

36th Newsletter – July 2025

Welcome from the Chairs

Dear MATH+ Community,

On 22 May, we celebrated the **approval of MATH+'s extension application**, marking the start of our second funding period (2026-2032). A [short video capturing the joyful celebration by MATH+ members](#) is available on the MATH+ YouTube channel and social media platforms. Many thanks to everyone who contributed to this remarkable success.

We are also pleased to announce that **28 out of 61 submitted research proposals have been approved** for funding through a two-stage review process. We look forward to the exciting research projects and results to come.

Warm congratulations to the **BMS graduates of Phase I and Phase II**, the four **winners of the 2024 MATH+ Dissertation Award** for their outstanding theses, and the **YAM Fellows** from Cameroon and Madagascar on completing their nine-month MATH+ Fellowship in Berlin. All were honored on 11 July during a special celebration that began with a MATH+ Friday Colloquium, followed by the **BMS Certificate Ceremony**, and concluded with a relaxed summer party.

In this newsletter issue, you will also find: A report on an **International Workshop on Nonlinear Dynamics in Semiconductor Lasers** at WIAS, a **Nature Communications publication** by MATH+ and RKI scientists on real-time barcoding for RNA sequencing, and an interview with the two **MATH+ Hanna Neumann Fellows** celebrating "International Women in Mathematics Day."

Our **outreach activities** have also been in full swing: MATH+ took part in **Berlin Mathematics Day** at Berlin Hochschule für Technik (BHT) and hosted a very successful **"Excellent Pub Quiz" at a bar** in Kreuzberg. We also participated in three events during the **Long Night of the Sciences (LNDW 2025)**, featuring the **"Decision Theatre"** at ZIB, a **BUA-organized event** at HU Berlin highlighting Cluster research, and **another "Excellent Pub Quiz,"** together with the other Berlin Clusters at TU Berlin.

Finally, we're **looking for an early-career scientist** interested in representing BMS and MATH+ at the upcoming **Berlin Science Slam in November**, as part of the Berlin Science Week, organized by the Berlin Clusters of Excellence. If you are interested, please contact Beate Rogler at rogler@mathplus.de.

As always, we encourage you to **share your research results, publications, awards, or news about interesting guests** with her as well.

Enjoy your summer break! We look forward to seeing you again soon!



Sebastian Pokutta



Claudia Schillings



Andrea Walther

MATH+ News

+ “Transcending Boundaries, Transforming Worlds”—MATH+ Success in the Excellence Strategy!



After two intense years of preparing the extension application—with support from critical friends, a few rehearsals, and the exciting official review in Bonn at the DFG this February—our efforts have paid off. On 22 May, the decision was announced: Out of 98 Excellence Cluster applications, we have made it!

To relive the excitement, fears, and joy of that unforgettable evening, check out our [short video on the MATH+ LinkedIn channel](#), shared live as the news broke.

This is a huge success for Berlin’s mathematics community: the MATH+ Cluster of Excellence will receive funding for another seven years as part of the German federal and state governments’ Excellence Strategy. The German Research Foundation (DFG) thus recognizes the outstanding achievements of the previous funding period (2019-2025) and reaffirms Berlin’s international leadership as a center for innovation in application-oriented mathematics. A heartfelt thank you to everyone who contributed to this remarkable success!

A press release highlights the MATH+ mission to shape mathematics with substantial societal impact, along with new plans and strategies for the upcoming funding phase 2026-2032.

[Read more](#)

+ Cluster Days: Outcomes and Shift in Research Focus

We are delighted to announce that, out of the 61 submitted innovative research project proposals, a total of 28 have been approved for funding through a two-stage review process. These new projects will run for the next 2-3 years.

With a balanced distribution across the **four new Application Areas**—[Mobility](#), [Health](#), [Energy](#), and [Technology](#)—and the **three new Emerging Fields**—[Learning-Informed Optimization](#), [Multi-Agent](#)

Systems, and Decision Support—they will strengthen the new MATH+ research agenda for the second funding period.

Furthermore, the new projects will consolidate our co-creation activities in the Partnership Area and advance the development of mathematical methodologies in the Method Development Unit.

+ International Workshop on “Nonlinear Dynamics in Semiconductor Lasers” at WIAS



The workshop took place on June 16-18 at the WIAS, bringing together scientists from **applied mathematics, photonics, and semiconductor physics**—including both theorists and experimentalists—to exchange insights on nonlinear phenomena in optoelectronic devices.

The program included **28 invited talks, 9 contributed talks, and 6 poster presentations**, covering topics such as machine learning and reservoir computing in photonic systems, delay differential equation models for mode-locked lasers, characterization and generation of frequency combs, pattern formation and localized structures in photonic devices, bifurcation theory, and the theory of nanolasers and quantum light sources.

