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Titelbild: Erfolgreicher Start der neuen Veranstaltungsreihe „Freiburger Horizonte“ am 12.2.2015 mit Bundesminister a.D. Prof. Klaus Töpfer (siehe Bericht auf S. 22). Einen Podcast des Vortrags und weitere Informationen zu den Freiburg Horizonten finden Sie unter <https://www.frias.uni-freiburg.de/de/veranstaltungen/freiburger-horizonte>



With the publication of this 11th issue of FRIAS News, the first academic year is drawing to a close in which FRIAS no longer received funding from the German federal and state governments' Excellence Initiative for promoting science and research at German universities. The Institute is now being supported by core funding from the Baden-Württemberg Ministry of Science, Research and the Arts, supplemented by funds from the University of Freiburg and the European Commission's Marie Skłodowska-Curie COFUND Programme. The Institute's new format, which was presented in detail in the 9th issue of FRIAS News, has since been largely realised and the first experiences from implementing the new research programme in practice have been gained.

The cut in the Institute's budget to around a quarter of the funding that it received in its early years has, of course, had far-reaching consequences. Fortunately, the resulting dramatic reduction in the size of the administrative department was largely undertaken without causing any social hardship and was completed relatively quickly. Our highly motivated employees supported this sometimes painful restructuring constructively, although it meant that the majority of them had to find employment opportunities outside of the Institute. Due to these cutbacks, three quarters of our available funds could be used directly in the Institute's programmes during this academic year. However, it was not possible to keep all the funding models which had proved fruitful in the past and many of those that were maintained saw a significant drop in size.

Nevertheless, two new event series have taken shape in the interim. Firstly, the Lunch Lectures series for students, which began in the 2014 summer semester, was strengthened and developed into a themed lecture series with ECTS credits in collaboration with the University College Freiburg. Secondly, the Freiburg Horizons series, which FRIAS uses to address issues that are particularly relevant to society and to create a forum for discussion between academia, politics and society, began in February of this year with a launch event on the energy transition, where Klaus Töpfer attended as the guest speaker. A report on the event is included in this edition. Further events have already been scheduled for the period until April 2016. In addition, at least one Freiburg Horizons event will take place next year on "Media and data control in the 21st century", the highly topical annual theme of the international network of University-Based Institutes for Advanced Study (UBIAS). Work on the Institute's first two research foci for the current academic year is in full swing. The scientific area of research focus is examined closely in this issue in an interview with the four project leaders, which looks especially at the importance of the research project to the energy transition. The research foci unite Freiburg-based academics from various faculties as well as a number of international External and Junior Fellows and guest academics to work on joint projects in teams of a critical size. These groups can make use of FRIAS's facilities such as its seminar and discussion rooms, have working lunches and organise regular colloquia.

In the future, FRIAS's academic programme must feature a greater number of events which do not duplicate the activities run by the faculties and which reflect the Institute's unique structure as an inter-faculty, interdisciplinary research college. In addition to the "cardinal" research foci and their

unique format, project groups comprising professors who begin or conclude their studies of a joint subject in the course of any given academic year will be funded over the next few years. Furthermore, there will continue to be a packed programme of academic workshops hosted by fellows or early-stage academics who gain funding through FRIAS's call for applications for junior researchers wishing to hold conferences. These conferences are complemented by presentations arranged by the faculties for which FRIAS offers use of its premises and support in organising the event. From October 2015, FRIAS will also fund up to five Junior Fellows from the University of Freiburg for one year.

These activities are continuing to bring large numbers of researchers to FRIAS from all corners of the globe, allowing the Institute to keep fulfilling its role of increasing our university's prominence worldwide. Even though FRIAS no longer ranks as one of the world's largest institutes for advanced study, its global network has grown recently as a result of it playing a very active role in the international associations established for institutes of this kind, such as UBIAS or NetIAS (Network of European Institutes for Advanced Study).

Joint fellowship programmes, like those already established with the University of Strasbourg Institute for Advanced Study (USIAS) and more recently with the Institute for Advanced Research (IAR) of Nagoya University, are also being sought by other institutes striving to work more closely with the University of Freiburg. Although yet to be determined, the Institute's financial framework following the expiry of our core funding in 2017 may open additional windows of opportunity. Finally, it should also be noted that instead of falling into ruin following the funding decisions made by the Excellence Initiative Grants Committee on 15th June 2012, FRIAS with its new format has remained a locally, nationally and internationally acclaimed institute which continues to enrich the academic world and to attract attention to the University of Freiburg.



Hermann Grabert
(Academic Director
Natural Sciences)

Prof. Dr Hermann Grabert is stepping down from his role as Academic Director at FRIAS at the end of this academic year. He has belonged to the FRIAS Board of Directors since the Institute was founded in 2007.

How is scientific work carried out within the FRIAS research focus "Designed Quantum Transport in Complex Materials"? And how do fundamental and applied research come together in the German research community? In this interview, FRIAS Fellows Prof. Andreas Buchleitner, Chair of Quantum Optics and Statistics at the University of Freiburg; Prof. Tobias Schätz, Professor of Experimental Atomic, Molecular and Optical Physics; Prof. Stefan Weber, Professor of Physical Chemistry at the University of Freiburg; and Prof. Eicke Weber, Director of the Fraunhofer Institute for Solar Energy Systems ISE in Freiburg, answer these questions and more.

FRIAS: We are delighted that you have taken the time to participate in this joint discussion. First of all, we would like you to tell us about the main objectives of your research focus.

Andreas Buchleitner: We are using the "Designed Quantum Transport in Complex Materials" re-search focus to gain a microscopic understanding of the basic physical processes which determine or possibly limit the efficiency of energy-related technologies. More specifically, the subject deals with the conversion of light into energy or vice versa, as is seen in photovoltaics or light-emitting diodes, for example. To help us achieve our objectives, both fundamental researchers and applied researchers are working closely together. Fundamental research has seen such developments in quantum transport theory and experimental diagnostics that the quality of data has led theoreticians to challenge certain assumptions and reflect on

AT THE INTERFACE BETWEEN FUNDAMENTAL AND APPLIED RESEARCH – A FRIAS RESEARCH FOCUS IN THE CONTEXT OF THE ENERGY TRANSITION



from left to right: Tobias Schätz, Stefan Weber, Andreas Buchleitner, Eicke Weber

completely new topics. All the while there was "dirty data", there were also "dirty" theories; today, however, we have much cleaner data and must therefore develop correspondingly cleaner theories.

FRIAS: One important focus of your project is the collaboration between fundamental and applied researchers. Thinking about your experiences to date, what must each side contribute in order for this cooperation to prove fruitful?

Tobias Schätz: The comment on dirty and clean experiments and theories is, to put it in provocative terms, a good example of the type of

contribution made by theoreticians. It is a complicated matter with people tending to regard "dirt" as something they do not understand or something which cannot be applied. However, the question is whether the system can be significantly improved by cleaning up the "dirt" or finding better ways to describe it when nature does not necessarily feel a compulsion to clean up everything and anything. Therefore, the main question we are asking ourselves and which is spurring us on is that of how much we should actually be cleaning things up. The natural world is, of course, completely different to the conditions we can create in the lab. This means that we have to reinte-