

Main Topics:

- Recent student activities
- The »Excellence Timeline«
- IMPRS-HD goes from strength to strength
- The »Graduate Days«
- The »Center for Quantum Dynamics« gets off to a good start
- Personalia
- Environmental astrophysics with dwarf galaxies
- Strong activities in correlation physics
- Carl Bender lectures

Recent student activities

■ Projects and activities initiated and organized by the students themselves are an important part of graduate life here in Heidelberg. It gives us the opportunity to get involved and actively contribute in order to create a – hopefully – inspiring atmosphere.

Recent events such as the »Newcomers' Welcome« or the winter school were very well received by the students. In the »Newcomers' Welcome« meeting we had a chance to inform new students about the rules of the University, in order to ease their administrative burdens in the hope of more productive and less stressful doctoral studies. We also are pleased to announce that a team formed from this year's



Doctoral students at the recently held management workshop

winter school participants is already organizing the next winter school, which will take place from the 16th-20th January, 2011.

Very recently, a workshop on »The Leadership and Management Transition for Natural Scientists« was held (see picture). The participants worked on three different modules concerning various leadership and management issues. The discussion was linked to the particular situation of doctoral students and in academia in general.

Editorial

The Graduate School is growing in leaps and bounds. We now number 249 students, but also 60 alumni who have gone on to take up postdoctoral positions all over the world as well as enter into industry. As usual, our students have shown lots of initiative - holding a winter school in January, a course on management skills in June and a »Greenhorn Meeting«, an event aimed at the next generation of graduate students.

We hope to give you a taste of the current excitement at this time in reading this edition of our newsletter. Do keep in mind that you are warmly welcome to provide contributions, give us feedback and make suggestions for improvements.

Sandra Klevansky and Markus Oberthaler

As your student representatives, we are currently working on a set of »guidelines for doctoral studies«. This serves to clarify several aspects of the doctoral studies that are ambiguous at the moment. Our motivation is to help improve graduate studies. Please feel free to approach either of us student representatives, Baybars Külebi or Joachim Welte, with your concerns or suggestions. ◀

are expected to play has been especially stressed.

With this evaluation comes the positive news that the IMPRS-HD will continue to be supported by the Max Planck Society for a further period of six years, running from 2011 through 2017. We congratulate all of those involved in this, from both the University and the Max Planck Institutes and wish them continued success. ◀

The »Excellence Timeline«

■ The HGSFP opened its doors in November 2006. At the end of October 2011, the first official funding period of the HGSFP will have ended. Within the Excellence Initiative, however, funding will continue for a further year, until the end of October 2012, by which time, the national evaluations for the continuation and award of new schools and clusters for the entire country will be announced. ◀

The »Graduate Days«

■ The coming »Graduate Days« will take place in autumn from the 4th to the 8th October 2010. As usual, one of the highlights of the »Graduate Days« is the Hans Jensen Lecture, which this time will be held by the Nobel Laureate Douglas Osheroff, from Stanford University on »So, What Really Happens at Zero Temperature?«. The lecture programme this time will again contain one soft skills course together with sets of lectures on various topics in both theoretical and experimental physics. ◀



The timeline for the »Excellence Initiative« is indicated in the above figure

The »Center for Quantum Dynamics« lifts off

■ The »Center for Quantum Dynamics«, a new integral part of our Graduate School, got off to a good start with the inaugural lecture given by the Nobel Laureate Bill Phillips on April 13, 2010, who explained the deeper sense of developing atomic timekeepers at absolute zero. Such clocks can be used for using and testing some of Einstein's predictions, as was impressively demonstrated by Professor Phillips.

The »Center for Quantum Dynamics« is devoted to fundamental questions concerning dynamics of quantum systems at the borderline between few-body and many-body physics. For further information, visit the CQD website: <http://cq.d.uni-hd.de> or contact Matthias Weidemüller. ◀



Rüdiger
Klingeler



Thorsten
Lisker



Sandro
Wimberger

Experimental Physics and has his offices in the Kirchhoff Institute of Physics. We welcome him as a new member of the Department and of the Graduate School.

Thorsten Lisker studied physics at the University of Erlangen-Nürnberg and the associated Dr. Reimis-Sternwarte Bamberg. He obtained his PhD in 2007 at the University of Basel. Since May 2007 he leads the independent junior research group »Extragalactic Astronomy« (<http://x-astro.net>) of the HGSFP.

Sandro Wimberger joined the Institute of Theoretical Physics in 2007 as a junior research group leader in the field of Complex Dynamics in Quantum Systems. After completing his doctoral degree in Dresden and Como he spent three years in Pisa and Turin researching on the dynamics of ultracold quantum gases. Sandro Wimberger is an active member of the Graduate School, who has contributed substantially to the Graduate School through industrial projects as well as in organising international workshops. In his spare time, Sandro Wimberger actively promotes physics for preschool children.

