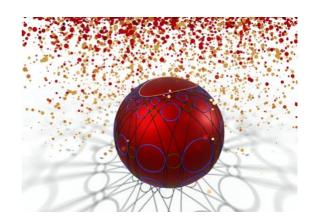Berlin Mathematics Research Center

MATH+

20ᵗʰ Newsletter – December 2021

Welcome from the Chair

Dear MATH+ Community,

The Christmas break is almost here, and looking back, we can be proud of excellent research activities and the many MATH+ events and activities that have taken place in the past year: The MATH+ presentation at the Humboldt Forum was completely sold out and made for a great outreach event. After a break in 2020, MATH+ participated again in the *Berlin Science Week* at the Museum für Naturkunde with the "Decision Theatre–Path to a Sustainable Mobility". This year's MATH+ Day and the General Assembly used the Gather platform to great effect. And last but by no means least, the numerous regular activities, such as the Thematic Einstein Semesters with their continuous virtual talks and workshops, our Spotlight Talks and Friday Colloquia. Considering the variety of activities, I would like to take this opportunity to thank everyone for their outstanding commitment and contribution throughout the year under difficult circumstances!

Some more good news: we are delighted to welcome the new **MATH+ Junior Research Group Leader**, Aswin Kannan, at HU Berlin, and the new BMS Dirichlet Postdocs, Henri Elad Altman and Letícia Mattos, both located at FU Berlin. Please read more about them in the "People" section below.

We would also like to announce that the BMS graduates Leon Sering and Josué Tonelli Cueto received the first MATH+ Dissertation Awards. Further, the MATH+ Hanna-Neumann-Fellowships 2022 will be awarded to Anna Djurdjevac (ZIB) and Katharina Jochemko (Royal Institute of Technology, KTH, Sweden). An interview with both will follow shortly.

As every year in November, the BMS students elected new BMS Student Representatives, who will be introduced on the BMS website soon. We are also excited about 191 applications submitted for the BMS program, and 192 applications for the Dirichlet positions.

If you have any news that you wish to share regarding your research, publications, prizes, or interesting guests in the other MATH+ communication formats or the next newsletter, please contact Beate Rogler with details: rogler@mathplus.de.

Finally, we thank Nina Smeenk for the lovely festive hyperbolic checkerboard incircular net.

I wish you a relaxing Christmas break and all the best for 2022! The new year will hopefully allow for more meetings inperson again!

MATH+ Dissertation Awards 2020

In cooperation with the [Einstein Foundation Berlin](#), MATH+ awards up to three annual prizes for outstanding dissertations to BMS graduates.

We are delighted to announce that the first MATH+ Dissertation Awards 2020 have been presented to **Dr. Leon Sering** and **Dr. Josué Tonelli Cueto** for their outstanding theses. **Congratulations!**

Read more about the two award winners

MATH+ Presentation at the Humboldt Forum

As part of the series *MitWissenschaft*, MATH+ presented selected research topics in the sold out lecture hall of the Humboldt Forum at the end of October. The topic was "Improving the world with mathematics? New solutions for the problems of an increasingly complex world".

The MATH+ Chairs, [Christof Schütte](#) (FU Berlin/ZIB) and [Martin Skutella](#) (TU Berlin), explained the Cluster's goals and challenges, and the MATH+ Managing Director, [Nadja Wisniewski,](#) talked about the scope of the graduate program. Then, MATH+ scientists presented selected aspects of the interdisciplinary research spectrum. As an example of the collaboration with **Life Sciences,** [Frank Noé](#) (FU Berlin) explained mathematical support in drug design, and [Edda Klipp](#) (HU Berlin) talked about agent-based mathematical modeling in simulating the spread of COVID-19. [Gabriele Steidl](#) (TU Berlin) presented how **Artificial Intelligence (AI)** is used in mathematical image processing, and [Sebastian Pokutta](#) (TU Berlin/ZIB) talked about how AI makes decisions. How mathematics can change **Mobility,** e.g., in ICE rotation optimizations, was shown by [Ralf Borndörfer](#) (FU Berlin/ZIB). Afterwards, [Caroline Geiersbach](#) (WIAS) discussed **Energy Markets** and their risks. In the last presentation, [Sarah Wolf](#) (FU Berlin) introduced the science communication format **Decision Theatre** using the example of sustainable mobility. The German radio journalist and RBB TV presenter [Volker Wieprecht](#) led through the program.

