



Research in Germany

PHYSICS

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Research in
Germany



Land of Ideas



Research in Germany



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PHYSICS

PREFACE

This brochure provides a first insight into research in Germany in the field of physics and is especially recommended to early career researchers from abroad.

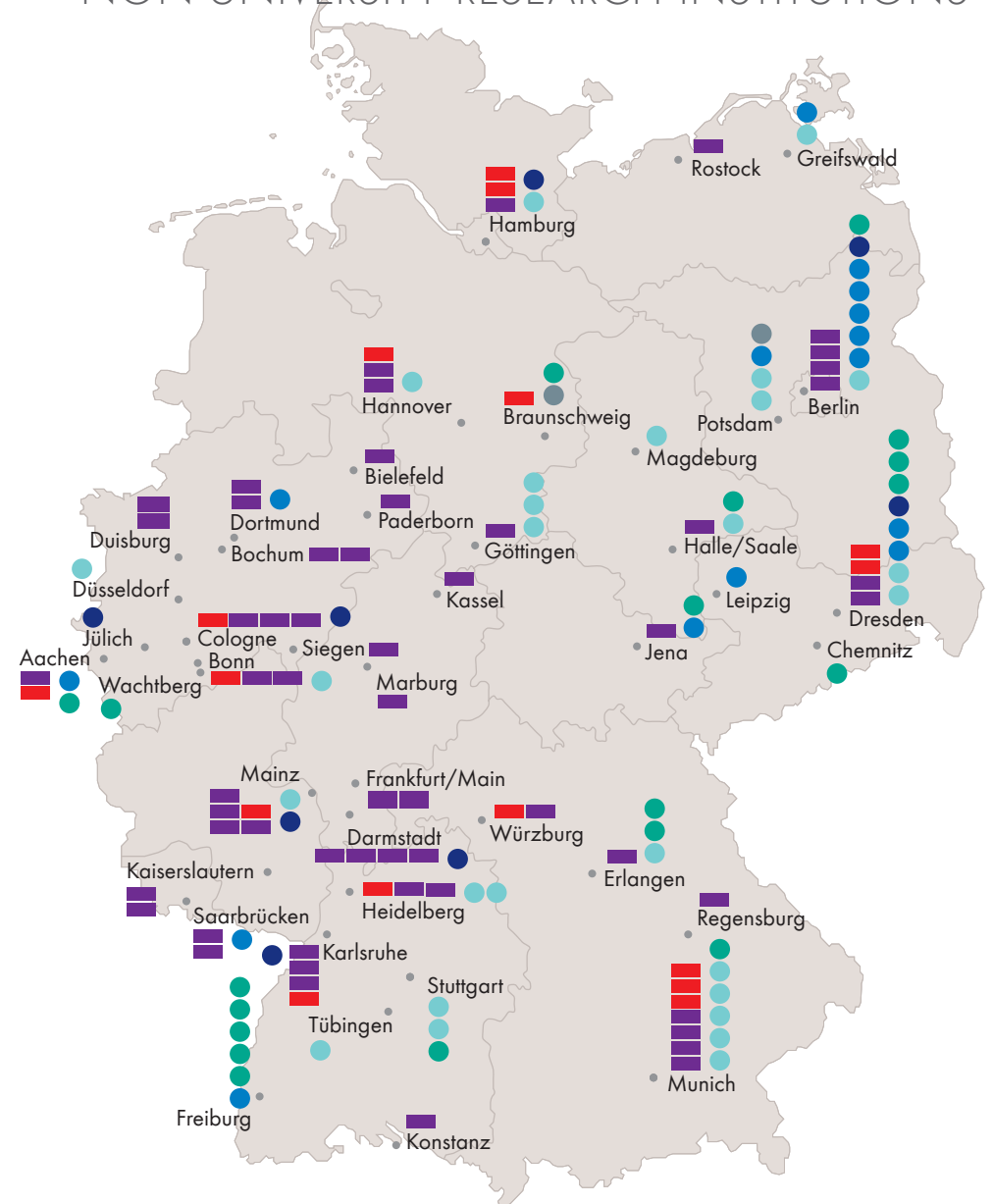
Physics research in Germany is conducted at universities and at non-university research institutions. Almost all universities and many universities of applied sciences host a section in this field. The spectrum ranges from small thematically focused working groups to large scale research facilities and the topics cover the whole scope of physics.








