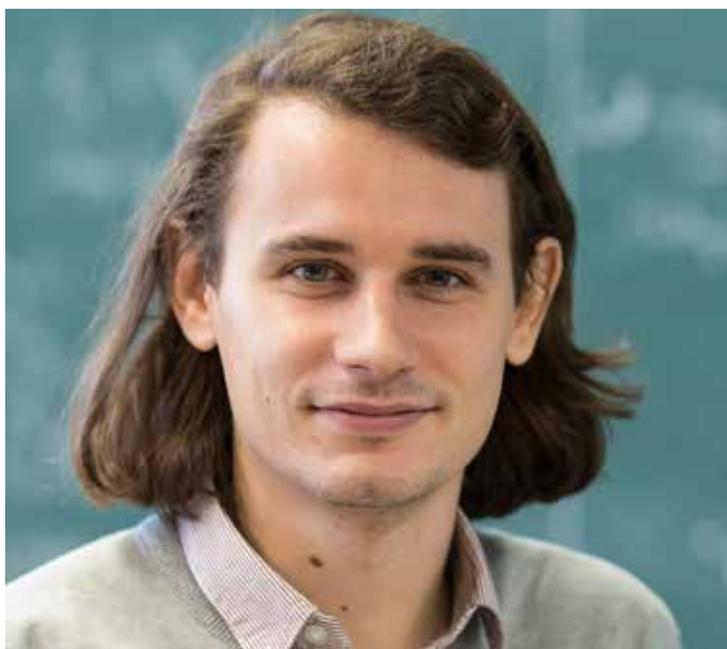




HAUSDORFF SPECIALS

Double honor for Peter Scholze

Press release of the University of Bonn from June 19, 2017



Leopoldina and Berlin-Brandenburg Academy elect mathematician from the University of Bonn as member

A double honor for an exceptional mathematical talent: The renowned German National Academy of Sciences Leopoldina has elected Peter Scholze, professor at the Cluster of Excellence Hausdorff Center for Mathematics at the University of Bonn, to become a member. Moreover, the Bonn-based exceptional mathematician also became a member of the Berlin-Brandenburg Academy of Sciences and Humanities.

At just 29 years of age, Peter Scholze is among the world's most groundbreaking mathematicians and constantly proceeds from one success to the next. Both of the recent honors join a plethora of awards and accolades over recent years and months that recognize the outstanding academic achievements and groundbreaking contributions of Professor Scholze.

The mathematician, who works in Bonn, is one of the world's leading researchers at the interface between arithmetic algebraic geometry and the theory of automorphic forms. At this interface, fascinating interconnections occur between seemingly completely different mathematical fields such as number theory, algebra, geometry, topology and analysis. Peter Scholze has fundamentally expanded the spectrum of methods in this interface area through "perfectoid spaces", which he has already introduced in his Ph.D. thesis, and which allow for essential generalizations. This has enabled him to solve several important open problems.

Founded in 1652, the Leopoldina is one of the oldest academies of science in the world. With some 1,500 members, the Leopoldina brings together outstanding scientists from Germany, Austria, Switzerland and many other countries. The Leopoldina was appointed as the German National Academy of Sciences in 2008. In this capacity, it represents the German scientific community in international committees and speaks out on social and political questions, providing a nonpartisan, factual framework for discussion.

The Berlin-Brandenburg Academy of Sciences and Humanities is a learned society with a three-hundred-year-old tradition of uniting outstanding scholars and scientists across national and disciplinary boundaries. As the largest non-university research institute for the humanities in the Berlin-Brandenburg region, it preserves and reveals the region's cultural inheritance, while also pursuing research and offering advice on issues that are crucial for the future of society and providing a forum for dialogue between scholarship and public.

