hausdorff center for mathematics

UNIVERSITÄT BONN

HCM NEWS 1/25

Dennis Gaitsgory awarded 2025 Breakthrough Prize

Dennis Gaitsgory, director at the Max Planck Institute for Mathematics (MPIM) and member of the HCM, receives the 2025 Breakthrough Prize in Mathematics, endowed with 3 million US dollars “for foundational works and numerous breakthrough contributions to the geometric Langlands program and its quantum version; in particular, the development of the derived algebraic geometry approach and the proof of the geometric Langlands conjecture in characteristic 0”. Dennis Gaitsgory has dedicated the past 30 years to proving the geometric Langlands conjecture. Over the decades, he and his collaborators have built an extensive body of work, forming the foundation of the new proof. The geometric Langlands program has far-reaching implications for physics, mathematics, and potentially even practical technologies. It forges deep connections between different mathematical structures and has the potential to drive breakthroughs in theoretical physics, number theory, and even quantum computing.

In Bonn since 2021

Dennis Gaitsgory completed his studies at Tel Aviv University before earning his PhD in 1997 at the Hebrew University of Jerusalem under Joseph Bernstein. He then held a visiting position in Princeton, USA, followed by roles as a Clay Research Fellow and a professor at the University of Chicago. In 2005, he joined Harvard University as a professor. In 2021, the Max Planck Society appointed him as a Scientific Member and Director at the Max Planck Institute for Mathematics in Bonn.

The Breakthrough Prize

The Breakthrough Prize was established in 2012 by Sergey Brin (Google), Mark Zuckerberg (Facebook), and others to recognize outstanding researchers for their groundbreaking discoveries. It is awarded in the fields of life sciences, physics, and mathematics.

Rajula Srivastava receives the Maryam Mirzakhani New Frontiers Prize

Rajula Srivastava from the Mathematical Institute at the University of Bonn has received a **Maryam Mirzakhani New Frontiers Prize** from the Breakthrough Prize Foundation for her outstanding research achievements. The award is endowed with 50,000 dollars.

"The prize confirms that my research questions are valued by the community - and it strengthens my motivation to continue working on them," says the award-winner. "It also increases my visibility as a young mathematician and, more importantly, brings more attention to the interdisciplinary field in which I have been working."

Rajula Srivastava works at the interface between harmonic analysis and number theory. Harmonic analysis is originally concerned with the mathematical study of acoustic waves or, more generally, with the decomposition of functions into fundamental oscillations. Different musical instruments produce different sounds. A trumpet sounds completely different from a violin, even if both instruments play the same note. In a first approximation, it is the shape of the instrument that determines the sound it produces, i.e. a geometric property. Rajula Srivastava also deals with geometric properties in her research, namely the number of rational points that can be found near a given smooth surface of a manifold such as the sphere or a helix, using methods of harmonic analysis. How can one count the rational points in the vicinity of such a surface and what exactly does this measure tell us? Solutions to such counting problems yield important statements in number theory, for example in questions of Diophantine approximation in higher dimensions, i.e. the approximation of points with real coordinates by rational points.

Hirzebruch Research Instructor

Rajula Srivastava completed her Master of Science at the National Institute of Science Education and Research in India. The mathematician received her doctorate from the University of Wisconsin-Madison in August 2022. As a Hirzebruch Research Instructor, Rajula Srivastava is a scientist at both the Mathematical Institute of the University of Bonn and the Max Planck Institute for Mathematics (MPIM) in Bonn. The Hirzebruch Research Instructor position is a three year appointment and was established in close partnership between the Hausdorff Center for Mathematics and the MPIM. It consists of two years of independent research at the MPIM and one academic year with a teaching obligation at the University of Bonn. The position is offered to particularly promising postdoctoral researchers.

Maryam Mirzakhani New Frontiers Prize

The Maryam Mirzakhani New Frontiers Prize is awarded to outstanding female mathematicians who have recently completed their doctorate. Rajula Srivastava has made progress in a challenging area at the interface between harmonic analysis and number theory. Rajula Srivastava receives 50,000 dollars. She would like to donate part of the prize money to organizations in India that support children's education. The prizewinner would like to thank her numerous mentors and the many female mathematicians at the University of Bonn who have inspired her as role models.