This brochure is intended to give an initial overview. The following maps and tables highlight research consortia and graduate training programmes at universities and non-university research institutes with a main focus on physics.

On top of this, there is a lot more to discover: e.g. the DFG funds a multitude of individual projects in the area of physics. These individual grants outweigh the research consortia both in number and in overall funding volume. Towards the end of this brochure, you will find a link to the online database GEPRIS that provides an overview of all DFG-funded research projects. You will also find additional important links for further information about programmes in the field of physics and profiles of German universities and research institutions.

We invite you to explore the many opportunities that Germany has to offer and welcome your feedback.

CENTRES OF RESEARCH/ NON-UNIVERSITY RESEARCH INSTITUTIONS



	Clusters of Excellence		Fraunhofer Institutes
	Collaborative Research Centres/Transregios		Helmholtz Centres
			Leibniz Institutes
			Max Planck Institutes
			Others

DFG-funded Priority Programmes and Research Units are not shown on the map since they are not necessarily located at a single location; they are listed on pages 17 and 21. The map shows the headquarters of the non-university research institutions.

CENTRES OF RESEARCH

- FUNDED BY DFG -

Clusters of Excellence (EXC) promote cutting-edge research. They serve to strengthen the research profiles of universities or university consortia in internationally competitive fields. They create excellent training and career opportunities for early career researchers. Within the framework of the Excellence Strategy, they can receive between €3 million and €10 million annually and are funded for seven years. A second seven-year period is possible.













Collaborative Research Centres (CRC) are organisational units established at universities which enable researchers to pursue an outstanding research programme crossing the boundaries of disciplines, institutes, departments and faculties. The traditional Collaborative Research Centre is generally applied for by one university and is conducted by researchers of that university. Early career support is a key objective of the Collaborative Research Centre Programme. Early career researchers may get involved in a CRC in numerous ways, for example within the framework of an Integrated Research Training Group. Collaborative Research Centres are funded for a period of up to 12 years.














Transregios (TRR) are Collaborative Research Centres in which up to three universities collaborate with each other and submit a joint application. The contributions of the cooperative partners are essential, complementary and synergetic to the joint research objective. Funding facilitates close, nationwide collaboration among the participating universities and researchers, as well as networking and shared use of resources. There is also the option of international Transregios.

CENTRES OF RESEARCH

Location	Institution	Title	Funded Since	Contact
CLUSTERS OF EXCELLENCE				
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Matter and Light for Quantum Computing (ML4Q) (EXC 2004)	2019	https://ml4q.de
Bonn	Rheinische Friedrich-Wilhelms-Universität Bonn			
Cologne	Universität zu Köln			
 Braunschweig	Technische Universität Braunschweig	Light and Matter at the Quantum Frontier: Foundations and Applications in Metrology (QuantumFrontiers) (EXC 2123)	2019	quantumfrontiers.uni-hannover.de
Hannover	Gottfried Wilhelm Leibniz Universität Hannover			
 Dresden	Technische Universität Dresden	Physics of Life – The Dynamic Organization of Living Matter (PoL) (EXC 2068)	2019	https://physics-of-life.tu-dresden.de
 Dresden	Technische Universität Dresden	Complexity and Topology in Quantum Matter: Fundamental Concepts, Materials Design, and Novel Technologies (Ct.qmat) (EXC 2147)	2019	www.ctqmat.de
Würzburg	Julius-Maximilians-Universität Würzburg			
 Hamburg	Universität Hamburg	Advanced Imaging of Matter: Structure, Dynamics and Control on the Atomic Scale (AIM) (EXC 2056)	2019	www.cui.uni-hamburg.de
 Hamburg	Universität Hamburg	Quantum Universe (EXC 2121)	2019	www.qu.uni-hamburg.de
 Heidelberg	Ruprecht-Karls-Universität Heidelberg	STRUCTURES: A Unifying Approach to Emergent Phenomena in the Physical World, Mathematics, and Complex Data (EXC 2181)	2019	www.thphys.uni-heidelberg.de/~structures/
 Karlsruhe	Karlsruher Institut für Technologie	3D Matter Made to Order (3DMM2O) (EXC 2082)	2019	www.3dmattermade.toorder.kit.edu
 Mainz	Johannes Gutenberg-Universität Mainz	Precision Physics, Fundamental Interactions and Structure of Matter (PRISMA+) (EXC 2118)	2019	www.prisma.uni-mainz.de

