POM SIGMAA

Philosophy of Mathematics Special Interest Group of the MAA

From the Chair

Jason Douma, chair, POMSIGMAA

As this will be my final "From the Chair" newsletter contribution during my term as POMSIGMAA chair, I find myself reflecting on what has—and has not—changed in and around our SIGMAA during my two years in this role.

First, and perhaps most importantly, we should underscore the traditions that continue, as strong now as ever. POMSIGMAA continues to sponsor delightful paper sessions on topics that are accessible to practicing mathematicians and mathematics educators with an interest in philosophical questions related to our field. Our SIGMAA sponsored a contributed paper session on Logic and Intuition in Everyday Mathematics (Mathfest 2022, Philadelphia), an invited/contributed paper session on Current Directions in the Philosophy of Mathematics (JMM 2023, Boston), a contributed paper session on Mathematics and Philosophy (JMM 2024, San Francisco), and a contributed paper session on How My Philosophy of Mathematics Affects My Teaching (Mathfest 2024, Indianapolis). All were well attended an very well received, with engaging conversations interspersed with excellent talks. In addition, POMSIGMAA continues to feature excellent keynote presentations from distinguished guest speakers, most recently including Yale Weiss (Mathfest 2022), Jody Azzouni (JMM 2023), Arezoo Islami (JMM 2024), and Timothy Bays (Mathfest 2024). At JMM 2025 in Seattle, we will be honored to hear from our incoming POMSIGMAA chair, Tom Drucker. We are deeply grateful for the wisdom and generosity of our invited lecturers. As members and friends of POMSIGMAA, you have learned to expect this level of programming from us, and I hope your expectations have been well satisfied.

The past few years have also been marked by some changes in our environment, which might inform our activities and priorities in the years ahead. New developments in the way mathematics is learned and practice (such as new insights from cognitive science, the rise of generative artificial intelligence, an evolving notion of "quantitative literacy," and emerging pedagogical strategies such as inquiry-based learning and standards-based assessment) raise interesting sets of philosophical questions for us to consider. On a more practical level, diminished access to travel funds (at many institutions) should prompt us to consider forms of virtual programming or local programming (e.g. at section meetings) that could provide better access for some members of our community, without abandoning our commitment to quality programming at national meetings. Finally, new (or new-ish) technologies may provide us with novel ways to share content and conversations with the POMSIGMAA community. (Podcasts, anyone?) Like many of you, I have trained myself to receive calls to "pivot" or "adapt" with a certain degree of healthy skepticism; but I genuinely do believe our SIGMAA has opportunities at hand which may enable us to extend our mission without diminishing our impact.

At the end of January 2025, I will officially transition to the office of Past Chair, and Tom Drucker will begin his term as your experienced, engaged, and eminently capable Chair. Thank you, Tom, and thank you to all of the POMSIGMAA Executive Committee, for your support, collaboration, and collegial spirit. It takes a village to keep an organization moving, and I am grateful for the opportunity to be part of these "village people."

Philosophy of Math at the Joint Math Meetings

POMSIGMAA Guest lecture:

Thomas Drucker

Emeritus, University of Wisconsin–Whitewater

From Computing Machinery and Intelligence to Snake Oil

Friday, January 10, 2025, 5:45 - 6:45 p.m., 609, Seattle Convention Center Arch at 705 Pike

Abstract: It is impossible to ignore the ubiquity of artificial intelligence as a tool even in watching television. This talk will look at some of the triumphs of artificial intelligence since its discussion in the papers of Alan Turing about 75 years ago. In particular, it will look at Turing's way of dealing with objections to the possibility getting machines to do the kind of mental work usually associated with humans. It will also suggest that some of the objections which Turing disposes of may still have some force against current applications of AI.

After looking at the story of how computers came to be such masters of the chessboard, the talk will conclude by considering some of the objections to the application of artificial intelligence raised by Narayanan and Kapoor in their recent 'AI Snake Oil' volume. Sometimes philosophers prove that a certain application is impossible just before it is carried out in practice, but the goal here will be arguing that their objections will not fall victim in this way.

