



Deutscher Akademischer Austauschdienst  
German Academic Exchange Service



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# Doctorate



## Statistical Physics of Complex Systems

Leipzig University • Leipzig

### Overview

Degree	Dr rer nat
In cooperation with	Université de Lorraine, Nancy, France Coventry University, Coventry, England, UK National Academy of Sciences of Ukraine, Lviv, Ukraine
Teaching language	<ul style="list-style-type: none"><li>English</li></ul>
Languages	Courses are held in English (100%). Also, personal communication is mainly in English, but some personal communication may also be in German.
Full-time / part-time	<ul style="list-style-type: none"><li>full-time</li></ul>
Mode of study	Hybrid
Programme duration	6 semesters
Beginning	Only for doctoral programmes: any time
Application deadline	No specific deadlines
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	Yes
Description/content	<p>The statistical physics of complex systems is a very broad field ranging from the study of quantum phenomena to the conformational behaviour of biomolecules which can only be successfully tackled by employing a variety of different theoretical methods. In this respect, this joint graduate college brings together the expertise in analytical theory from Nancy and the long-standing experience in sophisticated computer simulation studies from Leipzig, promising unique prospects in advanced education of PhD students via research into this important field. Additional input in computational aspects and analytical field-theory methods comes from our associated partners at Coventry University, UK, and the National Academy of Sciences of Ukraine in Lviv, Ukraine.</p> <p>The current research topics include disorder effects on phase transitions (diluted ferromagnets,</p>

long-range correlated defects, spin glasses, random graphs and networks), long-range interacting systems, topological excitations, conformational statistics of macromolecules such as polymers and proteins (folding, aggregation, adsorption, confinement effects), active polymeric systems, non-equilibrium relaxation (coarsening and ageing), ice and water models, and quantum phase transitions. The emphasis of the school is on fostering close collaboration between the PhD students in Leipzig and Nancy. To this end, extended visits by the students of the two partner universities, a joint seminar programme taking place reciprocally in Leipzig and Nancy, joint supervision by scientists in Leipzig and Nancy and a final degree from both universities ("co-tutelle de thèse") are an integral part of the graduate college. In addition, visits of and "co-tutelle de thèses" with the associated Coventry University in England and the Institute for Condensed Matter Physics of the National Academy of Sciences of Ukraine in Lviv are possible.

Binational grants, an EU Marie Curie International Network, and participation in an EU COST action provide an additional excellent background for further collaborations with internationally renowned scientists in, e.g., Armenia, Australia, India, Italy, Poland, Russia, Spain, Turkey, USA. and many other countries. Additional binational support is made possible by the CNRS in France and the DAAD and the Alexander von Humboldt Foundation in Germany.

## Course Details

<b>Course organisation</b>	The research training consists of research work and a well-structured training programme carried out by the doctoral students under supervision. The training is individual, flexible in time and problem-oriented. Besides the research work, the training activities include workshops and conferences, scientific symposia and colloquia, literature seminars, summer/winter schools, tutoring, and transferable skills courses offered by the Research Academy Leipzig. The Department of Physics and Earth Sciences in Leipzig offers an International Physics Study Programme (IPSP) for Bachelor's and Master's students. Some of the advanced Master's courses may be also useful for the PhD students. All students are expected to spend an extended research stay at the respective partner university, i.e., Université de Lorraine, Nancy, for those primarily based in Leipzig. In addition, visits to the associated Coventry University in England and the Institute for Condensed Matter Physics of the National Academy of Sciences of Ukraine in Lviv are possible. In return, students based in Nancy will spend several months in Leipzig, Coventry or Lviv. Moreover, the training programme profits from the involvement of international partners.
<b>A Diploma supplement will be issued</b>	No
<b>International elements</b>	<ul style="list-style-type: none"> <li>• International guest lecturers</li> <li>• Integrated study abroad unit(s)</li> <li>• Projects with partners in Germany and abroad</li> </ul>
<b>Integrated study abroad unit(s)</b>	<p>All students are expected to spend an extended research stay (from two weeks to several months) at the respective partner university, i.e., Nancy University for those primarily based in Leipzig. In return, students based in Nancy will spend several months in Leipzig. Per month, a flat rate of 600 EUR will be reimbursed.</p> <p>In the current granting period, visits to the associated Coventry University in England and the Institute for Condensed Matter Physics of the National Academy of Sciences of Ukraine in Lviv are also possible. All research stays will be planned individually.</p>
<b>Special promotion / funding of the programme</b>	<ul style="list-style-type: none"> <li>• Franco-German University (FGU)</li> </ul>
<b>Course-specific, integrated German language courses</b>	Yes

Course-specific, integrated  
English language courses

No

## Online learning

Pace of course

Instructor-led (Specific due dates for lectures/assignments/exams)

Phase(s) of attendance in  
Germany (applies to the  
entire programme)

Yes, voluntary

Types of online learning  
elements

- Access to databases with study material
- Online sessions

## Costs / Funding

Tuition fees per semester in  
EUR

None

Semester contribution

Currently, students have to pay an approx. 195 EUR enrolment fee per semester. This fee includes the Student Services, the Student Council, a semester ticket and the mobility fund.

Costs of living

Approx. 750-800 EUR per month to cover personal expenses

Funding opportunities  
within the university

No

## Requirements / Registration

Academic admission  
requirements

Typically, a Master's or "Diplom" degree in natural sciences

Language requirements

Knowledge of English

Application deadline

No specific deadlines

Submit application to

Prof Dr Wolfhard Janke  
Institut für Theoretische Physik  
Universität Leipzig  
IPF 231101  
04081 Leipzig  
Germany

# Services

Possibility of finding part-time employment	See offers in the student job market organised by the "Studentenwerk Leipzig"
Accommodation	Student halls of residence run by the "Studentenwerk Leipzig", shared apartments, accommodation services and estate agencies.
Structured research and supervision	Yes
Research training / discussion	Yes
Career advisory service	Provided by the Research Academy Leipzig
Support for international students and doctoral candidates	<ul style="list-style-type: none"><li>• Welcome event</li></ul>
General services and support for international students and doctoral candidates	A central orientation week for foreign students organised by the International Centre of the university. Arrival support for doctoral students is possible upon request.
Supervisor-student ratio	As for most PhD programmes, close to 1:2 or even 1:1

## Contact

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🌐 Course website: <https://www.physik.uni-leipzig.de/~janke/research/dfh-ufa.html>

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# International Programmes in Germany - Database

[www.daad.de/international-programmes](http://www.daad.de/international-programmes)  
[www.daad.de/sommerkurse](http://www.daad.de/sommerkurse)

## Editor

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## GATE-Germany

Consortium for International Higher Education Marketing  
[www.gate-germany.de](http://www.gate-germany.de)

## Disclaimer

The data used for this database was collected and analysed in good faith and with due diligence. The DAAD and the Content5 AG accept no liability for the correctness of the data contained in the "International Programmes in Germany" and "Language and Short Courses in Germany".

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