Berlin Mathematics Research Center

MATH+

24ᵗʰ Newsletter – October 2022

Welcome from the Chair

Dear MATH+ Community,

Before we start with the winter semester lectures, we can look back to an eventful summer: The **Cluster Days** on 05/06 September resulted in the selection of 15 projects for funding. Among them are the first two in which postdocs applied for their own positions! Congratulations to Elisa Tonello and Paolo Erdman!

On 01 September, Max von Kleist started as MATH+ Professor of "Mathematics of Data Sciences" at FU Berlin. We also welcome Tobias Hurth as "Einstein International Postdoctoral Fellow", who will strengthen Maximilian Engel's group at FU Berlin. And we are delighted that BMS Alumnus Sebastian Neumayer (EPFL) received the GIP PhD Prize 2022. More details can be found in the people's section below.

In 2021, the BMS-BGSMath Junior Meeting had to be canceled due to the pandemic. It could finally take place again from 05 to 07 September in Barcelona.

We're looking to fill the MATH+ Junior Research Group in "Optimization Under Uncertainty". Please help to spread the word about the call for application as Head of MATH+ Junior Research Group at TU Berlin. And the call for nominations for the MATH+ Dissertation Award is open!

For those who love entertaining science communication, please come and attend the "Science Slam of the Berlin Clusters of Excellence" at the *Berlin Science Week* on **10 November** and cheer on our MATH+ representatives Enrico Bortoletto (PhD, ZIB) and Guillermo Olicón Méndez (Postdoc, FU) while they'll be competing with the other Berlin clusters.

And finally, we remind you that the **MATH+ Day will take place on 18 November 2022**, with the General Assembly and the election of a new Chair and Board.

If you have any news you would like to share regarding your research, publications, prizes, or interesting guests, please contact Beate Rogler at rogler@mathplus.de.

With best wishes for the upcoming semester,

MATH+ Chair

MATH+ News

✚ Job@MATH+: Head of MATH+ Junior Research Group "Optimization Under Uncertainty" at TU Berlin

We are looking for a candidate with extensive experience and independent research results in **"Optimization Under Uncertainty"**, for example, in robust optimization, data-driven optimization, online algorithms, and algorithmic game theory.

Application deadline is **11 November 2022.**

Read more

✚ MATH+ Dissertation Awards

In cooperation with the Einstein Foundation Berlin, the Berlin Mathematical School (BMS) awards up to three annual prizes for outstanding dissertations. All BMS graduates who completed their doctorate with a grade of "summa cum laude" and defended between 01 October 2021 and 30 September 2022 are eligible.

Dissertations can be nominated by the PhD supervisor or another MATH+ Faculty Member. Nominations need to be submitted electronically to <dissertation-prize@mathplus.de> **by 31 December**!

Read more

MATH+ People

✚ Max von Kleist Started as MATH+ Professor of "Mathematics of Data Sciences" at FU Berlin

We are delighted to announce that Max von Kleist has recently assumed his position as MATH+ Professor of "Mathematics of Data Sciences" at FU Berlin. **Welcome and Congratulations!**

His research focuses on data-driven mathematics, machine learning for biological data analysis, and the development of efficient methods for multiscale modeling and simulation. He works on applications in infectious disease, public health, and molecular biology.

Max von Kleist received his PhD in Applied Mathematics from the Hamilton Institute/National University (Ireland) in 2009 and moved to FU Berlin for his postdoctoral research, where he became a MATHEON junior group leader in 2011, followed by a BMBF-funded junior group leadership at FU from 2014 to 2019. In 2019, he joined the Robert-Koch Institute and headed the Bioinformatics unit there from 2020, when the SARS-CoV-2 epidemic hit Europe.

Max von Kleist is very much familiar with the Berlin mathematical community, as he was a member of MATHEON, the Einstein Center for Mathematics (ECMath), and a council member in MATH+.

Read more

+ Tobias Hurth Joined Maximilian Engel's Group as "Einstein International Postdoctoral Fellow"

Maximilian Engel's research group "Application-driven Random and Multiscale Dynamical System" at FU Berlin is growing. Tobias Hurth joined them as *Einstein International Postdoctoral Fellow*.

