

# Statement of Contributions to Diversity

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I am a service-oriented mathematician, who believes that the true value of my scholarship is the opportunities I am able to provide for others. I aspire to help make academia more welcoming, more transparent, more diverse, more inclusive, and less intimidating.

**Commitment to improving diversity, equity, and inclusion.** I was excited to join the Colorado State Mathematics Department’s inaugural committee on Diversity, Equity, and Inclusion in 2020. As part of my role for this committee, I am the departmental liaison for QSIDE: The Institute for the Quantitative Study of Inclusion, Diversity, and Equity, which focuses on data science, social science, activism, and the social justice research that emerges at their intersection. Our QSIDE consortium membership allows Colorado State mathematics students, postdocs, and faculty to participate in the QSIDE colloquium and Data4Justice conferences. One undergraduate student shared feedback that the Data4Justice conference was the first time she felt “at home” in higher education. I recently applied for and was awarded a small internal grant from the College of Natural Sciences at Colorado State to expand our single-departmental QSIDE consortium membership to instead be a multi-departmental membership, joint with computer science and statistics.

In 2022, I joined the Colorado State Mathematics Department’s Graduate Committee, in order to learn how our admissions processes could better recruit, admit, and retain a more diverse cohort of masters and PhD students. I am fortunate to have advised two female graduate students to the completion of their PhD degrees, and they have gone on to research postdoctoral positions at the University of Tennessee and the University of California, Los Angeles. I have also published research papers or advised honors theses with five different female undergraduate students. We must work to provide opportunities in mathematics for those from historically marginalized groups, and I believe that mentorship on an individual level is an effective way to guide all students to reach their potential.

**Track record of service leadership.** The applied topology community remained quite active during the COVID-19 pandemic, due in part to the Applied Algebraic Topology Research Network (AATRN). AATRN began in 2014 as an outgrowth of the thematic year on applied topology at the Institute for Mathematics and its Applications in Minnesota, where I was a postdoc. I joined the AATRN leadership as an Assistant Director in 2016, and became the Executive Director in 2017. Our flagship program is an online seminar that has been in existence since 2014. When the pandemic began, we realized that we were in a position to serve. We invested a great deal of time and energy to expand our programs to provide opportunities for researchers worldwide, especially early career researchers. The new AATRN initiatives since the start of the pandemic include:

- Transforming our every-other-week flagship seminar to now meet every week, including summers, to provide opportunities for more speakers;
- Launching an interview series, featuring 11 recorded interviews of distinguished members of our field (Herbert Edelsbrunner, Vanessa Robins, Gunnar Carlsson, Massimo Ferri, Kathryn Hess, Lisbeth Fajstrup, Robert Adler, Shmuel Weinberger, Robert Ghrist, Frédéric Chazal, Konstantin Mischaikow) so far, with three interviews upcoming (Yusu Wang, Claudia Landi, Leonidas Guibas);

- Regular tea times (10 so far) to keep the community together;
- Annual poster sessions (3 so far) to allow early-career researchers to share their work, with 52 posters presented, and with one poster session organized with the Asia Pacific Seminar on Applied Topology and Geometry in a time zone amenable to participants from Asia and Australia;
- Annual tutorial-a-thons (2 so far), in which each attendee creates a tutorial video on a mathematical topic of their choosing (60 such videos created so far); see our article *How to Tutorial-a-thon* for the Notices of the American Mathematical Society;
- Developing two new spin-off AATRN seminars, one on Topological Complexity led by Professors Dan Cohen, Jesus Gonzalez, and John Oprea (24 talks), and the other on Vietoris–Rips complexes led by Professor Facundo Mémoli and myself (36 talks);
- Co-hosting a weeklong workshop on *Bridging Applied and Quantitative Topology*, the early career talks that were accepted for ATMCS 9 in 2020, and a month-long seminar series, joint with the *Statistical Thermodynamics & Molecular Simulations* seminar, at the intersection of mathematics and computational chemistry;
- Writing an article *How Do I . . . Develop an Online Research Seminar?* for the Notices of the American Mathematical Society; and
- Launching a new webpage [www.aatrn.net](http://www.aatrn.net).

As a result of these investments, the AATRN YouTube channel now has over **475 videos**, **over 24 hours watched per day**, and **over 4,500 YouTube subscribers**. The growth is reaching international audiences, with over 5% of our online viewership from India and over 3% from Cameroon, for example.

One of our goals with the Applied Algebraic Topology Research Network (AATRN) is to provide a platform representing the diversity of researchers in our area, and we recruit speakers and distinguished interviewees with this goal in mind. Unfortunately, when AATRN was formed in 2014, all members of the leadership (a director and an advisory board with three members) were men. I joined as a second director in 2016, and became the lone director in 2017. Under my leadership we have since recruited four new AATRN co-directors, three of them women, and two new Advisory Committee members, both women. I am proud that our AATRN leadership now better represents the community we serve. In order to diversify the voices who play a role in inviting speakers, we are in the process of forming a rotating AATRN Speaker Selection Committee. Our initial invitees to serve on this committee are Lori Ziegelmeier, Emerson Escolar, Barbara Giunti, and Facundo Mémoli due to their connections to liberal arts colleges and research universities in North and South America, Europe, and Asia, and in future years researchers from all continents will serve on this committee. In my role as Executive Director of AATRN, I have had the pleasure of forming professional connections with graduate students from Africa — these connections began at virtual AATRN events such as our tea times, evolved into recurring individual Zoom meetings, and now I am serving on the PhD thesis committees for three students from Nigeria, Cameroon, and Ghana. These students are actively contributing the applied community: for example, graduate student Péguy Kem-Meka from the African Institute of Mathematical Sciences has created two of the ten most-watched AATRN tutorial videos (with 3,400 and 2,300 views).

I look forward to future opportunities to serve the mathematical community as we continue to progress towards becoming a more diverse, supportive, and inclusive community.