CENTRES OF RESEARCH

Location	Institution	Title	Funded Since	Contact
 Munich	Ludwig-Maximilians-Universität München	Munich Center for Quantum Science and Technology (MQST) (EXC 2111)	2019	www.mcqst.de
 Munich	Ludwig-Maximilians-Universität München	ORIGINS: From the Origin of the Universe to the First Building Blocks of Life (EXC 2094)	2019	www.origins-cluster.de
	Technische Universität München			
 Munich	Technische Universität München	e-conversion (EXC 2089)	2019	www.e-conversion.de
COLLABORATIVE RESEARCH CENTRES				
 Berlin	Humboldt-Universität zu Berlin	Hybrid Inorganic/Organic Systems for Opto-Electronics (HIOS) (CRC 951)	2011	www.physik.hu-berlin.de/sfb951
 Berlin	Technische Universität Berlin	Control of Self-organizing Nonlinear Systems: Theoretical Methods and Concepts of Application (CRC 910)	2010	www.itp.tu-berlin.de/sfb910
 Bochum	Ruhr-Universität Bochum	Transient Atmospheric Plasmas – from Plasmas to Liquids to Solids (CRC 1316)	2017	http://sfb1316.rub.de
 Bochum	Ruhr-Universität Bochum	Cosmic Interacting Matters – From Source to Signal (CRC 1491)	2022	https://gepris.dfg.de/gepris/projekt/445052434
 Cologne	Universität zu Köln	Conditions and Impact of Star Formation – Astrophysics, Instrumentation and Laboratory Research (CRC 956)	2010	www.sfb956.de
 Cologne	Universität zu Köln	Control and Dynamics of Quantum Materials (CRC 1238)	2016	http://crc1238.uni-koeln.de/
 Darmstadt	Technische Universität Darmstadt	Nuclei: From Fundamental Interactions to Structure and Stars (CRC 1245)	2015	www.sfb1245.tu-darmstadt.de
 Dresden	Technische Universität Dresden	Correlated Magnetism: From Frustration to Topology (CRC 1143)	2014	https://tu-dresden.de/mn/physik/sfb1143/der-sfb
 Dresden	Technische Universität Dresden	Chemistry of Synthetic Two-Dimensional Materials (CRC 1415)	2020	https://tu-dresden.de/mn/chemie/sfb1415

