Mary Angelica Tursi

Contact information
University of Illinois at Urbana-Champaign, Champaign, IL 61801
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Education

University of Illinois, Urbana-Champaign, Champaign, IL
PhD in Mathematics- expected May 2021
Advisor: Timur Oikhberg

Franciscan University of Steubenville, Steubenville, OH
B.S. in Mathematical Sciences and Theology- May 2014

Research Interests

Functional analysis, particularly Banach lattices and their geometry, intersections between functional analysis and descriptive set theory or continuous logic.

Publications and Preprints

2020

1. *Renorming AM-spaces*, (with T. Oikhberg), submitted.
2. *A Separable Universal Homogeneous Banach Lattice, arXiv:2008.06658,* submitted.
3. *Quantifying uncertainty in object detection using Fourier analysis,* (with H. Filippini), *2020,* "Statistical Analysis and Data Mining," submitted.
4. *Order extreme points and solid convex hulls,* (with T. Oikhberg), *The Mathematical Legacy of Victor Lomonosov.*

2019

5. *Separable Universal Banach Lattices*, (with D.H. Leung, L. Li, and T. Oikhberg), Israel Journal of Mathematics.

Talks, Seminars, and Conferences

September 2020 — *A Separable Universal Homogeneous Banach Lattice*, Banach Space Theory Webinar (online), (Invited talk).

September 2020 — *A survey of homogeneity in Banach space structures,* Illinois Analysis Seminar, University of Illinois.

April 2020 — *Displaying Isometry Groups in Banach Lattices*, Graduate Student Logic Conference (GSLC), Notre Dame, (Invited talk, canceled due to COVID).

February 2020 — *Quantifying Uncertainty in Object Detection*, Conference on Data Analysis (CoDA), Santa Fe, New Mexico (poster).

February 2020 — *Lattice Analogues of Convex Hulls and Extreme Points,* AWM Mini-symposium, University of Illinois (lightning talk).

February 2020 — *Displaying Polish Isometry Groups in Banach Lattices,* AWM Graduate Student

	Colloquium, University of Illinois (Invited talk).
September 2019	*Separable Universal Banach Lattices*, Wabash mini-conference, IUPUI.
April 2019	*Universality in Operator Spaces,* Illinois Analysis Seminar, University of Illinois.
May 2018	*Banach Spaces and Descriptive Set Theory,* Illinois Analysis Seminar, University of Illinois.

Applied research experience

May 2018-September 2020 — **Uncertainty Waveforms Project**
Illinois Applied Research Institute, in collaboration with Sandia National Laboratories.

- Trained a convolutional neural network for detecting vehicles in satellite imagery and used various statistical techniques to analyze large datasets using Python and Caffe.
- Developed a framework for quantifying uncertainty in object detection using Fourier analysis.

June 2016 - August 2017 — **Tinitus Project**
University of Illinois, Speech and Hearing Department.

- Applied lead matrices to analysis of fMRI scans of test subjects with Normal Hearing, Hearing Loss, and Tinnitus. Lead Matrix analysis provided a richer approach to examining the scans than the usual correlation matrix analysis.

Teaching Experience

Merit Teaching Assistant, University of Illinois
Designed rigorous curriculum and worksheets for supplementary credit hour for at risk and underrepresented students and taught in the following courses:

Fall 2020	• Merit Calculus III
Fall 2017-Spring 2018, Fall 2019-Spring 2020	• Merit Calculus I

Teaching Assistant, University of Illinois
Directed interactive discussion sessions for the following courses:

Fall 2014, Spring 2017	• Calculus II
Fall 2015, Fall 2016	• Calculus III
Spring 2015	• Business Calculus

Spring 2016 • Applied Linear Algebra

Outreach and service

Fall 2020 **Illinois Geometry Lab**
- Graduate student supervisor for undergraduate research project on theorem proving using “Pecan.”
- Advises students on the research writing process.

Fall 2020 **Colloquium committee**
- Graduate student member.

Fall 2016-2018 **Interdisciplinary Graduate Society**
- Founding member and treasurer.
- Worked to organize talks and social gatherings for graduate students of different fields.
- Gave various accessible talks on mathematical topics to non-mathematical audiences.

Other related skills

Languages
English (native), Spanish (native), Latin (translation), Classical Hebrew (translation).

Programming skills
Python (proficiency), MATLAB (proficiency), C++ (experience), Machine learning.

Awards and Fellowships

Fall 2014, Fall 2015, Spring 2016 **Teacher Ranked as Excellent**
University of Illinois.

Summer 2014 **Summer Predoctoral Institute Fellow**
University of Illinois.

2014 **St. Anthony of Padua Alpha Phi Delta Award**
Franciscan University of Steubenville, equivalent to a “first in class” designation.

2014 **The Mathematics Award**
Departmental award, Franciscan University of Steubenville.