Hausdorff Memorial Prize awarded to Meike Neuwohner and Radu Toma

As every year, the Department of Mathematics awarded the Hausdorff Memorial Prize to the best dissertation in mathematics. As there were two outstanding nominations from very different mathematics disciplines this year, the jury decided to award the Hausdorff Memorial Prize for the academic year 2023/2024 twice: to **Meike Neuwohner** and **Radu Toma**. Herbert Koch, Chairman of the Department of Mathematics, presented the award on January 15.

Meike Neuwohner addresses in her PhD thesis "Improved Approximation Algorithms for Weighted k-Set Packing", supervised by Stefan Hougardy, approximation algorithms for the k-set packing problem, a fundamental question in combinatorial optimization. The results include the first improvement in the approximability of the problem in over twenty years. The first set of results not only strengthened the previous local search techniques, but also showed that a new algorithm in the thesis gives the asymptotically best achievable bound using local improvements. Overall, the results significantly improve our understanding of a fundamental problem, by developing new techniques and insights, while also charting their limitations. The results of the thesis were published in prestigious conferences and journals, including SODA 2023, IPCO 2022, and Mathematical Programming. The presentation of the results is also excellent: all reviewers praised the clear structure, rigour and clarity, as well as the intuitions provided in the exposition of complex technical arguments.

In his PhD thesis "The Sup-Norm Problem For Automorphic Forms In Higher Rank", supervised by Valentin Blomer, Radu Toma deals with sup-norm estimates of automorphic forms on groups of higher rank. Automorphic forms are an interface between various mathematical topics: from an analytical perspective, they are eigenfunctions of Laplace operators on symmetric spaces, from the perspective of representation theory, they are elements of irreducible representations. They contain information about properties of arithmetic objects in number theory. Since 1995, initiated by a paper by Iwaniec and Sarnak in the Annals of Mathematics, these estimates have received the greatest attention. Radu Toma was the first to show uniform estimates in the covolume and in the spectral parameter, both in the cocompact and non-cocompact case. The result in the cocompact case has already been well published. The non-cocompact case is much more difficult and all reviewers were impressed and surprised by this.

The **Hausdorff Memorial Prize** is awarded in honor of Felix Hausdorff every year around the anniversary of his death, January 26, as part of the Hausdorff Colloquium. Professors and senior lecturers have the right to nominate candidates. The decision is made by a jury appointed by the Department of Mathematics. The award consists of prize money of 500 euros and a book prize. This year, the prize money was split.

Jerald L. Ericksen Prize for Sergio Conti, Stefan Müller and Michael Ortiz

Sergio Conti and **Stefan Müller** from the Institute for Applied Mathematics at the University of Bonn and the former Bonn Research Chair **Michael Ortiz** (Caltech) have been awarded the **Jerald L. Ericksen Prize** 2025 for their work on “Data Driven Problems in Elasticity”. The prize will be awarded at the end of July at the joint SIAM/CAIMS conference AN25 in Montreal.

The prize was awarded for the paper “Data Driven Problems in Elasticity” in the journal "Archive for Rational Mechanics and Analysis", one of the leading journals for applications of mathematics in mechanics. In the article, the authors analyze novel, so-called data-driven approaches for describing the deformation of elastic materials. Until now, the prevailing and classical scientific paradigm in materials science has been to calibrate empirical material models based on a small amount of empirically observed data and then use the adapted material models for further investigations and simulations. This modeling process inevitably leads to errors and uncertainties in the solutions, especially for systems with high-dimensional phase spaces and complex material behavior. Remarkable advances in experimental sciences - such as digital imaging and microscopy - allow the accumulation of more and more data at different scales and have thus radically changed the nature of materials science. The richness of data suggests the possibility of a new, data-driven scientific approach. The new paradigm is to formulate the classical problems directly from the material data, bypassing the step of empirical modeling.

For Stefan Müller, the award has a special importance, as the award's namesake had an enormous influence on his own research program. “Ericksen's work on the mathematical description of solid-solid phase transitions was absolutely formative for my field of work. My research work is based on the theory developed from this,” explains Stefan Müller. “I therefore consider the award a special honor.” Sergio Conti agrees and adds: “I am very pleased about this award, which is above all the result of many years of extremely fruitful collaboration with Michael Ortiz. We were able to bring him to Bonn many years ago as an engineer and thus actually conduct interdisciplinary research. His many good ideas have greatly inspired our work.”

