the view from aim 2024

Syzygies and Mirror Symmetry

A Hot Topics Workshop

Positive Math Identities

Supporting Diverse Students and Educators

Joining Forces

AIM and Caltech Forge a New Collaboration

American Institute of Mathematics

Growing Positive Math Identities
Supporting Diverse Students and Educators

In September, AIM hosted a group of 55 committed advocates for math education at a workshop entitled "Toward a Shared Vision for Supporting the Mathematics Identities of Students and Educators from Historically Underrepresented Communities." Sponsored by a planning grant from the Eddie Bernice Johnson INCLUDES program of the NSF, the workshop was unique in bringing together individuals from a variety of sectors of the mathematics education ecosystem: K-12 teachers and higher education faculty, mathematicians and mathematics education researchers, and leaders of nonprofits and community organizations providing out-of-school time math engagement opportunities. The workshop was co-organized by planning grant PI Brianna Donaldson, AIM's Director of Special Projects, along with David Crombecque (USC/AIM), Alessandra Pantano (UC Irvine), Roberto Pelayo (UC Irvine), and Robin Wilson (Loyola Marymount University).

This page, from top: Participants mingle before the workshop dinner at El Portal. Shelly Jones gives an opening address about culturally relevant teaching. Opposite page: Claudia Rodriguez-Solorio talks about supporting the mathematical identities of Latinx students.

The goals of the workshop were to build a shared understanding of what we know about supporting the math identities of students and educators from historically underrepresented communities, to contribute toward a document outlining a "strategic plan" for the field, and to seed future collaborations among participants. It was an action-packed weekend, kicking off with a networking session for L.A.-based participants on Friday afternoon and a banquet for everyone at local restaurant El Portal on Friday evening. Saturday and Sunday mornings included several overview talks considering research-based, experiential, and systems-level perspectives. Each day, these overview talks were followed by a session of five-minute "Lightning Talks," during which participants shared key ideas from their equity-focused work in order to spark further conversations.

The Saturday afternoon working group sessions were a major highlight of the workshop. First, participants split into groups to generate questions for further investigation pertaining to the following six topics: active teaching and learning; building identities and belonging; joyful and out-of-school math; mentoring and critical transition points; systems-level approaches; and teacher preparation, development, and leadership. Using the AIM Moderated Problem Session approach, which is employed in every math research workshop hosted at AIM, the groups were able to generate dozens of questions that will eventually be combined into a problem list for the field. Later in the afternoon, participants split into 10 different working groups that took a deeper look at some of these questions. One participant commented, "I can't reiterate enough how great it was to see such a variety of people across the K-16 spectrum. I am glad you gave us so much time to collaborate."

Key themes that emerged from the workshop

included the importance of fostering belonging, considering the cultural relevance of curricula, providing rigorous yet joyful learning opportunities, and finding ways to effect systems-level change. Ongoing work is focusing on producing a publicly available white paper based on the outcomes of the workshop. Several of the working groups are also continuing to collaborate. As one participant remarked, "This workshop both spoke to my heart and has me thinking about tangible strategies to work within the system to attend to identities." ■

— Brianna Donaldson

Call for Proposals

AIM hosts focused workshops in all areas of the mathematical sciences. AIM's focused workshops are distinguished by their emphasis on a specific mathematical goal, such as making progress on a significant unsolved problem, understanding the proof of an important new result, or examining the convergence of two distinct areas of mathematics. AIM SQuAREs allow dedicated groups of four to six mathematicians to pursue an ambitious research program, with three weeklong in-person meetings held over the course of three years. AIM Research Communities are larger collaborative efforts involving at least 40 people, organized around a particular area of mathematics research, with online meetings and activities.

Each year, AIM accepts proposals for Workshops, SQuAREs, and Research Communities. Proposals are short (generally 2-3 pages) and should focus on the mathematical goals of the activity. The proposal submission window is Aug. 1 – Nov. 1 each year, and the proposal submission form is available at https://aimath.org/ during the submission window. The AIM Scientific Board meets in early December to select programs to support for the following year. AIM staff are always willing to answer questions from potential organizers at workshops@aimath.org.

Did You Know?

Every AIM workshop has an open call for applications, and successful applicants are fully funded, including travel and accommodations. Applications are generally due about five months before the workshop takes place. Workshops in 2024 include:

- **Post-quantum group-based cryptography**, April 29-May 3
- **High-dimensional phenomena in discrete analysis**, May 13-17
- **Groups of dynamical origin**, June 3-7
- **Symmetry-breaking of optimal shapes**, June 17-21
- **Formalising algebraic geometry**, June 24-28
- **Scissors congruences, algebraic K-theory and Steinberg modules**, July 8-12
- **Graph Theory: structural properties, labelings, and connections to applications**, July 22-26
- **PDE methods in complex geometry**, August 26-30

You can always check out upcoming workshops on the AIM website: https://aimath.org/workshops/.