

Career Panelist Introduction

Derek DeSantis – Postdoctoral Researcher/ Center for Nonlinear Studies at Los Alamos National Labs

Tell us a bit about your current career.

My current work focuses on developing interpretable unsupervised machine learning for application in the climate sciences. In particular, I work on the theory of tensor factorizations and explainable large-scale clustering. My thesis initiated the study of operator algebras modeling the dynamics of Hilbert space frames. These objects could be thought of as a generalization of representations of graph C^* -algebras.

How would you describe the research you did as an grad student or that in which you're currently involved?

My thesis initiated the study of operator algebras modeling the dynamics of Hilbert space frames. These objects could be thought of as a generalization of representations of graph C^* -algebras.

What advice did you wish that you received when you were a student?

Early on, critically think about the career you want to have. If you truly want to spend your days proving theorems and teaching students at a university, then select a research topic in vogue. Becoming the worlds expert in a narrow field is more likely to yield success on this route. If you want to want to do something that has a direct impact on people, then focus on becoming the best mathematician possible, and do whatever you think is interesting for research. A generalist with curiosity and the ability to adapt is more functional in this space.

Mike Hartglass – Assistant Professor at Santa Clara University

Tell us a bit about your current career.

An equal mix of teaching and research. I teach 2 undergraduate classes per quarter with level ranging from introductory calculus to real analysis,. I mentor students on their honors theses. I also must keep an active research program.

How would you describe the research you did as an grad student or that in which you're currently involved?

My research is primarily in the operator algebraic aspects of free probability with some interest in subfactors. My adviser, Vaughan Jones, was the inventor of modern subfactor theory, but I switched gears to free probability as my thesis studies a free probabilistic construction involving planar algebras

What advice did you wish that you received when you were a student?

I would advise any interested student to go to as many seminars as possible to figure out what subjects sound appealing. Even if a talk is hard to follow, it is a good idea to have exposure to other mathematicians' ideas. Even getting 5 minutes of content out of a talk is very beneficial. I also advise to not be scared to ask questions when a peer (or someone older) explains something that you do not quite understand. Often the most learning can occur when there is confusion followed by a discussion.

Paulette N. Haywood-Watson – CEO and Founder/ Polymath Advisory Consortium LLC and Adjunct Math Instructor at various universities

Tell us a bit about your current career.

The short answer is that I have fun and do whatever I want. My company works with small businesses to streamline and automate their processes and support them in their short and long term goals. From time to time I also tutor kids in math. As an adjunct instructor I teach in person and online math courses and mentor students. My dissertation was a combination of 4 individual projects I worked on.

How would you describe the research you did as an grad student or that in which you're currently involved? My research was in the general area of functional analysis. I studied operator algebras that are C^* -algebras built from graphs. I also studied dynamical systems, specifically focusing on symbolic dynamical systems of various types. My work had two distinct strands: C^* -algebras built from irreversible dynamical systems and group actions on graph C^* -algebras and their generalizations.

What advice did you wish that you received when you were a student?

First and foremost, enjoy yourself. If you wish, you can use grad school as an experience to learn more about yourself. In retrospect I realize that graduate school provided me with many opportunities and experiences to learn and develop skills that are highly in demand in the work force. I expected to finish my Ph.D. as an expert in math and found that I was also an expert in critical thinking, logic, problem solving, and learning whatever I'm interested in. My advice to grad students is my advice for life: learn about yourself, figure out what makes you happy, and do that.

Lara Ismert – Assistant Professor of Mathematics at Embry-Riddle Aeronautical University

Tell us a bit about your current career.

My primary duty is teaching; I teach 3 courses (up to 12-credits) per semester. My other responsibilities are typical of a tenure-track position at a teaching-oriented institution: conduct research, publish some papers, and provide service to the university.

How would you describe the research you did as an grad student or that in which you're currently involved? The title of my Ph.D. thesis was "Unbounded Derivations on C^* -algebras and the Heisenberg Commutation Relation." My work contained two projects—one solo project and the other with a collaborator, but both projects resulted in being able to say something about pairs of operators which could satisfy the Heisenberg Commutation Relation. I'm super interested in direct connections with quantum physics in the form of unbounded operators/derivations, KMS states on C^* -algebras, and C^* -dynamical systems.

What advice did you wish that you received when you were a student?

Oh boy. Be an advocate for yourself. Thesis advisors vary widely in terms of their promotion of your work and their networking on your behalf. Try to be confident in your interactions with more senior mathematicians and attend conferences that feel important to you. As a graduate student, you are certainly an "apprentice," but you should not mistake that for meaning you do not have the right and responsibility for paving your career path and forging relationships within your research community.

Nura Patani – Senior Consultant & Health Actuary

Tell us a bit about your current career.

I provide actuarial consulting to assist large public sector organizations with quantifying and managing the risks associated with the health and other benefit programs they offer to participants.

How would you describe the research you did as an grad student or that in which you're currently involved?

My dissertation research was in C^* -correspondences and topological dynamical systems associated to generalizations of directed graphs.

What advice did you wish that you received when you were a student?

Keep your current work in perspective...the contributions you will make to the field through your original research towards your PhD are important. Also important, however, is a clear understanding of the skills you are developing through this process, and how you can translate those to whatever area you choose to focus on after grad school.