approximation

## MENTORSHIP

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### Undergraduate Research Mentorship

- Abhishek Vijaykumar. TBA **Fa 2019**  
*Project on biangular Gabor frames and Zauner's conjecture*

### University of Maryland Directed Reading Program

- Lauren Fox. "Markov Chains and the Ergodic Theorem" **Fa 2013**
- Christopher Ostermann. "A Philosophical Enquiry of ZFC" **Sp 2016**

## SERVICE AND OUTREACH

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- Norbert Wiener Center Seminar Organizer **Fa 2016-Sp 2018**

- AMS Spring Central Sectional Meeting - Session Organizer **Apr 2020**  
*Special Session on Optimization for Discrete Geometry*
- Mentor for High School Capstone Project **2019-20**  
*Nathan Richardson. Fractal Analysis and its Applications*

## SKILLS

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<b>Languages</b>	English (native speaker), Japanese (advanced proficiency)
<b>Software</b>	LaTeX, Python, Matlab, Mathematica

Last updated: October 13, 2019