Congratulation!



# Heinz Maier-Leibnitz-Preis to Georg Oberdieck

Together with nine other distinguished scientists, our Bonn Junior Fellow Georg Oberdieck (31) received the Heinz Maier-Leibnitz-Preis, the most significant award for young scientists in Germany. The awardees were determined by a selection committee in Bonn, which was established by the Deutschen Forschungsgemeinschaft (DFG, German Research Society) and the Bundesministerium für Bildung und Forschung (BMBF, Federal Ministry of Education and Research).

Since 1977, the Heinz Maier-Leibnitz-Preis is bestowed annually on outstanding scientists who are still in the early stages of their scientific career and do not yet possess an open-ended professorship. The award serves as distinction and as an incentive to continue the young scientists' development autonomously and without deviation. Since 1980, the prize is named after the nuclear physicist and former DFG-president Heinz Maier-Leibnitz, during whose time in office (1973-1979) it was awarded for the first time.

Georg Oberdieck works in a branch of algebraic geometry called enumerative algebraic geometry. In algebraic geometry, geometric objects which can be described by algebraic equations are being investigated. A basic question is, how many geometry objects of a special kind appear under certain circumstances. Such counting issues are called enumerative algebraic geometry and appear for example in theoretical physics. Georg Oberdieck solved such problems in concrete physical contexts and at the same time described these objects' mathematical structure more precisely than ever before. Especially influential is his and Aaron Pixton's work "Gromov-Witten theory of elliptic fibrations: Jacobi forms and holomorphic anomaly equations". In this work, the authors prove their impressive understanding of methods from different areas, which they apply expertly to their key issue.

Georg Oberdieck studied mathematics at ETH Zürich until 2011. In 2015 he received his PhD for his work "The enumerative geometry of the Hilbert schemes of points of a K3 surface", which he wrote under the supervision of Rahul Pandharipande, who is one of the leading experts in modern algebraic geometry. Afterwards he worked as C.L.E. Moore Instructor at the MIT and is a Bonn Junior Fellow at the HCM since September 2018.

# Awards for Bonn Graduate Students

Every year, the Bonn Mathematical Society („Bonner Mathematische Gesellschaft") awardes a prize for the best Bachelor theses in mathematics endowed with 250 Euro. In the academic year 2018/2019, the following graduating Bachelor students were awarded:

- Susanne Armbruster
  *Das verallgemeinerte VPN-Problem*
  advisor: Jens Vygen
  *Institute for Discrete Mathematics*

- Janina Bernardy
  *Noether's theorems in terms of variational cohomology*
  advisor: Christian Blohmann
  *Max Planck Institute for Mathematics*

- Lukas Bonfert
  *Spiegelungsfunktoren*
  advisor: Hans Franzen
  *Mathematical Institute*

- Peter Holderrieth
  *Randomized Hamiltonian Monte Carlo and the Bouncy Particle Sampler: Convergence Rates and Scaling Limits*
  advisor: Andreas Eberle
  *Institute for Applied Mathematics*

- Simon Kollecker
  *Radiale Basisfunktionen in der Strömungsmechanik",*
  advisor: Christian Rieger
  *Institute for Numerical Simulation*

- Christian Nöbel
  *Higher Degree Symmetric Products of Curves*
  advisor: Daniel Huybrechts
  *Mathematical Institute*

- Ferdinand Wagner
  *Serre Duality for Open Varieties*
  advisor: Peter Scholze
  *Mathematical Institute*

*Congratulation!*

**HAUSDORFF PEOPLE**



*Congratulation!*

## Hausdorff Memorial Prize to Richard Höfer
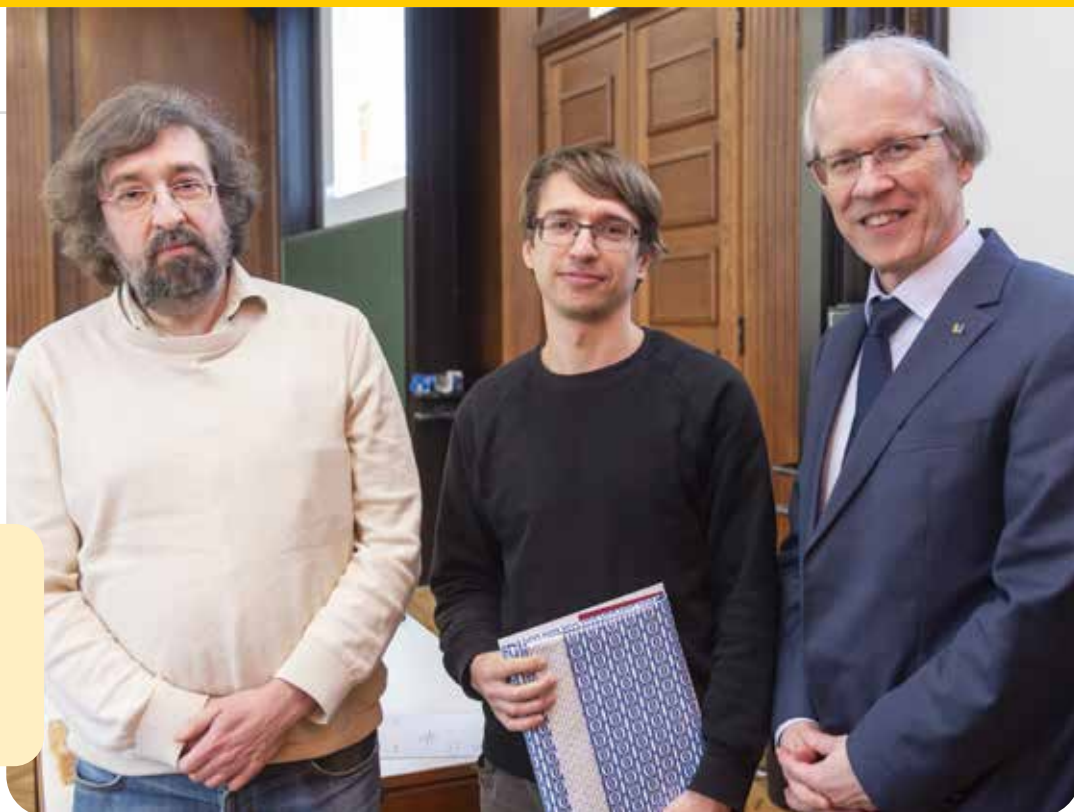
As every year, the Department of Mathematics („Fachgruppe Mathematik") rewarded the best PhD thesis with the Hausdorff Memorial Prize. This year Richard Höfer was awarded this prize for his thesis "Sedimentation of particle suspensions in Stokes flows", which he wrote under the supervision of Juan J. L. Velázquez. The prize was handed over by Johannes Beck, dean of the Faculty of Mathematics and Natural Sciences. Small particles moving in a fluid are encountered in various situations in nature and technology. In many cases, gravitation is the driving force for the movement of the particles. The particles interact through the fluid which can lead to complex behavior in the case of many small particles. Richard's thesis addresses the rigorous derivation and analysis of macroscopic equations (PDEs) in different physical regimes for the coupled fluid-particle system arising from the microscopic description of the system (by ODEs).