A great success for the Bonn Research Chair program

Michael Ortiz held a Bonn Research Chair until the end of last year and spent several months each year conducting research in Bonn in this position. The Bonn Research Chairs were established more than 10 years ago by the Hausdorff Center for Mathematics following the example of the Humboldt Research Award. The scientists appointed in these chairs have the opportunity and at the same time undertake to spend a period of time - usually six months - researching in Bonn each year, in close collaboration with colleagues in their field. Véronique Gayrard (CNRS), Maria Gordina (University of Connecticut), Lillian Pierce (Duke University), Peter Schröder (Caltech) and Alexander Volberg (Michigan State University) are currently holding such positions in Bonn.

Established in 2021 in memory of Jerald L. Ericksen, the prize is awarded every five years for the original formulation of a mathematical theory on a significant scientific or technical problem published in the fifteen years preceding the award. The prize recognizes either a theory that enables a novel application of mathematical ideas or an unusual approach that raises entirely new questions in mathematics. The namesake Jerald L. Ericksen (1924-2021) made fundamental contributions at the intersection of physics, mechanics, applied mathematics and engineering, including materials science. He is best known for his work in the 1960s on the mathematical modeling of liquid crystals (“Leslie-Ericksen theory”), which ultimately paved the way for numerous applications such as liquid crystal displays (LCDs). The Jerald L. Ericksen Prize is endowed with around 2,000 dollars.

Alexis Prévost heads a new Emmy Noether group

How does water move through a filter with coffee? This question is not so easy to answer, as neighboring areas in the moist coffee powder influence each other. How the hot water moves through the roasted powder is also governed by stochastic processes. Answers are provided by what are known as "percolation models," which **Alexis Prévost** is investigating. He joined the University of Bonn from the University of Geneva and now leads an **Emmy Noether group**. It is being provided with up to 1.3 million euros of funding by the German Research Foundation (DFG).

"My project is about stochastic processes that play a role in nature and in many areas of science," says Alexis Prévost. "A better understanding of these models not only helps to further develop mathematical principles but can also enable applications in other sciences in the long term." They extend from material research and theoretical physics to probability theory. Examples include questions about how ice melts to water or how certain structures form in networks. The topic of the new Emmy Noether junior research group "Universality classes for strongly correlated models" concerns complex systems in which regions in close proximity influence each other. Such "strongly correlated models" occur, for instance, in physics or biology when one wants to understand how magnetism is distributed in materials or how enzyme gels are degraded. "My goal is to better understand such systems mathematically and find general laws that are also important for other scientific questions," says Prévost, who is also an associate member of the Hausdorff Center for Mathematics.

The mathematician works with researchers from various countries and universities, including the University of Cambridge, Imperial College London, and the École Polytechnique Fédérale de Lausanne. He also wants to cooperate with researchers at the University of Bonn, particularly from the Transdisciplinary Research Area "Modelling". The term for the Emmy Noether group is initially three years and can be extended by a further three years following a positive interim evaluation.

Path to the University of Bonn

Alexis Prévost, born in Versailles (France) in 1992, studied mathematics in Paris and obtained his doctorate at the University of Cologne. He then worked at the University of Cambridge and the University of Geneva. Since March 2025, he has been the leader of an Emmy Noether group at the Institute for Applied Mathematics at the University of Bonn. He was awarded the Förderpreis of the Fachgruppe Stochastik in 2023.

Leopoldina elects Daniel Huybrechts as a member

The **National Academy of Sciences Leopoldina** elected **Daniel Huybrechts** as a member of the Leopoldina on the recommendation of renowned colleagues from among its members.

Daniel Huybrechts, born in Berlin in 1966, completed his doctorate at Humboldt University Berlin and the Max Planck Institute for Mathematics in Bonn. He also conducted research in Princeton and Paris, among other places. After his habilitation in Essen, he worked as a professor at the University of Cologne and at the Institut de Mathématiques de Jussieu in Paris. He has been a professor at the University of Bonn since 2005 and has been a member of the HCM since its foundation.

The Leopoldina was founded in 1652 and is one of the oldest scientific academies in the world. With around 1,500 members, the Leopoldina brings together outstanding scientists from Germany, Austria, Switzerland and many other countries. In 2008, the Leopoldina was appointed the German National Academy of Sciences. In this function, it represents German science in international bodies and speaks out on social and political issues in order to provide a non-partisan and objective framework for discussion.

Heisenberg grant for Asgar Jamneshan

The German Research Foundation (DFG) has accepted **Asgar Jamneshan** into the **Heisenberg program**. Asgar Jamneshan is carrying out research into the foundations of higher-order Fourier analysis. The mathematician, who is an associate member of the HCM, will receive funding of up to 570,000 Euro.