Both Thorsten Lisker and Sandro Wimberger have received several awards for their research. ◀

Personalia

■ In this edition of our newsletter, we profile Rüdiger Klingeler, Thorsten Lisker and Sandro Wimberger.

Rüdiger Klingeler graduated with a diploma in physics from the University of Cologne in 1998 and obtained his PhD in 2003 from the RWTH Aachen. After working as a scientific assistant in Aachen, he joined the National Pulsed Magnet Field Laboratory LNCMP in Toulouse. In 2005, he became leader of the Magnetism and Thermodynamics group at the Leibniz Institute for Solid State and Materials Research at the IFW in Dresden. His research activities focus on magnetic and electronic properties of self-organised nanostructures, multifunctional nanomagnets for

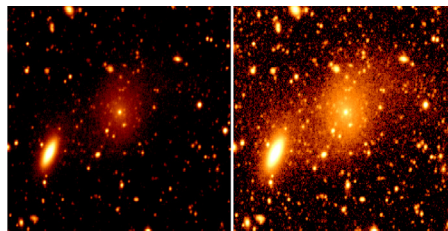
biomedical applications, iron-based superconductors, frustrated and low-dimensional quantum magnets. Being the coordinator of the EU Marie-Curie Research Training Network »Multifunctional Carbon Nanotubes for Biomedical Applications«, Rüdiger Klingeler applies a multidisciplinary approach to exploit functionalized nano-carriers for biomedical applications, in particular to act as magnetic nano-heaters, drug-carrier systems and sensors for usage on a cellular level. In 2009 he was awarded a BMBF Independent Research Group in the initiative »Lithium Ion Battery LIB2015« which addresses research on novel materials for energy storage. Rüdiger Klingeler has received several scientific awards and is co-author of ca. 120 papers. He has joined the Department of Physics and Astronomy as Professor of

Environmental astrophysics with dwarf galaxies

■ Dwarf galaxies are small entities, considered in astronomical terms. They contain less than a billion stars, some not even a million. Their low mass density and thus shallow gravitational potential makes them susceptible to environmental influences, like the tidal forces of neighbouring galaxies or the ram pressure of the hot medium inside galaxy clusters.

Since dwarf galaxies are also the most numerous galaxy type in the universe, Thorsten Lisker and his group seek to use them as probes of the physical mechanisms governing galaxy evolution in different environments. To achieve this goal, new observational campaigns at large telescopes have been initiated, covering ultraviolet to radio wavelengths. Besides disentangling the complex characteristics of dwarf galaxies, these data enable crucial tests for model predictions based on the latest cosmological simulations, thereby increasing our understanding of how galaxies form and evolve.

Thorsten Lisker's group is located at the Astronomisches Rechen-Institut of the Centre for Astronomy of Heidelberg University (ZAH), see also http://x-astro.net/people_tl.html. ◀

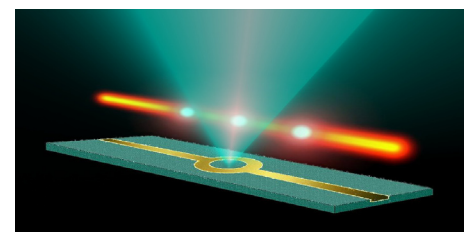


A dwarf galaxy with apparently undisturbed inner structure (left) shows clear signs of tidal disruption (right), (ESO/MPIA/ZAH; Pasquali, Lisker & Hilker)

Strong activities in correlation physics

■ Sandro Wimberger's group focuses on the theoretical characterization of driven single-particle systems. In particular, the regime of strong correlations in Hilbert space is the group's central interest. The aim is to explore the possibilities for a unifying view on different correlation measures originating from many areas of physics, such as solid-state physics (correlation functions), quantum chaos (Random Matrix Theory), and quantum information theory (entanglement and fidelity). The activities in Heidelberg go hand in hand with the research in experimental groups worldwide and are

supported by excellence grants of the University and by the DFG project FOR760 on »Scattering Systems with Complex Dynamics«. ◀



A graphical visualisation of a hybrid magneto-optical system coupling the best of two worlds for quantum information processing

Carl Bender lectures

■ Carl Bender will again be giving a lecture series on mathematical physics in the initial weeks of the autumn semester. Watch our website for further details. ◀

You're welcome:

... to send us suggestions of topics which you would like to be mentioned in the next newsletter: info@gsfp.uni-heidelberg.de