Berlin Mathematics Research Center
MATH+

PRESS RELEASE

"Transcending Boundaries, Transforming Worlds"
Success in the Excellence Strategy:
MATH+ to Receive Funding for Another Seven Years

Berlin, May 22, 2025 – A major success for Berlin's mathematics community: The MATH+ Cluster of Excellence will continue to receive funding for another seven years as part of the Excellence Strategy of the German federal and state governments. The German Research Foundation (DFG) thus recognizes the outstanding achievements of the previous funding period and underscores Berlin's international leadership as a center for innovation in applications-oriented mathematics.

"The renewed funding not only acknowledges our excellent scientific work, but it also reinforces our mission to shape mathematics with substantial societal impact — in areas such as climate change, health risks, or technological advancements," says Sebastian Pokutta, one of the cluster's three chairs. Since October 2024, the cluster has been led by Sebastian Pokutta (Technische Universität Berlin / Zuse Institute Berlin), Claudia Schillings (Freie Universität Berlin), and Andrea Walther (Humboldt-Universität Berlin / Zuse Institute Berlin).

Mathematics for the Great Challenges of Our Time

At the heart of MATH+ research lies data-driven modeling, simulation, and optimization. The goal is to further develop the interdisciplinary potential of mathematics and effectively address socially relevant challenges. Researchers are working on mathematical foundations for using large-scale datasets in application areas such as energy, mobility, health, and technology.

"We aim to spark new, innovative developments in selected future-oriented fields through mathematics," emphasizes Andrea Walther, adding: "This includes, for example, sustainability topics such as energy-efficient solar cells and sustainable mobility, and drug design – often involving artificial intelligence."

New Perspectives through Conceptual Expansion

The new funding phase introduces key conceptual expansions in response to global crises. Traditional modeling approaches will be strategically complemented by mathematical models of human behavior to better understand the interplay of technological innovation, opinion formation, and societal change. "Particularly forward looking is the new research field of *Opinion Dynamics*, which will explore the social dynamics of public opinion formation using mathematical models," explains Claudia Schillings. "This allows us to better understand and analyze processes like polarization or consensus-building."

Another major research focus will be the mathematical foundations of artificial intelligence (AI). While AI is ubiquitous and increasingly influential, what exactly happens within AI systems – and why – remains largely unknown.

Research Across Institutional and Disciplinary Boundaries

MATH+ will further strengthen its engagement with stakeholders and expand public-private partnerships (PPP) to collaboratively address real-world problems with partners from science, industry, and society. A key partner in this endeavor is the MODAL Research Campus – Germany's largest public-private partnership in applied mathematics — which closely collaborates with MATH+ in terms of knowledge transfer and societal impact.

Support for Early-Career Researchers and Knowledge Transfer to Society

In addition to cutting-edge research, fostering the next generation of scientists remains a core priority. Through the Berlin Mathematical School (BMS), MATH+ operates a globally recognized graduate school that attracts young talent from around the world and supports them in their academic careers — in an environment that emphasizes mentoring, diversity, and equal opportunity.

Another central concern is the transfer of knowledge to society. Through new formats such as the "Decision Theatre" on sustainable mobility, the research group "Science Communication," and collaborations with the Berlin Social Science Center (WZB), MATH+ aims to deepen the dialogue with the public. The goal is to build trust in science, communicate complex topics in an understandable way, and promote public engagement.

Berlin as a Center of Mathematical Excellence

With its broad range of research approaches and successful collaboration across disciplines and institutions, MATH+ exemplifies the strengths of Berlin as a science hub known for its vast and interconnected research network.

Supported by structures such as the Berlin University Alliance (BUA) and Berlin Research 50 (BR50), collaborations with the National High-Performance Computing Association (NHR), and the MaRDI consortium (Mathematical Research Data Initiative) within the National Research Data Infrastructure (NFDI), MATH+ sets standards for interdisciplinary, internationally visible mathematics with societal relevance and handling of large-scale data.

MATH+ is a cross-institutional and interdisciplinary Cluster of Excellence supported by Berlin's three major universities – Freie Universität, Humboldt-Universität, and Technische Universität – as well as the research institutes Weierstrass Institute (WIAS) and Zuse Institute Berlin (ZIB).

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