UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI MATEMATICA
"FEDERIGO ENRIQUES"

erme
european society for research in mathematics education

ERME Topic Conference (ETC24)

Argumentation and Proof in the Teaching and Learning of Mathematics and Interactions with Other Disciplines

June 22–25, 2026 – University of Milan, Italy

https://mathpie2026.sciencesconf.org

Second Announcement

We are pleased to share the second announcement of "Argumentation and Proof in the Teaching and Learning of Mathematics and Interactions with Other Disciplines" (MATHPIE2026) an ERME Topic Conference supported by the European Society for Research in Mathematics Education (ERME). The conference will be held on 22–25 June 2026 at the Department of Mathematics, University of Milan, Italy. This event originates from the long-standing TWG1 on Argumentation and Proof, which has been part of every CERME conference since 2003, and it draws upon collaborative work across CERME TWGs, such as TWG11 - Teaching and Learning of Discrete and Computational Mathematics, and TWG25 - Teaching and Learning of Calculus. *We welcome submissions focusing on argumentation and proof in mathematics education in interactions with other disciplines, including Physics, Computer Science, Biology, Linguistics, Philosophy, and others*.

Conference topic

Argumentation and proof are widely studied in mathematics education in Europe and beyond at every level of the curriculum from primary school to university (Moutsios-Rentzos et al., 2023; Shinnno et al., 2024; Stylianides et al., 2024), including advanced university mathematics (Biehler et al., 2024; Durand-Guerrier et al., 2012). There are commonalities in how argumentation and proof are conceptualized, taught, and studied across these educational systems. However, there are also significant differences depending on when and how argumentation and proof are introduced as an official curricular topic, as well as from what perspective (e.g., as a tool or an object). This diversity creates rich research opportunities.

This conference aims to broaden the scope of research on argumentation and proof by examining their relevance and development in interactions with other disciplines. This has been a growing area of interest with studies examining argumentation in proof in mathematics with connection with other disciplines, such as Physics (Branchetti et al., 2022; Moutsios-Rentzos, 2023), Computer Science (Buchbinder et al., 2025; Durand-Guerrier et al., 2019), Biology (Hellgren et al., 2025), Linguistics (Prediger & Hein, 2017), Philosophy (Hamami, 2025; Hanna & Larvor, 2020), and others.

Conference structure

MATHPIE 2026 will comprise plenary lectures, an expert panel, five thematic working groups, a poster exhibition, and young researcher events. The aim of the thematic working group sessions and

the workshop is to facilitate in-depth discussions and exchanges on theoretical background and methodologies, empirical results, comparisons, and to identify possible further collaborations. See the website for specific guidelines.

The thematic working groups and workshop sessions will be devoted to in-depth interaction between participants in the ERME spirit of the 3 Cs (*Communication, Collaboration, Cooperation),* fostering exchange on theoretical frameworks and methodologies, sharing and discussing empirical results, comparisons between educational systems, identification of possible further collaborations, and so on.

Half a day prior to the conference will be dedicated to promoting young researchers; this will be coordinated with the YERME representative on the ERME board, who is a member of the IPC. In addition, there will be specific attention to the active involvement of young researchers in all conference activities.

Conference themes

MATHPIE 2026 aims to foster rich dialogue on the role of argumentation and proof within and beyond mathematics, and we especially encourage work that explores the opportunities and challenges of interdisciplinary research in this domain.

We welcome submissions that address argumentation and proof in the teaching and learning of mathematics at all educational levels—from primary to university—as well as in teacher education and professional development. Submissions may explore theoretical, empirical, comparative, or interdisciplinary dimensions. Given the focus of MATHPIE 2026, we particularly encourage authors to submit work conducted at the intersections between mathematics education and other disciplines, highlighting new opportunities and challenges in interdisciplinary research. Within this perspective, submissions may engage with a variety of perspectives and research approaches, and are particularly encouraged to address one or more of the following thematic areas:

- Theoretical explorations of argumentation and proof in mathematics education
- Empirical studies on students' or teachers' engagement with mathematical reasoning and proof
- Comparative research across educational systems or cultural contexts
- Curricular and instructional design focused on argumentation and proof
- Interdisciplinary research connecting mathematics education with Physics, Computer Science, Linguistics, Philosophy, Biology, and other disciplines.
- Teacher knowledge, beliefs, and practices related to proof and reasoning
- Historical, epistemological, or philosophical analyses of proof and argumentation in mathematics education
- The role of logic in reasoning, proof and proving in mathematics education

Proposal Types

Papers: Maximum of ten pages, including references, figures, and appendices.

