



#### 4.4 International exchange programme

Students of the HGSFP will be able to participate in the extensive international exchange programme of the School. With its dedicated funds, this programme will facilitate student exchanges with leading physics institutions around the world within the three scientific branches of the School. Internationally renowned institutions, such as the physics departments at Stanford, JILA and ITAMP at Harvard in the USA, SISSA in Italy, ITEP in Russia, the ENS in France and Tsinghua University in Beijing have expressed their interest.

In addition to the student exchange programme, the HGSFP allows for a substantial guest programme.

#### 4.5 Student projects

The HGSFP offers the possibility for students to freely and independently organise events such as workshops. This offers a platform for students to develop and implement their own ideas creatively.

#### 4.6 Skills beyond research

Within the HGSFP, training of other skills that will be helpful to further the careers of students will be offered and financially supported. These include key competencies such as writing scientific texts and time and project management.

#### 4.7 Scholarships

A limited number of PhD scholarships for study at the HGSFP are available.



#### 5 Organisation

The School is governed by a directorate consisting of three faculty members (one per physics branch), the administrative director of the school as well as a graduate student representative. The Central Office of the HGSFP handles all organisational issues with respect to the School and is the seat of the administrative director.

#### 6 Admission

Admission to the school is now open. For further information, please contact the Central Office directly.

#### 7 Contact

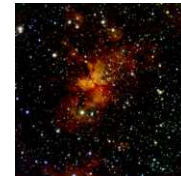
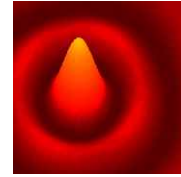
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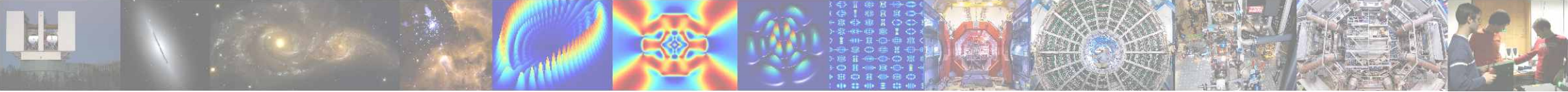


## Heidelberg Graduate School of Fundamental Physics

Information for students



<http://www.fundamental-physics.uni-hd.de>



## 1 General Information

The Heidelberg Graduate School of Fundamental Physics (HGSFP) has been established in Heidelberg in recognition of the scientific excellence of the fundamental physics done at Heidelberg University by the Excellence Initiative of the German Federal and State Governments.

The School will regularly invite applications from students local and abroad to the doctoral programme.

## 2 Background information and goals

A substantial grant awarded by the Excellence Initiative allows the Department of Physics to introduce and develop modern concepts of doctoral training in physics to increase its status of excellence both within Germany and abroad.

In our time of exciting developments all across fundamental physics, it must be a goal of the most interested PhD students to extend their knowledge beyond their immediate area of research to neighbouring branches of physics to see where seemingly disparate fields of physics grow together and depend on each other. Active learning, cross-disciplinary discussions involving students and staff alike, international exchange and mentoring are the key concepts of modern graduate training. A modular training programme and flexible entrance requirements serve to allow easier acceptance of foreign students from different countries, who come to Germany with varying degrees according to their countries of origin. The doctoral programme will be integrated with the Bachelor-Master system.

The new concept for the doctoral programme at the Heidelberg Graduate School of Fundamental Physics addresses these points. It has specifically been approved of and funded by the excellence initiative of the central government through the Deutsche Forschungsgemeinschaft (DFG – German Research Foundation).

## 3 Branches of Physics of the Graduate School

Three of the most exciting and rapidly developing branches of physics are well represented at the University of Heidelberg and the local research institutions. They form the core of research around the Graduate School.

These branches are

- The physics of elementary particles and their fundamental interactions, which will experience dramatic evolution as the Large Hadron Collider at CERN goes into operation this year
- The physics of complex quantum systems, for which Bose-Einstein condensates, the physics of disordered systems or atomic and molecular quantum dynamics are prominent examples
- Astronomy and Astrophysics, which is faced with the mysterious discoveries of dark matter and dark energy and which depends on links to all areas of physics, from quantum dynamics to relativity

The branch of the Graduate School dealing with Astronomy and Astrophysics is identical with the International Max Planck Research School of Astronomy and Cosmic Physics at the University of Heidelberg.

## 4 Specific benefits for graduate students

The Heidelberg Graduate School of Fundamental Physics is introducing a modified concept of educating graduate students in the three branches of physics mentioned above. This introduces beneficial changes for all its students and will serve to meet the goals set by the School. The changes most important for our PhD students are briefly detailed here.

### 4.1 Comprehensive thesis advice and mentoring

The concept of a single thesis advisor per student has been extended to a three person mentoring system forming a PhD committee. In addition to the traditional position of simply acting as thesis advisors, the mentors will provide support for the students to improve their competencies and research profile. Dedicated courses, seminars and other modules form part of the newly structured teaching programme, constructed to meet the personal interests of the student. Emphasis will specifically be given to modules requiring active participation.

### 4.2 Improved teaching

In order to be able to provide more courses within the newly structured PhD programme, it is necessary to increase the teaching and research staff. The HGSFP has obtained funds to do just this and will be able in this way to cover the new and extended teaching programme with six new lecturers at the group leader and professorial levels.

### 4.3 Extended research

With the increase in staff, it is not only possible to improve and cover the extended teaching and mentoring requirements of the Graduate School, but also to further our research goals and to start additional research projects. This will also create additional options for the School's PhD students to select their thesis subjects from.