## Farewell to Peter Koepke

At the end of January, a farewell colloquium for Peter Koepke, professor of mathematical logic and former director of the Mathematical Institute, took place on his (at least officially) last day at the Mathematical Institute. Carl-Friedrich Bödigheimer, honored Peter Koepke in his laudatory speech and emphasized his numerous merits for Bonn mathematics as well as the unusual popularity with all colleagues. Afterwards, a colloquium talk held by Thomas C. Hales (University of Pittsburgh) fascinated the auditorium in our overcrowded lecture hall. Finally, Peter Koepke looked back on his "Life in Logic" with many interesting and funny anecdotes.

## HAUSDORFF EVENTS

## Science Rallye

As every year, we participated in the Science Rally („Wissenschaftsrallye") of the University of Bonn on the Campus Poppelsdorf. Over 150 children came to the HIM and learned from our school team why there are only five Platonic solids and how (geometrical) statements can be proven using the principle of invariance.



## Children's University

The Wolfgang Paul lecture hall was full of very young students when Thoralf Räsch started his lecture on „Apparent Deceptions in Mathematics with Paper, Pen and Nice Words" at the children's university. In addition to Pinocchio, a Tyrannosaurus Rex was also used for illustration. A journalist from the German radio station „Deutschlandfunk" interviewed Thoralf Räsch and reported on the event.

## SchnupperUni for girls

"Girls only" was the title on the event's university flyer. The „SchnupperUni" is supposed to attract young women to study mathematics and science. Anna Kraut, Antje Kiesel and Johanna Rätz, a member of our school team, gave lectures on various areas of mathematics. Thoralf Räsch answered upcoming questions about studying math.

## HAUSDORFF EVENTS

# Further education training for math teachers

Rainer Kaenders organized a further education training for math teachers at the Gustav-Stresemann-Institut e.V. Taking the changes to the core curriculum for the lower secondary level as an opportunity, young and experienced teachers came together to do math together. Ranging from geometry to new ideas for the introduction of fractional calculation, there were many lectures and workshops in which one could gain new perspectives and ideas for math education.

$$P(a,b')=P(a',b)$$

$$[a:b]$$
$$=[P(a,b'):P(b,b')]$$
$$=[P(a',b):P(b',b)]$$
$$=[a':b']$$

# Mathematical Walks on the International Day of Mathematics

UNESCO proclaimed 14th March as the "International Day of Mathematics", which has been celebrated for the first time in 2020 and from now on every year worldwide. This year's theme was „Mathematics is everywhere". We at HCM, in particular our Bonn Math Circle („Bonner Matheclub") participated on this day with two „mathematical walks" that took place in the Botanical Gardens of the University of Bonn. Despite the beginning of the corona pandemic, around 25 children and their parents took part and discovered how best to calculate different geometrical sizes - with the help of cords, triangles, intercept theorems and more.

# HAUSDORFF CALENDAR

## Cancellations due to the corona pandemic

All HCM events and activities scheduled in the period from the 21st March to the 30th June such as workshops, summer schools, Girls' Day, public lectures and so on are cancelled because of the recent development concerning the corona virus and regulations made by the university and government. The current Trimester Program „Dynamics: Topology and Numbers" at the HIM itself is not impacted, but all additional events within the framework of this Trimester Program are also cancelled. Additionally, the next Trimester Program „The Arithmetic of the Langlands Program" has been cancelled completely. Current information and further restrictions can always be found **here**.

In the next newsletter we will report how we dealt with this crisis and which alternative event formats we have developed.

*Stay healthy!*

## HAUSDORFF MIXED



### The Hausdorff Center and "Beethoven" appeared in the final video of the IMU

On the occasion of the already mentioned first „International Day of Mathematics", the German Mathematicians' Association (International Mathematical Union (IMU) announced a video competition on the topic „Mathematics is everywhere". The best contributions were shown in a final video at a festive event at UNESCO in Paris. IMAGINARY and DMV selected the German contributions. In the role Ludwig van Beethoven and in collaboration with the hip hop performance group of the University of Bonn and the HCM school team, Thoralf Räsch proved that math „is in music". With this contribution we actually appeared in the final video! **Here** you can see this video in full length.

## IMPRESSUM