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Dear Committee Members,

I am writing to apply for the tenure-track assistant professorship in the Department of Mathematics and Statistics at California State University, Sacramento. Currently, I am a postdoctoral researcher in the Mathematics Department at Brown University, a position I have held since August 2022. I received my Ph.D. in Mathematics from the University of Wisconsin-Madison under the guidance of my advisor Professor Daniel Erman in 2020. From 2020-2022 I was an NSF Postdoctoral Fellow in the Mathematics Department at the University of California, Berkeley. I was a postdoctoral fellow at the Mathematical Sciences Research Institute for the 2020-2021 academic year.

I am especially interested in this position because during the Fall of 2023 while working remotely at Brown University, I had the opportunity to teach at San Francisco State University, and from this, I saw the amazing impact the California State University system has on helping a wide range of students, especially those from underrepresented and underserved groups, achieve their dreams. This proved to be one of the most rewarding teaching experiences I have ever had, and I am motivated to pursue similar experiences where I can support and work with students from a wide range of backgrounds. In this way working at California State University, Sacramento, and contributing via my research, teaching, and service would be a dream. This is furthered by the fact that much of my family lives in California, and I would love to be near them.

Further, the Department of Mathematics and Statistics's commitment to just, equitable, and inclusive education aligns extremely well with my passion for making mathematics a more inclusive community and supporting students from underrepresented communities. For example, I have worked to make mathematics more inclusive of people from underrepresented groups by founding events like Trans Math Day and leading Spectra: the Association for LGBTQ+ Mathematicians. To promote the success of mathematicians from underrepresented groups, I organized numerous national and international workshops and conferences. Further, in the classroom, I have sought to implement practices to make all students feel welcome, valued, and supported.

Going forward, I am excited to continue working hard to promote these values through my research, teaching, and service. In particular, I would be excited to help develop a curriculum that centers on the lives, experiences, and needs of underrepresented students. I am committed to continually trying to refine and advance my teaching practices, by seeking out new ways to better center the needs of students. Further, I would like to organize an undergraduate research experience for LGBTQ+ students.

My research interests lie in the intersection of algebraic geometry and commutative algebra with strong connections to computational and applied algebra. I am interested in using homological, combinatorial, and computational methods to study the geometry of algebraic varieties. Further, I am passionate about promoting inclusivity, diversity, and justice in the mathematics community.



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This passion extends throughout my teaching, where I am dedicated to creating an interactive and supportive classroom environment that helps students thrive.

Much of my work carries a significant computational component. I have co-authored four published software packages, and multiple publications that revolve around using high-throughput high-performance computing to explore new mathematical phenomena. Computation is a driving component of my research and teaching, and I would love the opportunity to share my views on computation, mathematics, and science with my colleagues and students.

My research output includes 15 papers, with publications in journals such as *Algebra & Number Theory*, *Geometry & Topology*, and *Experimental Mathematics*, as well as, multiple published software packages. Below are a few of the non-research highlights of my file.

- I was awarded an *NSF Postdoctoral Research Fellowship*, an *NSF Graduate Research Fellowship*, and I have secured over \$100,000 in conference grants including 4 NSF conference grants.
- I served as the inaugural president for *Spectra: The Association for LGBTQ+ Mathematicians*, and continue to serve on the organizations board.
- I have organized 12+ conferences, workshops, and special sessions, including multiple events aimed at supporting and promoting mathematicians from generally underrepresented groups, especially women and LGBTQ+ mathematicians.
- I was awarded the highest departmental and campus-wide teaching awards at the University of Wisconsin - Madison, the Capstone Teaching Award (2019) and the Teaching Assistant Award for Exceptional Service (2018), awarded to 1 and 3 students each year respectively.

With my application, I include a curriculum vitae, a research statement, a teaching statement, a diversity statement, two representative publications, and a list of three references.

Please do not hesitate to contact me if there is anything else I can provide, or with any questions, and thank you in advance for your consideration.

Sincerely,

Juliette E. Bruce

Juliette Bruce
Postdoctoral Research Associate