Read more and watch the recording of the event

New Team of BMS Student Representatives

Each year in November, the BMS students elect a new team of BMS student representatives for one year. We are delighted to announce this year's new team: Aizhan Issagali, Coco Bögel, Dante Luber, Lenny Leass, Margarita Kostré and Marwa Abdelhameed.

The new team will start their term in December, while the [recent BMS student representatives](#) will still be responsible for the Career Day on 10 December 2021 and for the student conference in 2022.

Read more

✚ Volker Mehrmann Named "Fellow of the American Mathematical Society (AMS)"

Volker Mehrmann (TU Berlin) has become the third mathematician from Berlin to be named a fellow of the American Mathematical Society (AMS) along with John M. Sullivan (TU Berlin) and Günter M. Ziegler (FU Berlin). **Congratulations!**

Forty-five mathematical scientists worldwide have been named Fellows of the American Mathematical Society for 2022, the program's tenth year. The citation noted honored Volker Mehrmann "for contributions to scientific computing and numerical linear algebra, and service and leadership in the mathematical community."

Read more

✚ New MATH+ Junior Research Group Leader at Humboldt Universität: Aswin Kannan

Aswin Kannan took up his position as Head of the MATH+ Junior Research Group "Data-Driven Computational Optimization" at HU Berlin in October 2021. His research interests lie in the interstices of mathematical optimization and machine learning. From the standpoint of practice, these cover applications ranging from automotive design, groundwater modeling, and power markets to backend analytics in computational biology, retail, portfolio analysis, and workforce management.

Prior to joining the Humboldt Universität, he worked for IBM Labs as a Research Staff Member in India (2015-2021). Before that he had worked for Argonne National Labs (U.S. Department of Energy) and Oracle Analytics. He holds a Doctorate from Penn State (United States).

Read more

✚ Welcome to the New BMS Dirichlet Postdoc Fellows: Henri Elad Altman and Letícia Mattos

Since October 2021, **Henri Elad Altman** has been a Dirichlet Postdoctoral Fellow in Mathematics. He has joined Nicolas Perkowski's Stochastics team at the Freie Universität Berlin, and works closely with Jean-Dominique Deuschel's team at TU Berlin.

Henri Elad Altman defended his PhD thesis in April 2019 at Sorbonne Université in Paris, with Lorenzo Zambotti as his supervisor.

His research pertains to the area of stochastic analysis, and focuses on the study of solutions to singular stochastic differential equations, with applications to the scaling limits of discrete random models. Between 2019 and 2021, he was a Chapman Fellow in Mathematics at Imperial College London.

Read more

Letícia Mattos started as BMS Dirichlet Postdoctoral Fellow in October 2021. She is working at Freie Universität Berlin, where she is part of the Combinatorics and Graph Theory group headed by Tibor Szabó.

She received her PhD from the Instituto de Matematica Pura e Aplicada (IMPA, Brazil) in June 2021, advised by Robert Morris. Previously, she obtained a Master's degree in Mathematics from Universidade Federal de Minas Gerais (UFMG).

Letícia Mattos' research lies in the areas of extremal, probabilistic, and additive combinatorics. In particular, she has mainly been interested in random symmetric matrices, Ramsey properties of random graphs, and random graph processes.

Read more

✚ Martha Nansubuga from Uganda Shares Her BMS Experiences

"I heard about the BMS for the first time in 2016 at the African Institute for Mathematical Science (AIMS) Tanzania, where I was working as a tutor. I started looking for more information about the BMS and the research training areas and got fascinated with the stochastics and mathematical finance area because it was always my area of interest when pursuing my MSc at the University of Dar es Salaam under the Norwegian Master's Program (NOMA).

In winter 2017, I joined the BMS for Phase I. Moving to a new country is always a challenge, but with the BMS One-Stop Office, the transition was smoother than I had expected. I received a BMS booklet (guidebook) before my arrival in Berlin, and I immediately applied for accommodation, made good use of the help from my BMS buddy, read every detail in the book, and when reaching Berlin, the paperwork was easy and very fast for me".