Peter Scholze, born in Dresden in 1987, gained his first mathematical education at the Heinrich-Hertz-Gymnasium Berlin and demonstrated his exceptional mathematical talent at an early age at the International Mathematical Olympiad, winning three gold medals and one silver medal. After finis-

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hing high school, he completed his mathematical studies in Bonn and earned his doctorate in 2012. In the same year, he was appointed to one of the renowned Hausdorff Chairs at the Bonn Cluster of Excellence Hausdorff Center for Mathematics, where he has been working ever since. He was the first German to receive the Clay Fellowship from the Clay Foundation in 2011, the Prix Peccot of the Collège de France in 2013, the Clay Research Award in 2014 and the Cole Prize for Algebra from the American Mathematical Society in 2015. Besides many other academic awards, in 2016 he was awarded the Leibniz Prize from the German Research Foundation and the Academy Award from the Berlin-Brandenburg Academy of Sciences and Humanities which he has now joined. Recently, Peter Scholze has been invited for a plenary lecture at the renowned International

Congress of Mathematicians (ICM) 2018 in Rio de Janeiro which meets every four years.

The Hausdorff Center for Mathematics (HCM) is a Cluster of Excellence at the University of Bonn. At HCM, German and international academics conduct research into many problems in mathematics and mathematical economics. When promoting the next generation of researchers, HCM relies on the highest international standards and actively supports the early independence of young mathematicians providing scholarships. The Cluster was founded in 2006 and extended by a second funding period in 2012.

Three HCM members and fellows invited to ICM 2018

June 20, 2017

Bonn's mathematics will be present in the next International Congress of Mathematicians (ICM) 2018 (August, 1-9) in Rio de Janeiro.

Peter Scholze (Hausdorff Chair at HCM) and Geordie Williamson (Advanced Researcher at the Max Planck Institute for Mathematics 2011-2016 and now Bonn Research Fellow at HCM) have been invited for a plenary lecture, and Massimiliano Gubinelli (Hausdorff Chair at HCM) has been invited as a speaker for the Sections 10 (Partial Differential Equations) and 12 (Probability and Statistics).

The International Congress of Mathematicians (ICM) is the largest mathematics conference in the world. Organized by the International Mathematical Union, the meeting takes place once every four years. Important prizes in the mathematics community are awarded during this event, like the Fields medal.



HCM member Christian Bayer is the spokesperson of a new Research Training Group

May 18, 2017

The German Research Foundation (DFG) is setting up two new Research Training Groups addressed at young academics at the University of Bonn.

The spokesperson of the Research Training Group "Die Makroökonomik der Ungleichheit" ("The Macroeconomics of Inequality") is HCM member Prof. Dr. Christian Bayer. The new program will start in September 2017 and will run for four and a half years.

In the last decades, in many developed economies the differences in assets and income have heavily increased. Although the increased economic inequality plays an important role in the public debate, the economic implications of this phenomenon are hardly investigated. This is the motivation behind the Research Training Group "Die Makroökonomik der Ungleichheit" ("The Macroeconomics of Inequality"). At a first stage, it aims to document the diverse dimensions of this inequality and to understand the causes of its rise. At a later stage, the group's goal is to investigate if macroeconomic crises in unequal societies spread differently and if inequality creates new channels through which microeconomic crises become macroeconomically relevant.

Bonn-Cologne Research Institute in Economics founded

News of the Bonn Graduate School of Economics from April 7, 2017

The University of Bonn and the University of Cologne founded the Bonn-Cologne Research Institute in Economics (BCecon) in order to provide a new foundation for cooperation in economic research and analysis.

The Institute was founded in the honor of Nobel Laureate Reinhard Selten (1930-2016). Prof. Dr. Benny Moldovanu and Prof. Dr. Bettina Rockenbach, both former students of Nobel Laureate Reinhard Selten, will be the founding Directors of the Institute.

Prof. Dr. Michael Hoch, Rector of the University of Bonn underlined, that “the world renowned economy of Bonn, which was heavily influenced and shaped by our Nobel Laureate Reinhard Selten has also been an area of excellence of the University of Bonn for many years”. Furthermore, Prof. Dr. Axel Freimuth, Rector of the University of Cologne noted, that “BCecon provides two renowned economic institutions the opportunity to create an internationally present flagship for economic research in the fields of behavioral economics, economic theory and market functions. The recurring experience of market failures over the last decade, as well

as the creation of new markets and the sequential rising of questions relating to the necessities of new regulations have made this research not only highly relevant but also time sensitive.

