BROWN

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Dear Committee Members,

I am writing to apply for the tenure-track assistant professorship at Saint Mary's College of California. 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. Additionally, I was a postdoctoral fellow at the Mathematical Sciences Research Institute for the 2020-2021 academic year.

I am especially interested in this position given its cross-disciplinary nature and Saint Mary's College's commitment to providing an excellent liberal arts education to a diverse student body (including many first-generation students). For example, Saint Mary's College's January term sounds like an amazing resource for the students and an opportunity. I would love to take part in it, and I have a number of ideas for January term courses that I would love to teach: a course on non-linear/applied algebra, or a course exploring the ways mathematics and gender and sexuality have historically intersected, a course on the ways computation and data science can be used in algebra and geometry.

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. 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 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 served on the Software Presentation Committee for the International Symposium for Symbolic and Computational Algebra.
- 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 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

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