Read the full report

✚ The Following BMS-Student Have Successfully Completed Their Doctorates

Katharina Alexandra Klost (TU Berlin)
"Geometric Graphs: Reachability, Long Trees and Short Cycles"

Georg Lehner (FU Berlin)
"The passage from the integral to the rational group ring in algebraic K-theory"

Hanxing Lin (FU Berlin)
"Parqueting-Reflection Principle and Boundary Value Problems in Some Circular Polygons"

Patrick Wyndham Morris (FU Berlin)
"Clique Factors: Extremal and Probabilistic Perspectives"

Babette de Wolff (FU Berlin)
"Delayed feedback stabilization with and without symmetry"

Congratulations!

MATH+ Events

Review

+ MATH+ Day and General Assembly on 05 November 2021

On 05 November, the third MATH+ Day and the General Assembly took place with more than 180 participants. It started with the General Assembly and a report about last year's MATH+ activities, calls, funding, and outreach projects, given by MATH+ Chair Christof Schütte. Afterwards, the MATH+ Day turned into a virtual networking experience, which allowed participants to interact in the lobby or private rooms, or to visit the poster sessions. At the end, the MATH+ Day concluded with a special online lecture from Małgorzata Peszyńska of Oregon State University about "The hardest subject in Mathematics" – focusing on women's career chances and obstacles in math.

Read more

+ MATH+ Project "Decision Theatre" on Sustainable Mobility at the Berlin Science Week

MATH+ participated in this year's Berlin Science Week by introducing the "Decision Theatre" focused on sustainable mobility. The event took place at the *Museum für Naturkunde* on 06 November. The Corona rules had limited the number of participants to only 15, but they were very attentive and active attendees. The Decision Theatre, introduced by Sarah Wolf from Freie Universität and Steffen Fürst from Zuse Institute Berlin, is a public discussion forum for decision-making processes on sustainable mobility based on application-oriented modeling.

Read more

+ Lecture with MATH+ Support: "About the Mendelssohn Family, Cholera and Higher Mathematics"

On 14 November, the Mendelssohn Society invited to an evening of lectures "About the Mendelssohn Family, the Cholera and Higher Mathematics" on the occasion of Fanny Mendelssohn's, later Fanny Hensel's (1805-1847), birthday. Hermann Simon, a historian, introduced the philosopher Moses Mendelssohn, Annette Vogt, a mathematics historian, presented his mathematical pursuits, and, MATH+ scientist Stefanie Winkelmann (ZIB) talked about pandemics and probability theory. The event was organized in cooperation with Berliner Cappella e.V. and was supported by MATH+.

Preview

+ MATH+ Fridays

17 December: Valentin Blomer (U Bonn): Analysis on arithmetic manifolds

14 January: Jürgen Jost (MPI MiS Leipzig)

28 January: Jürgen Richter-Gebert(TU München)

11 February: Maria J. Esteban (U Paris Dauphine)

+ TES: Tandem Tutorials (TES "Mathematics of Imaging on Real-World Challenges")

18 February: Karsten Tabelow (WIAS) and Ariane Fillmer (PTB): Neural MRI

+ Upcoming Thematic Einstein Semester: Summer Semester 2022

Summer 2022: The Mathematics of Complex Social Systems: Agent-based and Data-driven Modeling

+ MATH+ Spotlight Schedule in Winter Semester 2021/22

12 January: Marvin Lücke – EF4-8: Concentration Effects and Collective Variables in Agent-Based Systems

26 January: Jonathan Leake (Dirichlet Postdoc)

09 February: Maximilian Engel (MATH+ Junior Research Group Leader) – AA1-8: Random Bifurcations in Chemical Reaction Networks

+ New Look of the MATH+ Advent Calendar Website and Start of the Calendar Competition

The new website of the MATH+ Advent Calendar was launched on 01 November, just in time for the registration phase and the start of the MATH+ Advent Calendar on 01 December. The MATH+ Advent Calendar is an integral part of MATH+'s outreach activities and an opportunity to present MATH+ research projects to a broad, young, and bright audience.

This year's motto of the Math Advent Calendars is "Thinking Math Globally – Exploring the World with the Math Elves!"

The project coordinator is Ariane Beier. You can contact her at schools@mathplus.de.

Read more