At BCecon experienced as well younger economists with an outstanding reputation will work on furthering current economic research at the highest level. Furthermore, BCecon is also planning to host public events for all interested citizens. In addition, the Institute will have its own program for the creation and development of new research projects.

The opening ceremony of the Institute will take place on 28 April, 2017 on the occasion of a memorial conference for Professor Reinhard Selten (www.seltenconference.de).

The Rectors Prof. Dr. Michael Hoch (front left, University of Bonn) and Prof. Dr. Axel Freimuth (front right, University of Cologne), together with the professors Benny Moldovanu, Bettina Rockenbach, Felix Bierbrauer, and Daniel Zimmer (in the back from the left)



HAUSDORFF PEOPLE



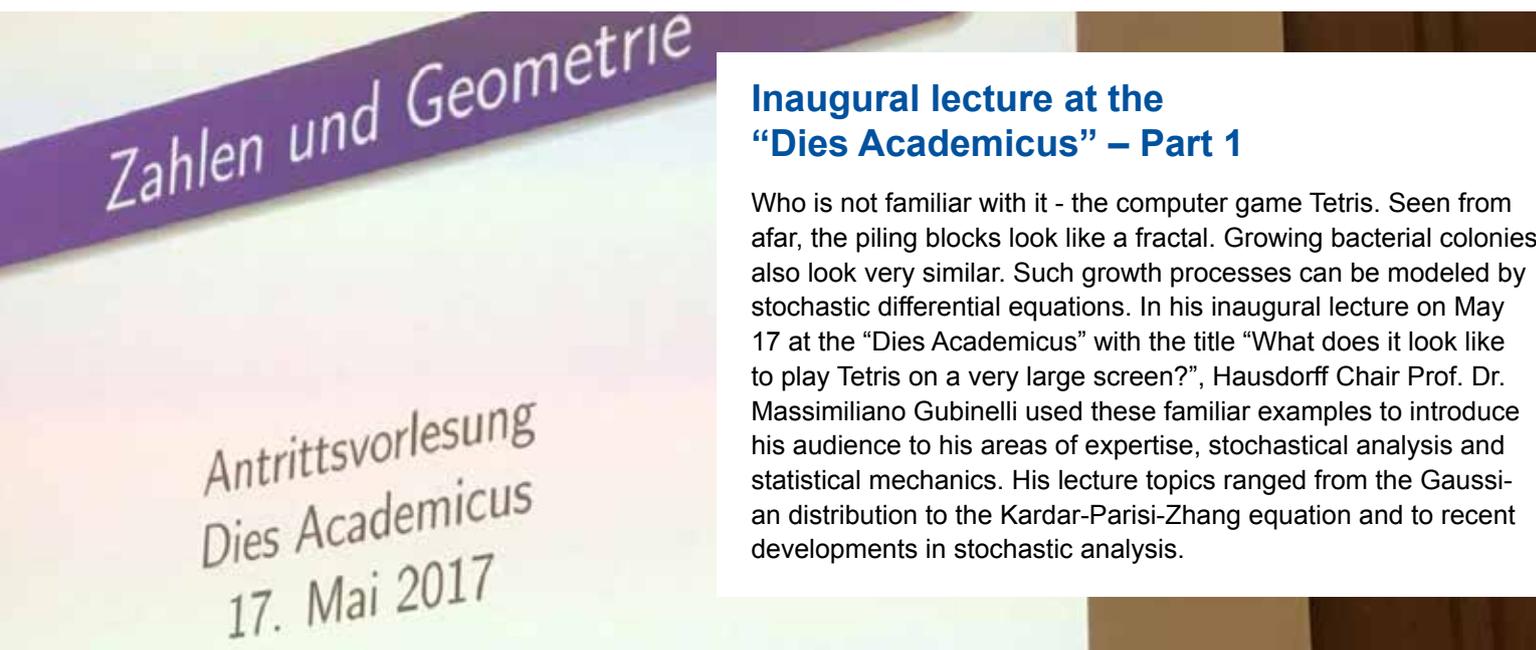
Since mid-May, **Stefan Hartmann** is responsible for public relations and events at the HCM. In 2002, he got his diploma in mathematics under the supervision of Prof. Dr. Sergio Albeverio in Bonn. He worked at the research center caesar for 15 years, first as a research assistant and later as a press and public relations officer, a position he held for ten years.