Hurth received his Ph.D. in mathematics from the Georgia Institute of Technology in 2014. He has since held postdoctoral positions at the University of Toronto, the Ecole Polytechnique Fédérale de Lausanne, and the University of Neuchâtel.

Tobias Hurth's research interests include stochastic processes, random dynamics, and mathematical physics. He has studied the long-term behavior of dynamical systems characterized by accidental switching between deterministic vector fields. In addition, he has worked on polymer models and stochastic heat equations.

In Engel's group, he intends to develop the ergodic theory for localized random dynamical systems and to explore applications to areas such as deep learning and chemical reaction networks.

Read more

+ BMS Alumnus Sebastian Neumayer Received the GIP Dissertation Award 2022

We are delighted to announce that BMS Alumnus Sebastian Neumayer received the GIP Dissertation Prize 2022. The GIP (Gesellschaft für Inverse Probleme) awards the best PhD thesis in the field of "Inverse Problems" every two years. **Congratulations!**

Sebastian Neumayer graduated with summa cum laude for his thesis on "Deformation and Transport of Image Data" from TU Berlin in 2020. He received his B.Sc. and M.Sc. in Mathematics from TU Kaiserslautern before transferring to Berlin for PhD studies. He held a postdoc position at TU Berlin in Gabriele Steidl's research group "Applied Mathematics" before he moved to Lausanne for his postdoctoral research in the "Biomedical Imaging Group" at EPFL in 2021.

Sebastian Neumayer's research interests include motion and deformation modeling, variational models and optimal control, optimal transport and Sinkhorn divergences, optimization on manifolds, machine learning, neural networks, and normalizing flows, inverse problems in imaging, and convergence analysis of numerical schemes.

Read more

+ BMS Students Won the Best Presentation Prize of the DMV Student Conference 2022

From 03-05 August 2022, the Student Conference of the Deutsche Mathematiker-Vereinigung (DMV) took place in Leipzig at the Max Planck Institute for Mathematics in the Sciences.

We are proud to report that two BMS students were awarded the prize for the best presentations at the

conference: Anastasija Pešić (Humboldt-Universität zu Berlin) and Jonas Köppl (Freie Universität Berlin). **Congratulations!**

Anastasija Pešić received her Bachelor's degree from the University of Belgrade and joined the BMS as a Phase I student in 2019. She is pursuing her dissertation research with Barbara Zwicknagl at HU Berlin.

Jonas Köppl did his Bachelor's degree in Passau and also started BMS Phase I in 2019. After completing his Master's degree at TU Berlin, he joined the research group of Benedikt Jahnel at WIAS for his PhD.

✚ The Following BMS Students Have Successfully Completed Their Doctorate

Sarah Manuela Geiß (TU Berlin)
"Sharp generalizations of stochastic Gronwall inequalities"

Ali Hashemi (TU Berlin)
"Advances in Hierarchical Bayesian Learning with Applications to Neuroimaging"

Gottfried Hastermann (FU Berlin)
"Analysis of the Cell-Vertex Finite Volume Method for PseudoIncompressible Divergence Constraints on Quadrilateral and Cuboid Meshes"

Tobias Kreutz (HU Berlin)
"Arithmetische Aspekte von Periodenabbildungen und deren speziellen Untervarietäten"

Jan Lukas Macdonald (TU Berlin)
"The Reliability of Deep Learning for Signal and Image Processing: Interpretability, Robustness, and Accuracy"

Moritz Ebeling-Rump (TU Berlin)
"Phase-Field Approach to Two-Scale Topology Optimization"

Congratulations!

MATH+ Events

Review

✚ BMS-BGSMath Junior Meeting in Barcelona, 05-07 September 2022

We are delighted that the BMS-BGSMath Junior Meeting took place at the University of Barcelona this year from 05 to 07 September. Around 80 participants attended this year's meeting in Spain. BMS Co-Chair John M. Sullivan (TU Berlin) represented the BMS.