Workshops: Maximum of five pages, including references, figures, and appendices. Its goal is to allow presenters sufficient time to share new tools, frameworks, and methodological or theoretical approaches with conference attendees. Workshops will be 90 minutes long. Can be submitted by a single author or a group of authors. They are intended to be interactive and engaging. Therefore, please include in your proposal a detailed description of the activities planned for participants

Posters: Maximum of 2 pages, including references, figures, and appendices.

Important note. Each individual may be the lead presenter on a maximum of one paper and a maximum of one workshop (no restrictions apply to poster proposals), but can be a co-author on more than one proposal.

Guidelines for submitting a proposal

Proposal submissions are open! To submit your proposal: Go to the conference website: https://mathpie2026.sciencesconf.org; log in / create an account, and upload your contribution.

- The main language of the conference is English. It is possible to submit and present a paper in Italian with an English abstract, provided the presenter considers how to address the conference audience in its linguistic diversity through slides or an English handout.

  La lingua principale della conferenza è l'inglese. È possibile inviare e presentare un contributo in italiano, a condizione che il/la presentatore/presentatrice tenga conto della diversità linguistica del pubblico della conferenza, ad esempio attraverso le slide o un handout in inglese.

- Please format your proposal following the CERME 14 template (https://www.cerme14.it/paper-poster-submission. We note that proposals not following this format in full may not proceed to the peer review stage.
- All proposals must employ APA7 style for in-text citations and referencing (https://apastyle.apa.org/style-grammar-guidelines/references/examples)
- Proposal selection will be conducted through peer review, as in the CERME conferences.
- Preconference proceedings will be available to registered participants.
- The final proceedings will be available online on the HAL archive after the conference.
- Only registered participants will have their contribution included in the conference program and conference proceedings.

Timeline

October 1, 2025	Submissions open
December 12, 2025	Due date for Submissions
January 26, 2026	Due date for Reviewers to submit their reviews
February 27, 2026	Decisions sent to contributors
March 2, 2026	Registration opens
April 15, 2026	Revised versions of the accepted proposal submitted
May 27, 2026	Pre-Proceedings available online
June 22 – 25, 2026	Conference in Milan

Organising Committee (OC)

Andreas Moutsios-Rentzos (Greece), Leader of TWG1 in 2023 & 2025, chair of the IPC
Orly Buchbinder (USA), Co-leader of TWG1 in 2023 & 2025, co-chair of the IPC
Laura Branchetti (Italy), Leader of the TWG 25 in 2025, chair of the LOC
Nadia Azrou (Algeria), Co-leader of TWG1 in 2023 & 2025
Fiene Bredow (Germany), Co-leader of TWG1 in 2023 & 2025
Dimitrios Deslis (Greece), Co-leader of TWG1 in 2023 & 2025
Viviane Durand-Guerrier (France), Co-leader of TWG1 in 2023 & 2025, OC Coordinator
Simon Modeste (France), Leader of the TWG 11 in 2025
David Reid (Norway), Co-leader of TWG1 in 2023 & 2025

International Programme Committee (IPC)

Andreas Moutsios-Rentzos (Greece; IPC chair)
Orly Buchbinder (USA; IPC co-chair)

Laura Branchetti (Italy; LOC chair)
Nadia Azrou (Algeria)
Fiene Bredow (Germany; Young Researcher)
Paola Cantù (France)
Dimitrios Deslis (Greece; Young Researcher)
Viviane Durand-Guerrier (France)
Christine Knipping (Germany)
Luca Lamanna (Italy; ERME Board Representative, Young Researcher)
Takeshi Miyakawa (Japan)
Simon Modeste (France)
David Reid (Norway)

Local organising committee (LOC)

Laura Branchetti (Univ. of Milan; LOC Chair)
Luca Lamanna (Univ. of Milan)
Miglena Asenova (Univ. of Milan)
Sandra Mantovani (Univ. of Milan)
Sara Gagliani Caputo (Univ. of Milan)
Ottavio Giulio Rizzo (Univ. of Milan)
Violetta Lonati (Univ. of Milan)