HAUSDORFF EVENTS



Girls' Day 2017: More than numbers – The professional world of female mathematicians

What are prime numbers? How do you recognize them? And what role plays the mathematician Sophie Germain in this? 30 schoolgirls got the answers to these and other questions during this year's Girls' Day on April 27. During this one-day long event, the participants solved tricky exercises on prime numbers and got to know students who are enthusiastic mathematicians. The students' visit was completed with an exhibition, from which they learned about work and achievements of outstanding women in mathematics.



Inaugural lecture at the "Dies Academicus" – Part 1

Who is not familiar with it - the computer game Tetris. Seen from afar, the piling blocks look like a fractal. Growing bacterial colonies also look very similar. Such growth processes can be modeled by stochastic differential equations. In his inaugural lecture on May 17 at the "Dies Academicus" with the title "What does it look like to play Tetris on a very large screen?", Hausdorff Chair Prof. Dr. Massimiliano Gubinelli used these familiar examples to introduce his audience to his areas of expertise, stochastic analysis and statistical mechanics. His lecture topics ranged from the Gaussian distribution to the Kardar-Parisi-Zhang equation and to recent developments in stochastic analysis.

Inaugural lecture at the "Dies Academicus" – Part 2

The lecture hall was crowded when Prof. Dr. Peter Scholze gave his inaugural lecture on "Zahlen und Geometrie" ("Numbers and Geometry") at the Lecture Hall 1 at the University of Bonn on May 17. The subjects covered ranged from Galois groups, passing through covering spaces and fundamental groups, to the theorem of Kucharczyk and Scholze (2016) on topological realizations of absolute Galois groups. The lecture on numbers and geometry imparted impressively the links between these two fields of mathematics: arithmetics/algebra and geometry.

Everyone who wants to gain insight into these topics can watch the inaugural lecture recorded by unibonn.tv and available on [Youtube](https://www.youtube.com).



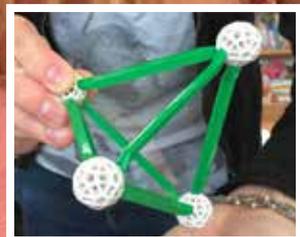
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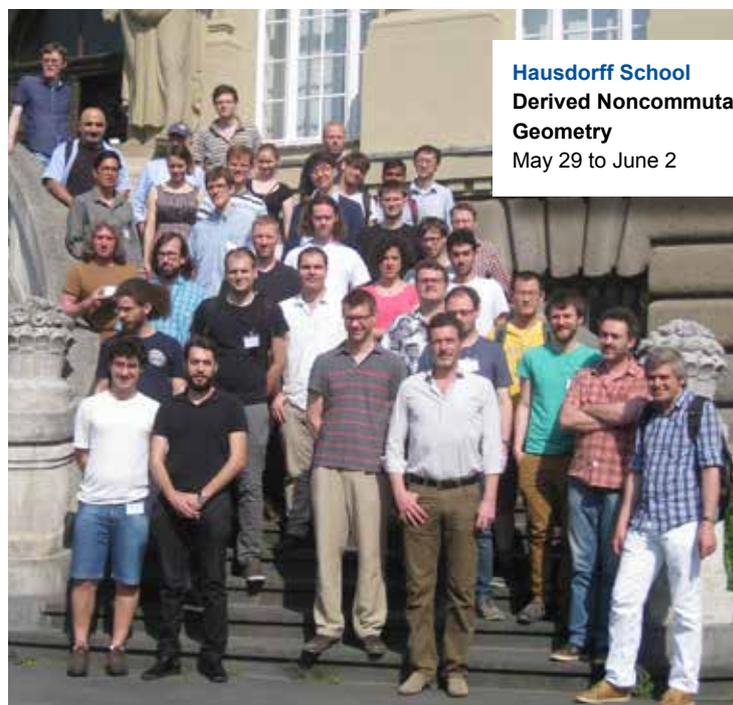
The HCM school team gets primary-school pupils into mathematics