Asgar Jamneshan works at the Institute of Mathematics at the University of Bonn. His research focuses on the foundations of higher-order Fourier analysis and he explains what this involves using the following example: If you take the natural numbers 1, 2, 3, etc. in series, toss a coin for each number and then place the number in a "pot" if the coin shows "heads," you will produce a random subset. "You would expect that around half of the numbers would end up in the pot and that these numbers would be randomly distributed," says Jamneshan. However, Szemerédi's theorem, a central result in additive combinatorics, shows that ordered structures – so-called arithmetic progressions such as 5, 10, 15, 20, 25 – also arise in such subsets. The remarkable point is that this theorem also applies to every sufficiently large subset with a positive "fraction", irrespective of how the subset is selected. "This means that structure cannot be completely destroyed – as long as the set is sufficiently large," says the mathematician. Yet it is still unclear what "sufficiently large" actually means in many problems. Researchers need tools from higher-order Fourier analysis in order to investigate these types of questions. "These principles are of fundamental importance for parts of pure mathematics and also play a role in applications such as theoretical computer science."

The DFG will provide the mathematician with funding over the next five years within the Heisenberg program. Funding is initially awarded for a three-year period and can be extended for a further two years after a successful interim evaluation. Heisenberg funding is awarded to highly qualified researchers to improve their prospects of securing a permanent position as a professor. "I have worked for a long time on the development of this research project and am delighted that it has been approved for funding by the DFG and their reviewers," says Jamneshan. "My goal is to push forward our understanding of as many of the questions addressed in the project as possible during my time in Bonn. The Mathematical Institute is a particularly suitable and inspiring environment for this research."

Asgar Jamneshan studied and received his PhD at the Humboldt University of Berlin. He has worked at the University of Konstanz, ETH Zurich, the University of California, Los Angeles and Koç University in Istanbul. Jamneshan moved to the University of Bonn from TU Dresden at the beginning of April.

Former Bonn PhD student Richard Höfer receives the Heinz Maier-Leibnitz Prize 2025

Richard Höfer, professor at the University of Regensburg and former PhD student in Bonn, has been awarded the **Heinz Maier-Leibnitz Prize 2025**. The prize is considered the most important award in Germany for researchers in the early stages of their careers. The award ceremony will take place on June 3 in Berlin.

Richard Höfer deals with the mathematical properties of differential equations that describe physical phenomena. He achieved sensational breakthroughs in the mathematically rigorous treatment of suspensions, i.e. solutions of small particles in liquids or gases. You could model each individual particle with its own equation, but when you are dealing with several thousand or even millions of particles, an overarching macroscopic approach becomes necessary. The aim is to gain fundamental insights into interactions that are difficult to explore through experiments or numerical simulations. For example, he models clouds of particles instead of modeling individual particles. Suspensions are omnipresent in nature, for example in aerosols and biological fluids. Richard Höfer's theoretical findings can therefore also be relevant for environmental and medical technology.

Richard Höfer completed his PhD in 2019 under Juan Velázquez at the Institute of Applied Mathematics at the University of Bonn. In 2020, he went to the Université de Bordeaux as a postdoctoral researcher and was a Leopoldina postdoctoral researcher at the Université Paris Cité from 2021 to 2022. He was then appointed Associate Professor at the University of Regensburg. In 2020, he received the Hausdorff Prize for the best PhD thesis of the 2018/19 academic year in the Department of Mathematics at the University of Bonn.

The Heinz Maier-Leibnitz Prize has been awarded by the German Research Foundation (Deutsche Forschungsgemeinschaft; DFG) to scientists at an early stage of their careers since 1977 and is intended to recognize and encourage outstanding scientific work. Ten prizes are awarded each year, each endowed with 200,000 euros. The prize money can be used for further scientific research for up to three years. Heinz Maier-Leibnitz (1911-2000) was a German experimental physicist and President of the DFG.

Jan Hasenauer and Ana Ivonne Vazquez-Armendariz win transdisciplinary research prize

The Transdisciplinary Research Areas (TRAs) “Modelling“ and “Life and Health“ at the University of Bonn have presented their €100,000 **research prize, entitled “Modelling for Life and Health,**” for the second time. The winners – **Ana Ivonne Vazquez-Armendariz** and **Jan Hasenauer** – will be using their prize money to study the functions of “scavenger cells” in the lungs at the interface between mathematics and medicine. Jan Hasenauer ist a member of the HCM and one of the leaders of its Interdisciplinary Research Unit (IRU) "Mathematics and life sciences".

