University of Kentucky
College of Arts & Sciences
Mathematics

Courtney B. George

702 Patterson Office Tower
Lexington, KY 40506-0027
courtney.george@uky.edu

Dear members of the search committee,

I am excited to apply for the position of Visiting Assistant Professor in the Department of Mathematics at University of California, Riverside.

My research involves the interplay between algebraic and tropical geometry. I am particularly interested in studying projectivized toric vector bundles to identify classes that meet the property of being a "Mori dream space." While this property can be algebraically tedious, there are ways to classify spaces using exclusively combinatorial data. Since Mori dream spaces behave nicely under the minimal model program, there is much interest in identifying which spaces have this property, but no complete classification yet exists. In my research, I have used techniques in tropical geometry to give an entirely combinatorial sufficient condition for a space to be Mori dream. I have also written an algorithm in Macaulay2 to present generators and relations of the Cox ring corresponding to these projectivized toric vector bundles.

In my nine semesters of teaching experience, I have served as both a primary instructor and as a recitation leader. I have taught courses including *College Algebra*, *Mathematics for Elementary Educators*, and *Matrix Algebra.* Currently, I am the instructor for a section of *Corequisite to College Algebra,* a course that I helped design two years ago when I was asked to teach the inaugural section. Throughout my time teaching, I frequently encounter students who feel like they are simply "not math people." My goal is to break this mentality by providing alternative instruction and grading structures that better support student learning. In the past, this has included specifications-based grading, where assignments are graded either "Pass" or "Revise" and work can be resubmitted as necessary, and standards-based grading, where the course is divided into learning outcomes that the students are given multiple attempts to demonstrate mastery in. For this work, I was honored to receive the UK Arts & Sciences Outstanding TA award in May 2022.

Through my position as a researcher and instructor, I pride myself on advocating for social justice in my classroom and my community. I have served on my department's Diversity, Equity, and Inclusion Committee, where I established both an in-person and digital library of resources addressing issues of race, gender, class, and educational background. I also co-founded the University of Kentucky chapter of Spectra, an association for LGBTQ+ mathematicians and allies. I make a commitment to a lifetime of educating myself and others about diversity, equity, and inclusion.

I would be honored to join the esteemed faculty at University of California, Riverside. I believe that my experience in developing and teaching a diverse and inclusive curriculum, my passion for algebra research and mentorship, and my advocacy for diversity, equity, and inclusion initiatives would make me a valuable contribution to your department. Thank you for your consideration.

Sincerely,

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