References

Biehler, R., Durand-Guerrier, V., & Trigueros, M. (2024). New trends in didactic research in university mathematics education. ZDM Mathematics Education, *56*, 1345–1360. https://doi.org/10.1007/s11858-024-01643-2

Branchetti, L., Cattabriga, A. Levrini, O., & Satanassi, S. (2022). Continuity and rupture between argumentation and proof in historical texts and physics textbooks on parabolic motion. In J. Hodgen, E. Geraniou, G. Bolondi & F. Ferretti. (Eds.), *Proceedings of the Twelfth Congress of the European Society for Research in Mathematics Education (CERME12*) (pp. 109-116). Free University of Bozen-Bolzano and ERME.

Buchbinder, O., Vestal, S., & An, T. (2025). Assessing the Impact of FullProof on College Geometry Students' Confidence and Perceptions of Proof Writing. *The International Journal of Mathematical Education in Science and Technology.*

Durand-Guerrier, V., Boero, P., Douek, N., Epp, S., & Tanguay, D. (2012). Examining the role of logic in teaching proof. In G. Hanna & M. de Villiers (Eds.), *ICMI Study 19 Book: Proof and proving in mathematics education* (pp. 369–389). Springer. https://doi.org/10.1007/978-94-0072129-6_16

Durand-Guerrier, V., Meyer, A., & Modeste, S. (2019). Didactical issues at the interface of mathematics and computer science. G. Hanna, M. D. De Villiers, D. A. Reid (Eds), *Proof Technology in Mathematics Research and Teaching* (pp.115-138). Springer International Publishing. https://doi.org/10.1007/978-3-030-28483-1_6

Hamami, Y. (2025). Philosophy of mathematical practice and mathematical education: Cross fertilization, dialogue and prospects. *Journal of Mathematical Behavior, 78*. 101208. https://doi.org/10.1016/j.jmathb.2024.101208

Hanna, G., & Larvor, B. (2020). As Thurston says? On using quotations from famous mathematicians to make points about philosophy and education. *ZDM Mathematics Education, 52*, 1137–1147. https://doi.org/10.1007/s11858-020-01154-w

Hellgren, J. M., Bergqvist, E., & Österholm, M. (2025). Argumentation in mathematics and science university textbooks: Similarities and differences in linguistic structures. *European Journal of Science and Mathematics Education, 13*(1), 1-15. https://doi.org/10.30935/scimath/15746

Moutsios-Rentzos, A., Buchbinder, O., Azrou, N., Bredow, F., Deslis, D., Durand-Guerrier, V., Reid, D., Yang, M. (2023). An introduction to TWG1: Argumentation and proof. In P. Drijvers, C. Csapodi, H. Palmér, K. Gosztonyi, & E. Kónya (Eds.), *Proceedings of the Thirteenth Congress of the European Society for Research in Mathematics Education (CERME13)* (pp. 52–55). Alfréd Rényi Institute of Mathematics and ERME.

Moutsios-Rentzos, A., (2023). Arguments in mathematics and physics: An interdisciplinary, systemic communicational approach to teacher education about scientific inference and evidence. In P. Drijvers, C. Csapodi, H. Palmér, K. Gosztonyi, & E. Kónya (Eds.), *Proceedings of the Thirteenth Congress of the European Society for Research in Mathematics Education (CERME13)* (pp. 216–223). Alfréd Rényi Institute of Mathematics and ERME.

Prediger, S., & Hein, K. (2017). Learning to meet language demands in multi-steps mathematical argumentations. Design research on a subject-specific genre. *European Journal of Applied Linguistics, 5*(2), 309–335. https://doi.org/10.1515/eujal-2017-0010

Shinno, Y., Bredow, F., Knipping, C., Hakamata, R., Miyakawa, T., Otani, H., & Reid, D. (2024). A preliminary analysis of two proof lessons from an international perspective: a case study on German and Japanese Grade 8 classrooms. In T. Evans, O. Marmur, J. Hunter, G. Leach, & J. Jhagroo (Eds.), *Proceedings of the 47th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 97–104). IGPME.

Stylianides, G.J., Stylianides, A.J. & Moutsios-Rentzos, A. (2024). Proof and proving in school and university mathematics education research: a systematic review. *ZDM Mathematics Education, 56*, 47–59. https://doi.org/10.1007/s11858-023-01518-y