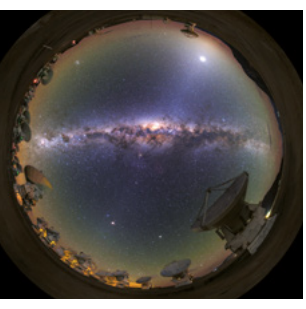
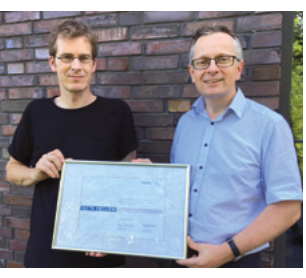


For the first time in Germany: Astroinformatics Conference

"Astroinformatics 2018" will be held in the Studio Villa Bosch, Heidelberg, from September 3–7, 2018. Scientists from all over the world will meet to exchange views on the newest and most successful methods of machine learning in an effort to advance the exploration of the Universe. The conference is organized by HITS researchers **Dr. Kai Polsterer**, **Antonio D'Isanto**, **Erica Hopkins**, and **Dr. Nikos Gianniotis** (all from the Astroinformatics group) in cooperation with Prof. Joachim Wambsganss (Heidelberg University) and Dr. Coryn Bailer-Jones (Max Planck Institute for Astronomy). The Astroinformatics Conference – which is devoted to the scientific exploitation of the fast-growing volumes of data in astronomy – is one of the most important events in this field. At the conference, scientists will discuss topics including novel database systems, visualization and augmented reality, artificial intelligence, and the reproducibility of research results. The conference is hosted at a different location all around the world once every year. This year, it will take place in Germany for the first time.



HITS Fellowship for Volker Springel

In a special ceremony on July 23, 2018, HITS group leader and astrophysicist **Prof. Volker Springel** was made a "HITS Fellow" in recognition of his "outstanding scientific achievements and service to the institute during his time at HITS," as the document states. After more than eight years at HITS, Volker Springel left Heidelberg to become director of the Max Planck Institute for Astrophysics (MPA) in Garching near Munich as of August 1, 2018. In his laudatory speech, HITS Scientific Director **Prof. Michael Strube** emphasized that Springel had "become a beacon that amplified the visibility of HITS in numerous ways" (see more in "Farewell").

HEIDELBERG LAUREATE FORUM

Heidelberg Laureate Forum

HITS is scientific partner of the Heidelberg Laureate Forum (September 23–28, 2018). Again, we will host a group of young researchers at the institute.

"Open House" for the whole family

On a sunny summer's day in early July, HITS opened its doors to the public, inviting the young and old alike to a diverse program of events and offerings. The numerous visitors came to the hands-on stations, where they made geometric soap-bubbles, built spectrographs, and molded proteins. The talks given by **Dr. Kai Polsterer** (AIN), **Lucas Czech** (SCO), **Prof. Volker Springel** (TAP), and **Dr. Sebastian Lerch** (CST) were fully attended, as were the guided tours by **Rebekka Riehl** and **Thomas Rasem** (both members of the administration group). The "highlight" – not only for kids – was the "galactic" face- and body painting with scientific themes ranging from the axolotl to galaxies.

HITS researcher receives "Experiment!" grant

Dr. Kashif Sadiq (MCM) explores ribonucleoprotein granules, a condensed form of bio-matter found inside cells. He investigates whether the rate of enzymatic reactions in these membrane-free granules is accelerated. If so, this finding would lead to new insights regarding how cells regulate their biochemistry and could shed light on the origins of life on Earth. The project is funded by the Volkswagen Stiftung with an "Experiment!" grant.

New employees and visiting scientists

CST: Johannes Resin, PhD student

MCM: Katarzyna Swierkula, visiting scientist (Warsaw University, Poland, Erasmus program)

NLP: Minsu Ko, PhD student (HITS scholarship)

HITS groups:

Astroinformatics (AIN), Computational Statistics (CST), Data Mining and Uncertainty Quantification (DMQ), Groups and Geometry (GRG), Molecular Biomechanics (MBM), Molecular and Cellular Modeling (MCM), Natural Language Processing (NLP), Physics of Stellar Objects (PSO), Scientific Computing (SCO), Scientific Databases and Visualization (SDBV), Theoretical Astrophysics (TAP).