New findings on the role of scavenger cells in the lung

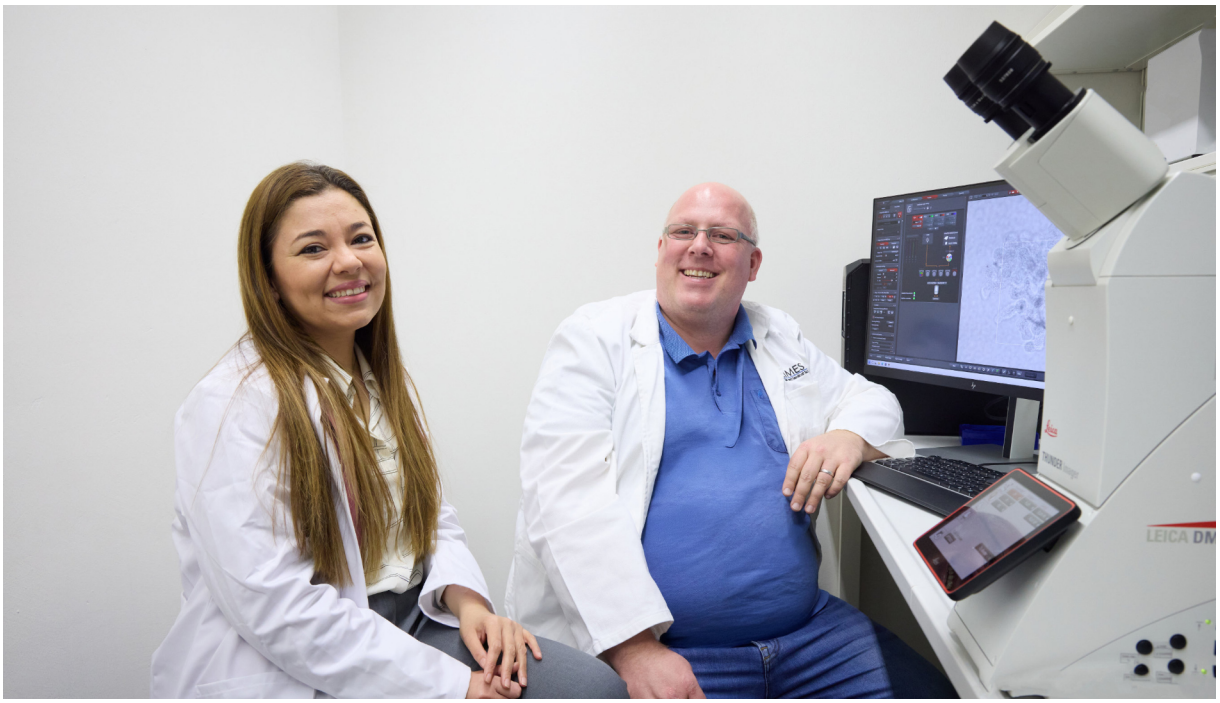
Ana Ivonne Vazquez-Armendariz and Jan Hasenauer, both holders of an Excellence Professorship at the University of Bonn, are now devising new models to examine the behavior of alveolar macrophages more closely to try and find out whether the lung’s scavenger cells move around randomly or in a targeted way. To study this behavior, the researchers are creating a mathematical model based on experiments done using “mini” lungs from the laboratory. This involves obtaining scavenger cells from various sources and inserting them into special lung systems known as 3D organoids, which are made from stem cells grown in such a way as to imitate the structure and function of a human organ. Hasenauer and Vazquez-Armendariz are using state-of-the-art imaging techniques to track the movements of the cells within these organoids and investigating them using their mathematical model. In the long term, their findings could help unlock a better understanding of the defense mechanisms inside the lung.

The prize this year was open to pairs of researchers who are members of the TRA Modelling and TRA Life and Health. The steering committees of the two TRAs came together to crown Jan Hasenauer and Ana Ivonne Vazquez-Armendariz as the winners after considering criteria such as innovativeness, transdisciplinarity, scientific quality and the applicants’ credentials as well as the potential for collaborative research offered by the project being proposed.