“How many of these grilles are there? Is it possible to calculate that?” The pupils of the second grade at KKS Schlossbachschule in Bonn-Röttgen paid their full attention to the problem.

With a lot of fun, the HCM school team taught the pupils on May 24, how to code and decode a message with simple cryptographic processes like the Fleissner grille cipher (“Sandorf’s cipher”) and the Caesar cipher. The workshop was followed by another one for first and second graders who learned how to find the shortest path between two, three and four points – on a plane and on a sphere. In simple words for the pupils: What is the shortest route from London to New York – on a map and on a globe? Through trial and error the pupils got to know the construction of the Fermat point in an equilateral triangle and the Steiner tree problem. The school team illustrated the solution to the mathematical problem impressively with the aid of something similar to soap-bubbles, which automatically find the shortest “path network”.



Hausdorff School
Large Random Graphs:
Geometry and Applications
April 3 to 7



Hausdorff School
Derived Noncommutative
Geometry
May 29 to June 2

HAUSDORFF CALENDAR

BIGS Poster Exhibition 2017**July 6 to 7****Toeplitz Kolloquium 2017***Nicola Oswald (Wuppertal)***July 10, 04:00 p.m.****Hausdorff Kolloquium 2017***Tony Yue Yu (CMI and Université Paris-Sud, Orsay)**Robert L. Pego (Carnegie Mellon University)***July 12, 03:15 p.m.****Hausdorff Forum for Interaction with
Mathematical Sciences***Rüdiger Schultz (Universität Duisburg-Essen)**Jens Vygen (Universität Bonn)***July 14, 02:15 p.m. to 04:45 p.m.****Random Constraint Satisfaction**

