

# MARK MAGSINO

The Ohio State University  $\diamond$  Department of Mathematics  
231 West 18th Street  $\diamond$  Columbus, OH 43210  
(732) 668-6131  $\diamond$  magsino.2@osu.edu  $\diamond$  memagsino.github.io

## EDUCATION

---

<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

---

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

---

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

## PUBLICATIONS

---

### 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

---

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

## TEACHING

---

<b>The Ohio State University</b>	<b>2018 - Present</b>
Vector Analysis	Fall 2020
Differential Equations and Their Applications	Spring 2020
Foundations of Higher Mathematics	Fall 2019
Ordinary and Partial Differential Equations	Spring 2019
Engineering Mathematics A	Fall 2018
<b>University of Maryland</b>	<b>2012 - 2018</b>
<u>Instructor of Record</u>	
Introduction to Probability	Fall 2016
Introduction to and Classification of Differential Equations	Summer 2013
Elementary Probability and Statistics	Spring 2013, Fall 2013
<u>Teaching Assistant</u>	
College Algebra and Trigonometry	Fall 2012
Precalculus	Spring 2014, Fall 2014
Calculus I	Spring 2017, Fall 2017
Introduction to and Classification of Differential Equations	Spring 2015
<b>Carnegie Mellon University</b>	<b>2011 - 2012</b>
Differential and Integral Calculus	Fall 2011
Integration, Differential Equations, and Approximation	Spring 2012

## MENTORSHIP

---

<b>Undergraduate Research Mentorship</b>	
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

## High School Student Mentorship

June Richardson. “Fractal Analysis and its Applications”. Senior capstone project. 2019 - 2020

## SERVICE

---

Norbert Wiener Center Seminar Organizer Fall 2016 - Spring 2018

Special Session on Optimizaiton for Discrete Geoemetry – Session co-organizer Apr 2020

AMS Spring Central Sectional Meeting. Cancelled due to COVID-19.

## SKILLS

---

**Languages** English (native speaker), Japanese (advanced proficiency)

**Software** LaTeX, Python, Matlab, Mathematica, Git

Last updated: October 15, 2020