About the prizewinners

Ana Ivonne Vazquez-Armendariz studied clinical biochemistry at the University of Nuevo León in Mexico and molecular medicine at Charité in Berlin. She gained her doctorate from Justus Liebig University Giessen before going on to work as a postdoctoral researcher at the University Hospital of Giessen and Marburg. Vazquez-Armendariz established and headed up her first research unit at the University of Giessen’s Institute for Lung Health in 2021. She is continuing the work on lung organoids and disease modeling that she began there in her current position of Argelander Professor at the University of Bonn. Her research has already been published in a number of renowned journals and has won multiple awards, including from the American Thoracic Society. Vazquez-Armendariz is a member of the TRA Life and Health and the ImmunoSensation2 Cluster of Excellence.

Jan Hasenauer studied technical cybernetics at the University of Stuttgart, where he earned a doctorate in engineering. After working at Helmholtz Munich and the Technical University of Munich, he became Professor of Mathematics and Life Sciences at the University of Bonn in 2017. Since 2022, he has held one of the distingushed Schlegel Professorships, established as part of the Excellence Strategy. Jan Hasenauer is a member of the TRAs Modelling and Life and Health, and of the two Clusters of Excellence ImmunoSensation2 and HCM.



HAUSDORFF EVENTS

Abel in Bonn - Abel Symposium 2025

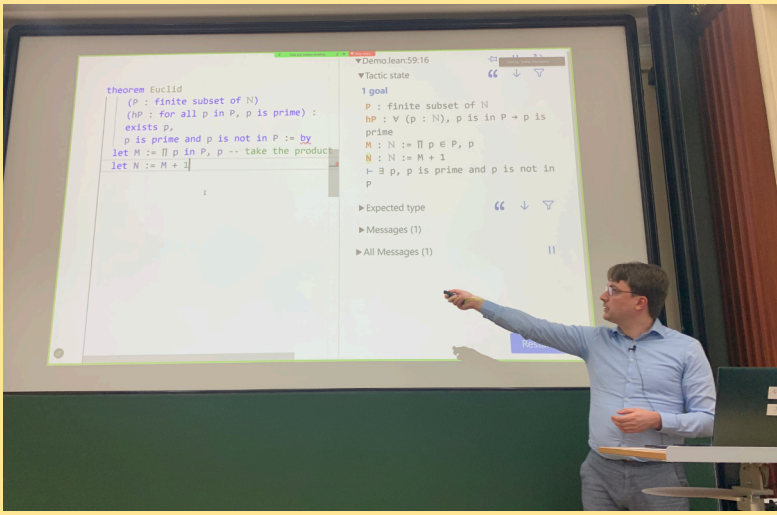
The Niels Henrik Abel Memorial Fund has established an annual Abel Symposium, administered by the Norwegian Mathematical Society, which is always held after the last meeting of the Abel Committee. This year, the Abel Symposium took place at the HCM in Bonn, with world-leading speakers from various fields of mathematics: **László Lovász** (Abel Laureate 2021), **Hee Oh** (member of the Abel Committee), **Peter Scholze** (Fields Medalist 2018), **Maryna Viazovska** (Fields Medalist 2022) and **Avi Wigderson** (Abel Laureate 2021). Members of the Abel Committee this year included Ursula Hamenstädt from the Mathematical Institute and Martin Hairer, Chairman of the HCM Scientific Advisory Board.

The Abel Prize

The Abel Prize is named after Niels Henrik Abel, Norway's greatest mathematician of all time. Abel left a lasting mark on the mathematical world. His mathematics served as the basis for a number of significant technological breakthroughs, including the development of the Internet. The Abel Prize was established by the Norwegian Parliament in 2002 to mark the 200th anniversary of its foundation. The prize is endowed with 7.5 million Norwegian kroner and is awarded by the Norwegian Academy of Sciences and Letters on behalf of the Ministry of Education. This year, the Japanese mathematician Masaki Kashiwara was awarded the Abel Prize 2025 "for his fundamental contributions to algebraic analysis and representation theory, in particular the development of the theory of D-modules and the discovery of crystal bases of representations of a quantum group".

11th Bonn Math Night

The **Bonn Math Night** began on “Pi-Day” (March 14) in the afternoon with workshops for children and teenagers, held by the HCM school team and its leader, on mathematics with dominoes, the Borsuk-Ulam theorem from topology, and mathematics for the 2025 federal elections, the seat allocation procedure and Balinski-Young's theorem. The evening program was hybrid - with lectures held at the HIM buiilding and an audience both on site and at home on their computers and smartphones. **Lisa Sauermann** gave a talk on rainbow circles and her main field of research, probabilistic combinatorics. In the subsequent interview, conducted by **Thoralf Räsch**, the audience was also able to get to know Lisa Sauermann from her personal side. For many of the students present, Lisa Sauermann is a great role model, not least because of her successes in mathematical competitions in her youth. Thus the interest in this interview was very high. Finally, **Floris van Doorn** demonstrated the proof assistant Lean using the example of Euclid's proof that there are an infinite number of primes. The next math night will take place in November or December, once again together with Münster and Berlin.