The event attracted **50 on-site participants** and attracted considerable attention. It was organized by Markus Kantner, Eduard Kuhn, Mindaugas Radziunas, and Andrei G. Vladimirov (all WIAS), with financial support from MATH+.

[Read more](#)

+ BMS Certificate Ceremony, MATH+ Dissertation Award Winners, and Summer Party



On 11 July 2025, MATH+ and its Graduate School, the Berlin Mathematical School (BMS), proudly celebrated their graduates, the Young African Mathematicians (YAM) Fellows, and this year's four MATH+ Dissertation Award winners at Freie Universität Berlin.

The day began with a **MATH+ Friday Colloquium** by MATH+ Chair Andrea Walther,

followed by a **Certificate Ceremony for all BMS graduates**, led by BMS Chair John M. Sullivan and MATH+ Chair Claudia Schillings, which was also attended by the graduates' families and friends. Bright sunflowers, which were presented along with the certificates, added a sunny touch to an otherwise cloudy day.

The two then delivered a laudatory speech for the **four 2024 MATH+ Dissertation Award winners**—Fabian Altekrüger, Svenja Griesbach, Federico Moretti, and Luisa Plato—and honored the **three 2024-2025 YAM Fellows**: Sintia Laura Nyaffi Achikwoue and Gill Wilfried Laken Kouatche from Cameroon, and Sergio Germain Tinaharimanjaka from Madagascar.

The fellows had successfully completed the nine-month YAM Fellowship program within MATH+. Laura and Wilfried will continue their academic journey this fall by joining the BMS PhD program in Berlin. Congratulations to all of them!

The ceremony was attended by around 100 guests, including BMS Chair Holger Reich and FU Berlin President Günter M. Ziegler. The evening closed with a lively barbecue reception and a summer party.

[Read more](#)

+ “Nature Communications” Publication on Real-Time Barcoding for RNA Sequencing (Max von Kleist)



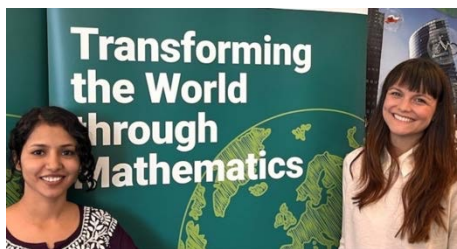
A research team led by MATH+ Professor Max von Kleist at [Freie Universität Berlin and the Robert Koch Institute \(RKI\)](#), supported by the [Smyth group at HZI \(Würzburg\)](#) and [CNRS \(Strasbourg\)](#), has **developed WarpDemuX**—a fast, reliable, and **cost-efficient tool for barcoding and demultiplexing direct-RNA (dRNA) sequencing data** from Oxford Nanopore Technologies.

The results were published in *Nature Communications*. This breakthrough enables more sophisticated and scalable designs in epi-transcriptomic studies. The new method was successfully applied to analyze the intracellular dynamics of SARS-CoV-2.

[Read more](#)

MATH+ People

+ Celebrating “International Women in Math Day” Featuring the 2025 Hanna Neumann Fellows



On 12 May 2025, MATH+ celebrates “International Women in Mathematics Day” by introducing the **new MATH+ Hanna Neumann Fellows** through an interview: **Alice Marveggio from Italy**—currently a postdoc in Bonn at the Hausdorff Center— and **Monika from India**, where she holds a postdoctoral position at the Indian Institute of Technology, Gandhinagar.

The MATH+ Hanna Neumann Fellowship enables them to work with leading mathematicians in Berlin and deepen their expertise. During their time in Berlin, **Monika is collaborating with Marc Kegel’s research group at HU Berlin, while Alice is working with Barbara Zwicknagl, also at HU Berlin.**

In the interview, Alice Marveggio and Monika **reflect on their mathematical journeys and share their experiences as women in the field.** They discuss the challenges they’ve faced, including specific cultural situations, and emphasize the importance of resilience, mentorship, and building supportive networks.

They also offer encouraging advice to young women pursuing mathematics and share their hopes for fostering inclusive research environments and expanding international collaborations.

[Read the full interview](#)

+ 2024 MATH+ Dissertation Award Winners



In cooperation with the [Einstein Foundation Berlin](#), the [Berlin Mathematical School \(BMS\)](#) of the Cluster of Excellence MATH+ awards up to four annual prizes for outstanding dissertations by BMS graduates.

We are delighted to announce that the 2024 [MATH+ Dissertation Awards](#) were presented to **Fabian Altekrüger, Svenja Griesbach, Federico Moretti, and Luisa Plato** in recognition of their outstanding theses on 11 July 2025 at the BMS Certificate Ceremony. Congratulations to all of them! Svenja and Luisa were able to attend the award ceremony, and photos of all awardees are available on the MATH+ website.