The Berlin Mathematical School (BMS) and the Barcelona Graduate School of Mathematics (BGSMath) take turns in organizing the joint meeting every two years. Both schools share their ambitions to conduct excellent doctoral and postdoctoral training programs. The scientific sessions were focused on different areas of mathematics, covering a wide range of topics. Following the usual rotating principle, the next BMS-BGSMath Junior Meeting will be held in Berlin either in 2023 or 2024.

Read more about the meeting and a student's impressions

+ Final Conference: TES - Mathematics of Complex Social Systems (19-20 September 2022)

The Thematic Einstein Semester (TES) "The Mathematics of Complex Social Systems: Past, Present, and Future" aimed at unlocking the potential for mathematical modeling and reasoning within the extremely large and diversified fields of study that constitute modern Social Sciences and the Humanities.

It brought together young researchers and experienced scholars from mathematics and other disciplines to focus on complex social systems, with a two-fold focus on agent-based models (ABMs) and data-driven methods. To synthesize the TES' insights and outcomes, the final conference deepened discussions on four selected issues and gave an insight into student projects that took place throughout the semester. With a set of interdisciplinary sessions, the aim was to explore differences and similarities in existing work and to discover gaps and open questions of interest for future research.

Read more

+ DMV Annual Meeting 2022 in Berlin

Photos: ©Bernd Wannenmacher

The DMV Annual Meeting 2022 took place from 12 to 16 September at the campus of Freie Universität Berlin. MATH+ supported the event, and MATH+ Chair Christof Schütte gave a public lecture.

Highlights included lectures by Fields Medalist (2022) Hugo Duminil-Copin (Paris) and by Alexandra Carpentier (Magdeburg), recipient of the DFG's von Kaven Prize in 2020, as well as the presentation of the DMV's Minkowski Medal (2022) to Martina Hofmanová (Bielefeld).

The evening of 13 September featured the presentation of the 2022 DMV Mathematics Cartoon Prizes, the awarding of the 2022 National Mathematics Competition winners, and a book reading by Dr. Norbert Lossau, DIE WELT, from his new science thriller "Feuermondnacht".

Preview

+ MATH+ Fridays

21 October:	Carlos Enrique Améndola Cerón (TU Berlin): : Algebraic Statistics: Past, Present and Future
04 November:	Peter Scholze (MPI Bonn)

+ MATH+ Events

18 November:	MATH+ Day! (General Assembly and Election of a new Chair and Board)

+ Other Events with MATH+ participation

05 November:	Schule@DecisionTheatreLab Project at the Berlin Science Week
10 November:	Science Slam of the Berlin Clusters of Excellence (including 2 MATH+ reps)
02 December:	"Mathenacht" (online) of three Math Clusters of Excellence: Hausdorff Center for Mathematics, Bonn (HCM); Mathematics Münster (MM); MATH+, Berlin

MATH+ Outreach

+ MATH+ Advent Calendar 2022 - Submit your Challenges!

We cordially invite you to submit your challenge for the 19th MATH+ Advent Calendar. With several thousands of dedicated participants from Germany, Europe, and the whole world, the mathematical Advent calendar is an integral part of MATH+'s outreach activities. Furthermore, it is your opportunity to present your research to a broad, young, and bright audience to attract their interest. Please submit your proposal as soon as possible to schools@mathplus.de.

If you have any questions or need assistance, do not hesitate to get in touch with Ariane Beier at schools@mathplus.de.

+ Call for Support of MATH+ Outreach Events and Science Communication

Are you interested in Science Communication and in presenting your research to an interested audience? We are always on the lookout for scientists who wish to represent MATH+ and explain their research and experiences to the general public in an amusing or entertaining fashion.

For younger scientists, in particular, this can be an essential distinguishing feature in their scientific careers, as more attention is being paid to science communication activities in addition to scientific qualifications. **Dear PIs and "Scientists in Charge":** Please encourage your group members and (PhD) students to join our events, such as Science Slams, Meet the Scientist etc.

In case of interest, please get in touch with Ariane Beier (school@mathplus.de) and Beate Rogler (rogler@mathplus.de).