Note: the speaker advertised earlier, Rajesh Kasturirangan, at first agreed to be our speaker, but due to an unexpected emergency back in India, will be unable to give his talk.

Other Philosophy of Math talks at the Joint Math Meetings

Wednesday, January 8
8 – 8:30 a.m., room 615, "Relating to and with Mathematics", Kori Czuy, Indigenous Science Educator, in CRM-PIMS-AARMS Special Session on Indigenous Voices in Mathematics, I
9:30 – 10 a.m., room 615, Neełtut niʼiłkʼeh ołtag: Perceptions and uses of mathematics on the San Carlos Apache Reservation, Philip Stevens, University of Idaho, in CRM-PIMS-AARMS Special Session on Indigenous Voices in Mathematics, I
10:30 – 11 a.m., room 615, Grounding Euclid in Diné territory: tensions and dexterities of culture, language, and cognition in mathematics, Jessica K Benally, University of California, Berkeley, in CRM-PIMS-AARMS Special Session on Indigenous Voices in Mathematics, I
2:30 – 3 p.m., Yakima 2, Kristopher Brown, Topos Institute, Category theory applied to inferentialist philosophy of language, in AMS Special Session on Applied Category Theory, II

Thursday, January 9
8:30 – 9 a.m., room 618, Mechanization of mathematics: who decides, Michael Harris, Columbia University, in AMS Special Session on Mathematics, AI, and the Social Context of Our Work, I
11-11:30 a.m., room 619, Negation as a foundation and as an open question: how deep conceptual analysis can lead to mathematical innovation in the classroom Sonia de Jager, Erasmus University, Rotterdam, in AWM Special Session on Exploring Mathematics through the Arts and Pedagogy in Creative Settings

Friday, January 10

9 – 9:30 a.m., Chelan 5, [Immersive Theatre, Interactive Fiction, and Multivariable Calculus](#), Andrew M H Alexander, The Nueva School, in AMS Special Session on Methods of Compassionate Math I

1 – 1:30 p.m., room 610, [A Reflection on Artist Statements: Mathematics in Creating Art](#), Mara Alagic, Wichita State University, in SIGMAA Special Session on Mathematics and the Arts, III

2:30 – 3 p.m., Chelan 5, [Peirce's Existential Graphs and String Diagrams for First-Order Logic](#), Nathan Haydon, University of Waterloo, in AMS Special Session on Methods of Compassionate Math II

3 – 3:30 p.m., Chelan 5, [The Flower Calculus: an interactive and diagrammatic approach to constructive proofs](#), Pablo Donato, Grothendieck Institute, in AMS Special Session on Methods of Compassionate Math II

4 – 4:30, Chelan 5, [Crafting Mathematical Narratives: A path to connecting components](#), Kristine Bauer, University of Calgary, in AMS Special Session on Methods of Compassionate Math II

Saturday, January 11

8:30 – 9 a.m., Yakima 1, [A Survey of Learning Rules: In Search of Unity in Diversity](#), Hanti Lin, University of California, Davis, in AMS Special Session on Categorical Generalizations of Conditionalization, I

2 – 2:30 p.m., room 608, [Counter-Resolution: Inference and Human Understanding in Automated Reasoning](#), Stephanie Dick, Simon Fraser University, in AMS Special Session on History of Mathematics, III

2:15 – 3:20 p.m., Ballroom 6E, MAA-AMS-SIAM Gerald and Judith Porter Public Lecture, [The Mathematics of Doodling](#), Ravi D Vakil, Stanford University

4 – 4:30 p.m., Yakima 1, [Process,causality and noncommutative probability: A category-theoretic approach](#), Hayato Saigo, Nagahama Institute of Bio-Science and Technology, in AMS Special Session on Categorical Generalizations of Conditionalization, II

The POMSIGMAA Contributed Paper Session at the Joint Math Meetings 2025 was cancelled due to a general lack of submissions.