Hausdorff School

July 17 to 21**Workshop: K-theory in topology and non
commutative geometry**

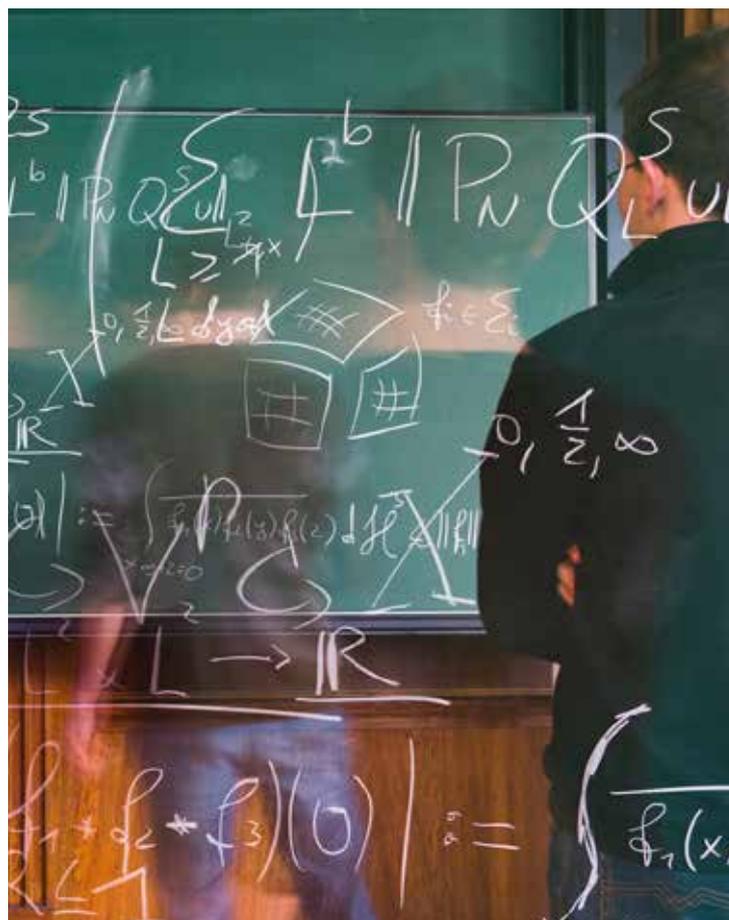
Hausdorff Trimester Program Activity

August 21 to 25**Applied and Computational Algebraic Topology (Part 2)**

Special Hausdorff Program

September 4 to 29**Dispersive Equations, Solitons, and Blow-up**

Hausdorff School

September 4 to 8**SchülerInnenwoche 2017****September 6 to 9****Workshop: Meshfree Methods for Partial Differential
Equations****September 18 to 20****Bonner Mathematikturnier 2017****September 29**

HAUSDORFF MIXED

**New officials at the
Hausdorff Center**

In the professors' assembly on June 14, Prof. Dr. Stefan Schwede was elected the new Vice-Coordinator of the Hausdorff Center for Mathematics from now on until February 2018. Furthermore he is the new representative of the Mathematical Institute in the Board of Directors. He replaces Prof. Dr. Daniel Huybrechts in these functions.

For the next three-year period of office from October 2017 on, Prof. Dr. Christoph Thiele takes over the position of the HIM-Director, currently held by Prof. Dr. Wolfgang Lück. Prof. Dr. Barbara Niethammer will be the new Director of BIGS, replacing Prof. Dr. Stefan Schwede, while Prof. Dr. Catharina Stroppel will take over from Prof. Dr. Anton Bovier as the new Vice-Director of BIGS. Moreover, Prof. Dr. Patrik Ferrari will be the new Director of the Hausdorff School, while Prof. Dr. Ira Neitzel will be the new Vice-Director of the Hausdorff School.

HAUSDORFF MIXED



Hands-on exhibition about mathematics in the “Deutsches Museum”

Visitors of the exhibition “Mathematik zum Anfassen – Die Mitmachausstellung rund um Zahlen und Formen” (“Hands-on mathematics – The hands-on exhibition about numbers and shapes”) can literally “grasp” mathematics in the “Deutsches Museum Bonn” and the “Wissenschaftszentrum” from June 27 to August 27. The exhibition displays parts of the collection of the “Mathematikum” in Gießen, the first mathematical hands-on museum in the world, where visitors can immerse themselves into the world of mathematics. It is for example possible to create a tunnel similar to a soap-bub-

ble around oneself or to compose a piece of music with the help of dice. The HCM complements the traveling exhibition with posters specifically designed for this purpose which put women in mathematics in the spotlight. Furthermore, the HCM contributes an exhibit about the center’s eponym, Felix Hausdorff, which reminds the visitors of his work. It includes, amongst other things, his collected works, out of which eight volumes are finished and shown in the exhibition. The HCM school team guides school classes through the exhibition and answers the visitors’ questions.

Bonn Research Fellows

A new program at the Hausdorff Center gives former members the opportunity to intensify earlier cooperation with the HCM. The Bonn Research Fellow program is aimed at selected former HCM Bonn Junior Fellows and Advanced Researchers (W2) of the MPIM who have moved to a foreign research institution after their tenure in Bonn. Bonn Research Fellows are appointed by the HCM Board of Directors for a duration of five years. A re-appointment is possible. During this time, the Bonn Research Fellows spend some weeks every year in Bonn and participate in the teaching activities of Bonn Mathematics. In 2017, Geordie Williamson, now Professor at the University of Sydney and former Advanced Researcher at the MPIM, and Lillian Pierce, former Bonn Junior Fellow and now Assistant Professor at Duke University, were appointed as Bonn Research Fellows.



IMPRINT

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