

# MARK MAGSINO

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## EDUCATION

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

## RESEARCH INTERESTS

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My primary research area is frame theory, which is a subset of applied harmonic analysis. In particular, I study their applications to signal and image processing, data science, compressive sensing, and optimal line packings.

## PROFESSIONAL EXPERIENCE

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<b>U.S. Naval Academy</b> Assistant Professor	<b>2022 -</b>
<b>The Ohio State University</b> Research Visiting Assistant Professor	<b>2018 - 2022</b>
<b>MITRE Corporation</b> Graduate Research Intern (Summer only)	<b>2015</b>

## PUBLICATIONS

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### Journal Articles

1. M. Magsino, D.G. Mixon, H. Parshall. “Kesten-McKay law for random subensembles of Paley equiangular tight frames”. *Constructive Approximation*, 2020.
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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<b>Wavelets and Sparsity XVIII</b> SPIE Optics + Photonics	Aug 2019
<b>Algebra, Geometry, and Combinatorics of Subspace Packings</b> SIAM Conference on Applied Algebraic Geometry	Jul 2019
<b>Special Session on Frame Theory</b> Sampling Theory in Signal and Image Processing (SampTA)	Jul 2019
<b>Special Session on Wavelets, Frames, and Related Expansions</b> AMS Spring Western Sectional Meeting	Apr 2018
<b>AMS Special Session on Recent Advances in Packing</b> AMS Spring Central Sectional Meeting	Mar 2018
<b>Norbert Wiener Center Seminar</b> University of Maryland	Oct 2017

## COURSES TAUGHT

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<b>The Ohio State University</b>	<b>2018 - 2022</b>
Vector Analysis	
Differential Equations and Their Applications	
Foundations of Higher Mathematics	
Ordinary and Partial Differential Equations	
Engineering Mathematics A	
<b>University of Maryland</b>	<b>2012 - 2018</b>
Introduction to Probability	
Introduction to and Classification of Differential Equations	
Elementary Probability and Statistics	

## MENTORSHIP

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<b>Undergraduate Research Mentorship</b>	
Yixin Xu. Project exploring CAZAC sequences of length 10.	Fall 2021
Abhishek Vijaykumar. Project on biangular Gabor frames and Zauner's conjecture.	Fall 2019
Katherine Cordwell. "CAZAC Sequences and Haagerup's characterization of cyclic $N$ -roots". Co-mentored with John J. Benedetto.	2017-2018
<b>University of Maryland Directed Reading Program</b>	
Lauren Fox. "Markov Chains and the Ergodic Theorem".	Fall 2013
Christopher Ostermann. "A Philosophical Enquiry of ZFC".	Spring 2016
<b>High School Student Mentorship</b>	
June Richardson. "Fractal Analysis and its Applications". Senior capstone project.	2019 - 2020

## SERVICE

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Norbert Wiener Center Seminar Organizer	Fall 2016 - Spring 2018
Special Session on Optimizaiton for Discrete Geoemetry – Session co-organizer AMS Spring Central Sectional Meeting. Cancelled due to COVID-19.	Apr 2020

## SKILLS

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**Languages** English (native speaker), Japanese (advanced proficiency)  
**Software** LaTeX, Python, Matlab, Mathematica, Git

Last updated: August 9, 2022