Other Upcoming Events
Mathfest 2025 in Sacramento: August 6–9, 2025
Invited talk and business meeting

Jared Warren, Stanford University

Title: Conventionalism and Mathematical Truth

Invited Paper Session: Call for Invited Speakers

POMSIGMAA will have an Invited Paper Session at Mathfest 2025. We are looking for volunteers to present papers. If you want to speak at this session, please contact Steve Deckelman at deckelmans@uwstout.edu.

CSHPM/SCHPM/Congress of the Humanities and Social Sciences

The 2025 CSHPM Annual Meeting will be held in conjunction with the Congress of the Humanities and Social Sciences at George Brown College (Toronto) from May 31 to June 2, 2025. The deadline for the submission of abstracts is February 1, 2025. You can find the call for papers [here](#). A program will be posted as soon as it becomes available

Special Session: Conceptual Change in Mathematics: In Kuhnian terms, mathematics has often been portrayed as cumulative science par excellence, in which progress is achieved by simply adding newly-proven truths. Although this perspective is generally perceived as overly simplistic, little consensus exists concerning the nature of the conceptual changes that enable growth and progress in mathematics. We invite philosophical discussions and historical studies that can shed light on this aspect of mathematical knowledge.

Officers

Chair (through 1/25, after which he becomes Past Chair for 1 year)
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General Session: Members are invited to present papers on any subject relating to the history of mathematics, its use in the teaching of mathematics, the philosophy of mathematics, or a related topic. Talks may be given in either English or French.

Events connected to World Logic Day
Wittgenstein and the formal sciences 4

Friday - January 10, 2025, Zoom
sites.google.com/view/wittgenstein-formal-sciences4
Registration is free of charge and everybody is welcome to attend.
Speakers:
1. Colin Rittberg (Vrije Universiteit Brussel)

2. Diego Morales (Eindhoven University of Technology)
3. Alexander Porto (Duquesne University)
4. Paul Hasselkuß (Heinrich Heine University Düsseldorf)

Topic: Ludwig Wittgenstein, despite being one of the most influential philosophers of the 20th Century, is often perceived as confusing and misunderstood. Furthermore, in spite of Wittgenstein's belief that his most important work was his philosophy of mathematics, his work on it is generally more unknown than the rest. Given the potential of his work in areas like the philosophy of mathematical practice, ethnomathematics, and even the development of AI, this workshop aims at discussing it and raising its visibility.

Formalize!(?) – 5: A philosophical & educational perspective on formalization in mathematics

Wednesday - January 15, 2025, Zoom
sites.google.com/view/wldzurich2025
Registration is free of charge and everybody is welcome to attend.
Speakers:
Jordi Fairhurst (UIB)
Seunghyun Song (Tilburg University)
Robert Naylor (Manchester)
Colin Rittberg (Vrije Universiteit Brussels)
Aleksandra Vučković (Belgrade)

Topic: After three years on the topic, we have realized that this context is too narrow to understand formalization and thus we have we added a yearly theme (although not all talks are necessarily aligned with it). This year we focus on ethical perspectives. Are there ethical aspects of the practices of formal sciences (including math), which role play formal arguments in politcal contexts, what about aspects of ethical AI ...

This series of events began with the theme of foundations in the context of automated theorem proving: What are the chances and problems of the act of formalization in the context of mathematics? It is often said, that all of mathematics can be reduced to first-order logic and set theory. The derivation indicator view says that all proofs stand in some relation to a derivation, i.e. a mechanically checkable syntactical objects following fixed rules, that would not have any gaps. For a long time this was a mere hope. There may have been proofs of concepts from early logicists but derivation never played a big role in mathematical practice. The modern computer might change this. Interactive and automated theorem provers promise to make the construction of a justification without any gaps feasible for complex mathematics. Is this promise justified? Will the future of mathematical practice shift to more formal mathematics? Should it? We hope to illuminate such questions and focus especially on what these developments mean for the future of the curriculum of university students.

Organizers:
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