[Read more about all awardees and their dissertations](#)

+ The Following BMS Students Have Successfully Completed Their Doctorates

Marwan Benyoussef (FU Berlin)

"Character Varieties for Seifert Groups and Higgs Bundles over Orbifolds"

Dennis Chemnitz (FU Berlin)

"Stability of Random Dynamical Systems in Noisy Oscillators with Shear and in Stochastic Gradient Descent"

Li Li (HU Berlin)

"Aspects of syzygies of algebraic curves"

Fernando Peña Vázquez (HU Berlin)

"Hochschild (CO)-homology of D -modules on rigid analytic spaces"

Sophie Rehberg (FU Berlin)

"Extensions of Ehrhart theory and applications to combinatorial structures"

Henning Sauter (HU Berlin)

"Least-squares collocation for DAEs and its application in optimal control"

Stefanie Schindler (HU Berlin)

"Asymptotic self-similar behavior in coupled systems"

Giacomo Umer (HU Berlin)

"Algebraic structures in enumerative geometry from topological recursion"

[Congratulations!](#)

MATH+ Events

Preview:

+ **MATH+ Fridays** (Save the dates for the Winter Semester 2025/26) and **MATH+ Day in November**

- **17 October 2025** – tba
- **31 October 2025** – tba
- **17 November MATH+ Day!**

- **28 November 2025** - tba
- **12 December 2025** - tba
- **16 January 2026** - tba
- **30 January 2026** – tba

MATH+ Outreach

+ MATH+ at Berlin Mathematics Day, Hosted by Berliner Hochschule für Technik (BHT)

On 10 May 2025, the Berliner Hochschule für Technik (BHT) hosted the 28th Berlin Mathematics Day. School students, teachers, and math enthusiasts had the opportunity to dive into the fascinating world of mathematics.

As in previous years, a mathematics competition was held for school students in grades 7 through 13, where teams competed for great prizes. **The grand prize for participants in grades 11 to 13 was a trip to the award ceremony of the renowned Abel Prize in Oslo**—an international award recognizing outstanding achievements in mathematics. MATH+ covered the travel and accommodation costs.



MATH+ was prominently represented at Berlin Mathematics Day, with numerous **MATH+ members delivering talks** for teachers, students, and other interested guests. **Hanno Gottschalk (TU Berlin) presented on automated driving at his booth**, and **MATH+ Chair Claudia Schillings delivered the keynote lecture** before the awards ceremony, titled “Optimal Experimental Design – Gaining More Insight Through Smart Experiments.”

MATH+ also hosted a booth with information about its research and outreach activities. Our popular mathematical dice game was available for visitors of all ages. If you are on Instagram, you can [watch a short MATH+ video of the event](#) there. A [photo gallery](#) is available on the BHT website.

[Read more](#)

+ Three MATH+ Activities at the Long Night of the Sciences (LNDW-2025)



MATH+ participated with three interactive formats designed to encourage discussion, curiosity, and hands-on learning during LNDW 2025.

At the “**Decision Theatre**” at the Zuse Institute Berlin (ZIB), school pupils and university students joined experts from politics, civil society (ADFC), and academia to discuss ideas for sustainable mobility in Berlin—supported by mathematical models. At an **interactive event about the Clusters of Excellence**, organized by the Berlin University Alliance (BUA) at HU Berlin, MATH+ Chair Andrea Walther provided insights into the application-oriented mathematics developed within MATH+—for example, the topic of opinion dynamics, such as how opinions develop and spread.

Finally, at the **“Excellent Pub Quiz,”** hosted for the third time by the seven Berlin Clusters of Excellence at TU Berlin, 58 creative teams—with more than 170 participants—tested their knowledge of Berlin’s cutting-edge research. The event also included fun and challenging questions from the world of MATH+ mathematics.

[Read more and browse the photo galleries of all events](#)

+ Full House and Lots of Fun at the MATH “Excellent Pub Quiz” at the Fahimi Bar (Kreuzberg)



It was a full house as nearly 80 participants joined the **MATH+ “Excellent Pub Quiz” at Fahimi Bar**—right in the heart of Kreuzberg! This was the fourth science quiz night organized in 2025 by the seven Berlin Clusters of Excellence. On 2 June, it was MATH+’s turn to host the Pub Quiz, which meant that half of the questions focused on application-oriented mathematics from MATH+ research.

In addition to math questions, the quiz covered topics from all clusters, ranging from world literature, politics, green chemistry, intelligence research to new materials, and neuroscience. Midway through the event, MATH+ PhD student Joshua Wiebe gave a short live presentation on agent-based modeling and the Decision Theatre.

Fifteen teams with creative names figured out their way through the questions—discussing, debating, and marveling at what they learned—before heading home a little wiser. Host Jochen Müller once again guided the evening with a perfect mix of wit and knowledge. In the end, the victors were the team “Keine Ahnung” (“No Idea”)—clearly more informed than they claimed—followed by “Graphen” and “Team Prim.” But everyone came out ahead—with new knowledge, fresh inspiration, and having had a great time.