HAUSDORFF MIXED

Children's university with Antje Kiesel

In January, **Antje Kiesel** held an exciting lecture as part fhe children's university. The lecture was entitled “A mathematical journey from Leonhard Euler to the Bottrop tetrahedron” and took place in the Wolfgang Paul lecture hall in front of several hundred children. On this mathematical journey, the children encountered the Platonic solids and the „House of Santa Claus“. Together with Antje Kiesel, the children drew, counted and puzzled and learned why Euler's mathematics is still important in many applications today.

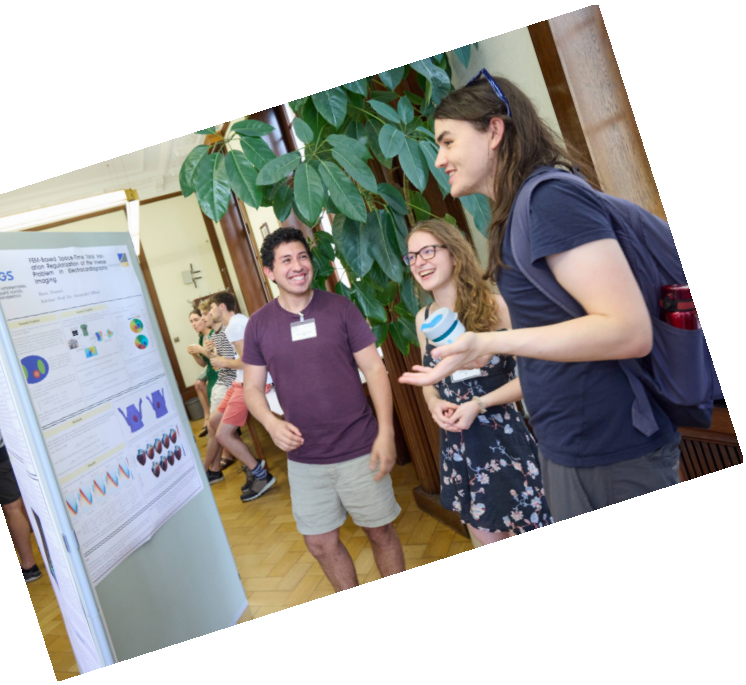
News from the Bonn Math Club

In January, the Bonn Math Club started a long-planned project: the international math club. This is an intercontinental math club that is held once a month in cooperation with AMI Kenya. Several hundred children in Kenya have already followed the lectures from Bonn in English in four online workshops. English-speaking children from Bonn and other cities are now also taking part. In the future, this international math club is to be expanded and enriched with workshops by other lecturers, in particular from Kenya. In addition, online courses to prepare for early mathematical studies and weekly math competition training have been taking place at for several months. Other activities organized by the Bonn Math Club since the beginning of the year include a math trip to Mainz to the “Ich mach Mathe!” hands-on museum, the organization of the FEMO spring round with four first prizes for the children of the Bonn Math Club, the organization of the award ceremony for the FEMO winter rounds with eleven-time world champion in mental calculation, Gert Mittring, and a very special event: deaf children from Berlin visited in February and were taught with the support of sign language. Afterwards, the children played together over pizza and cola until they all went to see the play “The Little Prince” in the domed hall

of the Thalia bookshop in the evening, an emotionally moving bilingual reinterpretation of the classical play, which was developed and performed together with a team of hearing and deaf artists from the “Junges Theater Bonn“ and in which Grace, the daughter of HCM Managing Director Magdalena Balcerak Jackson, played the leading role. A few months ago, the Bonn Maths Club also became a registered association with recognized charitable status. Donations to this association are very welcome.

What is... the Hausdorff School for Mathematics (HSM)?

The **Hausdorff School for Mathematics (HSM)** is a new institution within the HCM that brings together all programs and initiatives for PhD students and postdocs. The HSM aims to provide an excellent learning and working environment for early-career mathematicians and to support them in pursuing their research projects and promoting their individual career paths.



