Double honor for Peter Scholze

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

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-
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.
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).

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, stochastical 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.
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 payed 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.
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-bubble 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.