Malaria parasites and the need for speed

Malaria parasites of the genus *Plasmodium* move ten times faster through the skin than immune cells, whose job it is to capture such pathogens. Heidelberg scientists have found the reason that the parasite is faster than its counterpart. These findings – published in PLOS Biology – represent a starting point for a possible new therapy against malaria infections. Among the authors are HITS researchers **Prof. Rebecca Wade** (corresponding author), **Dr. Prajwal Nandekar**, and **Dr. Kashif Sadiq** (all from the Molecular and Cellular Modeling group).The researchers studied actin, a protein that is important to the structure and movement of cells and that is formed differently in parasites and mammals. The scientists replaced parts of the parasite protein with corresponding sections of protein from mammalian actin in the laboratory. They performed experiments and computer simulations ranging from modeling at the molecular level to observing the parasites in live animals. The findings could be used to discover chemical compounds that selectively target parasite actin and affect either the building or breakdown of the filament. This joint research project was partially funded by the innovation fund FRONTIER at Heidelberg University.

Ross G. Douglas, Prajwal Nandekar, Julia-Elisabeth Aktories, Hirdesh Kumar, Rebekka Weber, Julia M. Sattler, Mirko Singer, Simone Lepper, S. Kashif Sadiq, Rebecca C. Wade, Friedrich Frischknecht. Inter-subunit interactions drive divergent dynamics in mammalian and Plasmodium actin filaments, PLOS Biology, July 16, 2018. doi.org/10.1371/journal.pbio.2005345

A new concept for personalized breast cancer therapy

HITS partners the international research consortium "MESI-STRAT", funded by the European Union with € 6 million for five years. The interdisciplinary consortium consisting of experimentalists, theoreticians, and clinicians develops new systems medicine approaches to enable individualized therapies for breast cancer patients. Exploring the interplay of cancer metabolism and oncogenic signaling, MESI-STRAT derives concepts for knowledge-based stratification of patients into subgroups to guide combinatorial, targeted interventions. **Dr. Wolfgang Müller** (Scientific Databases and Visualization group) leads the work package for model- and data management and analyses. Visit www.mesi-strat.eu for more information on the consortium.

MESI-STRAT

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 754688.

Volker Springel: "I will always be a part of HITS."

After more than eight years at HITS, astrophysicist and leader of the Theoretical Astrophysics group Volker Springel left Heidelberg at the end of July 2018 to become director of the Max Planck Institute for Astrophysics in Garching near Munich. In a special ceremony on July 23, HITS awarded him with the institute's highest distinction: "HITS Fellow." In his laudatory speech, HITS Scientific Director Michael Strube quoted German physicist Georg Christoph Lichtenberg (1742–1799): "Astronomy is perhaps the science whose discoveries owe least to chance, in which human understanding appears in its whole magnitude, and through which man can best learn how small he is." "It seems to me," said Strube, "as if Lichtenberg had had a man like Volker Springel in mind when he wrote about *chance*, the *magnitude of human understanding*, and *modesty* in the face of nature's grandeur. […] Back when he went to high school, Volker won second prize in physics in the "Jugend Forscht" competition, and he is a two-time member of the German team at the International Physics Olympiad. […] In his first postdoc years, Volker won several prestigious awards. Thus, it was not merely by *chance* that Klaus Tschira and Andreas Reuter noticed this young star in the astronomical sky – and hired him."

Strube summarized Springel's impact on HITS: "At HITS, Volker helped to realize Lichtenberg's words about the *magnitude of human understanding*. He refined his AREPO code. Up to now, it has been used or cited in more than 750 publications. Volker won an ERC starting grant 1 that enabled him to pursue his research and build up his group to a remarkable size – another form of magnitude. The record of his contributions to astrophysics research is impressive, as is the impact of his work on the development of HITS as a research institute. Indeed, Volker has become the brightest of our stars, a beacon that amplified the visibility of HITS over the last eight years in numerous ways. Still, there is a certain *modesty* to Volker's personality, for he has always remained kind and open-minded. Volker seems to have internalized what Lichtenberg said about astronomy – that a man can best learn how small he is." In his reply, Volker Springel gave thanks for the "excellent support by the staff" and added, "I will always be a part of HITS." He emphasized, "I will do my very best to support HITS, and I am sure that it will continue to thrive."

We therefore do not say "goodbye," but rather, "until we meet again, Volker!"

Imprint | Dr. Peter Saueressig (V.i.S.d.P.), Saueressig@h-its.org, Tel. +49 6221 533 245
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