What does that mean in concrete?

With the **Global Math Exchange Program** for PhD students and the **Teaching Mentoring Program** for postdocs, we want to provide early career researchers with skills and experience that are useful for their individual career stage. Other programs such as the **Junior Research Retreats** and the **Special Topic Schools** promote networking and scientific exchange across the early career stages. In addition, there are **mentoring programs** and the opportunity to independently apply for travel funds and invite guest researchers.

Who manages the HSM?

The most important decisions - such as the selection of Special Topic Schools and the allocation of travel funds - are made by the HSM Executive Committee. This committee is headed by Director **Margherita Disertori** and Deputy Director **Philipp Hieronymi**. **Magdalena Balcerak Jackson**, who designed and implemented the new HSM concept, is responsible for scientific coordination. The exciting thing about this committee, however, is that half of it is made up of representatives of the various groups of early career researchers: **Elena Dematté** as a representative of the PhD students, **Tingxiang Zou** as a representative of the postdoctoral researchers and **Christian Brennecke** as a representative of the Bonn Junior Fellows. The HSM thus also creates a space in which young academics can participate in the strategic decision-making processes and play a key role in shaping their own institution. The HSM is administratively supported by **Pavel Barinkin** (HSM Administrator and Event Coordinator) and **Anna Klinov** (HSM Graduate Studies Administrator).

Professor Prof. h.c. mult. Dr. Dr. h.c. Bernhard Korte

November 3, 1938 – April 26, 2025

An obituary of the Research Institute for Discrete Mathematics

It is with deep sadness that we bid farewell to Professor Bernhard Korte, an outstanding scientist and pioneer in discrete mathematics, who passed away in Bonn on 26 April 2025. His work had a lasting impact on the world of mathematics and computer science, and his passion for science, art and culture left a lasting mark.

Born in Bottrop, Germany, on 3 November 1938, Bernhard Korte grew up in a coal-mining village as the son of a miner. After graduating from high school in 1959, he embarked on a scientific career, studying mathematics, physics and chemistry at the University of Bonn.

It was there that he laid the foundations for his impressive academic career: he obtained his doctorate in 1967, followed by his habilitation in 1971. His career took him to professorships in Regensburg and Bielefeld before returning to Bonn, where he became professor in 1972 and had a lasting influence on the university.

Professor Korte initially headed the Institute for Operations Research, which attracted the world's best scientists in discrete mathematics. This led to the establishment of the Research Institute for Discrete Mathematics at the University of Bonn, which he founded in 1987. Under his leadership, significant advances were made in combinatorial optimisation, particularly in the field of chip design. The 'BonnTools' developed by him and his team revolutionised the design of microprocessors, which are used in countless devices worldwide.

Professor Korte was not only an eminent scientist and scientific organiser, but also the founder of the Arithmeum. A passionate collector of historic calculating machines, he laid the foundations for what is now the largest and most important collection of its kind in the world. With equal dedication, he assembled one of the most renowned collections of concrete art and, with the ArithmeumLibrary, created the world's largest collection of historical arithmetic and mathematics books. All of these collections have found a unique home in the Arithmeum in Bonn, which he designed himself, and where science and art come together in a unique and vibrant way as a testament to his creative vision.

Bernhard Korte has received numerous awards for his outstanding achievements. He was awarded the State Prize of North Rhine-Westphalia in 1997 and the Great Cross of Merit of the Federal Republic of Germany in 2002. He was also a Grand Officer of the Order of Merit of the Italian Republic and an honorary professor of the Academia Sinica in Beijing and the Pontifical Catholic University in Rio de Janeiro, Brazil. In 1987 he received an honorary doctorate from the University of Rome, La Sapienza. He was a member of the German Academy of Sciences Leopoldina in Halle, the North Rhine-Westphalian Academy of Sciences and Arts in Düsseldorf and the German Academy of Science and Engineering (acatech). In 2021, he was awarded the Innovation Prize of the State of North Rhine-Westphalia in the Honorary Award category for his life's work.

Bernhard Korte leaves an impressive legacy that goes far beyond his scientific contributions. He was an inspiring mentor, a creative spirit and, with his magnum opus, the Arithmeum, a passionate promoter of the connection between science and art. His life's work will live on in the institutions he built and inspire future generations.

It is with gratitude and appreciation that we pay tribute to a great scientist and human being whose legacy will continue to guide us. Our thoughts are with his family and loved ones at this difficult time.

IMPRINT

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