

DIVERSITY STATEMENT

The fact that one must still write a diversity statement is itself a reminder that what should be axiomatic remains aspirational.

My commitment to diversity, equity, and inclusion in mathematics comes from personal experience and a deep conviction that the health of any discipline depends crucially on it [2]. Having studied and worked in academic and corporate environments across three countries — India, the United States, and the United Kingdom — I have seen firsthand how inclusive perspectives enrich scientific thought. Yet many talented individuals still face structural barriers that limit their access, and I believe it is the responsibility of each of us to work actively to redress these imbalances.

Mentoring and Support for Underrepresented Groups: I take mentoring very seriously. At the University of Warwick, I led an undergraduate project as part of Warwick's Summer Undergraduate Mathematical Research Programme, which provided research experience to students from underrepresented groups. The project, focused on Pfaffian functions, brought together four undergraduates, including two women, and produced original mathematical results while helping students develop research-level writing and collaboration skills. Among them was a student of a particularly shy disposition, which made me more attentive to the range of personal and social factors that can affect participation. Since then, I have made it a point to create environments where students of all identities, including LGBTQ+ students and others who may feel uncertain about belonging, feel supported and able to contribute fully. I am also currently mentoring a female PhD student at the Indian Institute of Technology Bombay on quantum algorithms. While one might feel that individual efforts are like spoonfuls of water trying to fill a tank, I believe that a few strong role models can have an exponential impact in shaping a more diverse and inclusive mathematical community.

Axiom 1. Mathematical talent is distributed equally among different groups, irrespective of geographic, demographic, and economic boundaries.

Axiom 2. Everyone can have joyful, meaningful, and empowering mathematical experiences.

Axiom 3. Mathematics is a powerful, malleable tool that can be shaped and used differently by various communities to serve their needs.

Axiom 4. Every student deserves to be treated with dignity and respect.

I have extended my mentorship beyond academia. I serve as a mentor in the *Prison Math Project*, working with an incarcerated individual in New York studying mathematics at Bard College, guiding him through coursework and research projects. This experience showed me how transformative mathematical thinking can be when it reaches unexpected places. I have also worked to reduce inequity at the earliest stages of academic progression: during the COVID-19 pandemic, I mentored PhD applicants

from underrepresented backgrounds, advising them on personal statements and university selection. This reinforced my belief that talent and curiosity are universal, even if opportunity is not, and deepened my commitment to equitable recruitment practices. I strongly subscribe to Federico Ardila's axioms [1] and will always act in accordance with them.

Inclusive Practices: I believe that diversity should extend not only to individuals but also to the geographical reach of collaboration. I conceived and wrote a successful proposal that was awarded the *Stellenbosch–Warwick Joint Seed Fund*, which fosters collaboration between researchers at the University of Warwick, Stellenbosch University, and the African Institute for Mathematical Sciences. Through this initiative, we secured substantial funding to provide researchers and students from South Africa opportunities to visit Warwick and build connections with mathematicians in the UK. I am equally eager to learn from them mathematically and strengthen ties with mathematicians across Africa. I hope to keep collaborating with, learning from, and including mathematicians from all parts of the world, helping build a truly global mathematical community.

As the main organiser of the conference *OMIGAWD: O-minimal Geometry – Interactions, Applications, and Wider Developments* (Warwick, 2025), I worked deliberately to foster broad participation and representation. While the conference topic, o-minimal geometry, is highly technical, I brought together speakers exploring its connections with a range of areas – from statistical learning theory to quantum field theory. We achieved strong participation from women mathematicians (30% of the entire pool) and ensured wide geographic representation, including invited speakers and attendees from nearly twenty countries – no small feat given that research in o-minimal geometry is not widespread. To reduce barriers, I secured an additional £3,000 from the Mathematics Research Centre at Warwick, allowing us to offer financial support to students and early-career researchers from underrepresented backgrounds. I also made the conference hybrid, enabling online participation for those unable or unwilling to travel. The result was a vibrant, interactive meeting that exemplified

the kind of mathematical community I aim to cultivate.

A valuable outcome of this conference was establishing contact with a motivated young researcher at Université Ibn Tofail in Morocco, who works in an area close to mine. I am currently providing him with guidance on networking and supporting his efforts to build a stronger research profile. While this interaction is still in its early stages, my aim is to assist him in preparing an application to the London Mathematical Society's *Scheme for Collaboration with Developing Countries*, with the goal of giving him an opportunity to visit the UK and build contacts with researchers there.

Teaching: Through teaching, I have worked to make mathematics more approachable and engaging. As part of the *London Maths Outreach Programme*, I taught a course for high-school students entitled *Effective Methods in Algebra*. I designed the course to introduce foundational ideas and gradually build toward giving students a glimpse of advanced research topics in an inspiring and understandable way, particularly for students who might not otherwise encounter university-level mathematics. Through personal communication, I know of at least one student for whom this experience directly influenced his decision to study mathematics.

At Purdue, I took a proactive approach to teaching and departmental service, ensuring that every student felt supported in their development. This often meant spending additional time with students outside of class to help them build the necessary background to follow advanced courses. This commitment was recognised through the *Outstanding Service Award* (2016) at Purdue, reflecting my efforts to make teaching environments welcoming to all students.

Equity in Professional Life: My own experience balancing research and parenting has had a definitive impact on my sensitivity to issues of equity and work-life balance in academia. During my postdoctoral positions, I often had to manage the demands of raising our two daughters alongside my wife, who was pursuing a PhD while also working at a corporate firm. These experiences have given me first-hand insight into the challenges caregivers, particularly women, face in maintaining research momentum in mathematics. I have become a strong advocate for flexible academic structures, such as hybrid events and remote work options, that enable researchers at all stages to thrive.

Looking Ahead: Looking ahead, I will continue to teach with care for every student, helping those who feel underprepared gain the confidence to succeed. My background in both pure mathematics and computer science allows me to support a wide range of interests and approaches to learning. I aim to build a research group that reflects these values and to make participation in mathematical life genuinely accessible through flexible and inclusive practices. Above all, I aim to sustain an environment where curiosity and engagement with mathematics matter most.

Diversity, equity, and inclusion in mathematics are not optional extras; they are the conditions that make the best mathematics possible. My goal is to continue shaping spaces where these principles are not only discussed but lived.

References

- [1] Federico Ardila-Mantilla. "Todos cuentan: Cultivating diversity in combinatorics". In: *Notices of the AMS* 63.10 (2016), pp. 1164–1170.
- [2] Katherine W Phillips et al. "How diversity makes us smarter". In: *Scientific American* 311.4 (2014), pp. 43–47.