Location	Institution	Title	Funded Since	Contact
 Duisburg	Universität Duisburg-Essen	Non-Equilibrium Dynamics of Condensed Matter in the Time Domain (CRC 1242)	2016	www.uni-due.de/sfb1242
 Göttingen	Georg-August-Universität Göttingen	Atomic Scale Control of Energy Conversion (CRC 1073)	2013	www.uni-goettingen.de/en/437142.html
 Hamburg	Universität Hamburg	Light Induced Dynamics and Control of Correlated Quantum Systems (CRC 925)	2011	http://photon.physnet.uni-hamburg.de/sfb
 Hannover	Gottfried Wilhelm Leibniz Universität Hannover	Designed Quantum States of Matter (DQ-mat) (CRC 1227)	2016	www.dq-mat.uni-hannover.de
 Hannover	Gottfried Wilhelm Leibniz Universität Hannover	Relativistic and Quantum-based Geodesy (TerraQ) (CRC 1464)	2020	www.terraq.uni-hannover.de/der-sfb/
 Heidelberg	Ruprecht-Karls-Universität Heidelberg	Isolated Quantum Systems and Universality in Extreme Conditions (ISOQUANT) (CRC 1225)	2016	http://isoquant.uni-heidelberg.de
 Heidelberg	Ruprecht-Karls-Universität Heidelberg	The Milky Way System (CRC 881)	2010	http://sfb881.zah.uni-heidelberg.de
 Jena	Friedrich-Schiller-Universität Jena	Nonlinear Optics down to Atomic Scales (NOA) (CRC 1375)	2019	www.noa.uni-jena.de/
 Karlsruhe	Karlsruher Institut für Technologie	Wave Phenomena: Analysis and Numerics (CRC 1173)	2015	www.waves.kit.edu/
 Kassel	Universität Kassel	Extreme Light for Sensing and Driving Molecular Chirality (ELCH) (CRC 1319)	2018	www.uni-kassel.de/forschung/en/sfb/crc-1319-elch
 Konstanz	Universität Konstanz	Fluctuations and Nonlinearities in Classical and Quantum Matter beyond Equilibrium (CRC 1432)	2021	www.sfb1432.uni-konstanz.de
 Marburg	Philipps-Universität Marburg	Structure and Dynamics of Internal Interfaces (CRC 1083)	2013	www.uni-marburg.de/sfb1083
 Munich	Ludwig-Maximilians-Universität München	Nanoagents for the Spatiotemporal Control of Molecular and Cellular Reactions (CRC 1032)	2012	www.sfb1032.physik.uni-muenchen.de

CENTRES OF RESEARCH

Location	Institution	Title	Funded Since	Contact
Munich	Technische Universität München	Neutrinos and Dark Matter in Astro- and Particle Physics (NDM) (CRC 1258)	2016	www.sfb1258.de
Regensburg	Universität Regensburg	Emergent Relativistic Effects in Condensed Matter: From Fundamental Aspects to Electronic Functionality (CRC 1277)	2017	www.sfb1277-regensburg.de
Rostock	Universität Rostock	Light-Matter Interactions at Interfaces (LiMatI) (CRC 1477)	2022	https://gepris.dfg.de/gepris/projekt/441234705
Saarbrücken	Universität des Saarlandes	Physical Modeling of Non-Equilibrium Processes in Biological Systems (CRC 1027)	2012	www.sfb1027.uni-saarland.de
Würzburg	Julius-Maximilians-Universität Würzburg	Topological and Correlated Electronics at Surfaces and Interfaces (ToCoTronics) (CRC 1170)	2015	www.physik.uni-wuerzburg.de/sfb1170/startseite/

COLLABORATIVE RESEARCH CENTRES/TRANSREGIOS

Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Particle Physics Phenomenology after the Higgs Discovery (P3H) (TRR 257)	2018	https://p3h.particle.kit.edu/
Karlsruhe	Karlsruher Institut für Technologie			
Siegen	Universität Siegen			
Berlin Cologne	Freie Universität Berlin Universität zu Köln	Entangled States of Matter (TRR 183)	2016	http://crc183.uni-koeln.de/
Berlin Halle/Saale	Freie Universität Berlin Martin-Luther-Universität Halle-Wittenberg	Ultrafast Spin Dynamics (TRR 227)	2017	www.trr227.de

Location	Institution	Title	Funded Since	Contact
Bielefeld	Universität Bielefeld	Strong-Interaction Matter Under Extreme Conditions (TRR 211)	2017	https://th.physik.uni-frankfurt.de/~strongmatter
Darmstadt	Technische Universität Darmstadt			
Frankfurt/Main	Goethe-Universität Frankfurt am Main			
Bonn	Rheinische Friedrich-Wilhelms-Universität Bonn	Open System Control of Atomic and Photonic Matter (OSCAR) (TRR 185)	2016	www.physik.uni-kl.de/oscar
Kaiserslautern	Technische Universität Kaiserslautern			
Bonn	Rheinische Friedrich-Wilhelms-Universität Bonn	Symmetries and the Emergence of Structure in QCD (TRR 110)	2012	http://crc110.hiskp.uni-bonn.de
Munich	Technische Universität München			
Beijing (China)	Peking University			
Darmstadt	Technische Universität Darmstadt	Multiscale Simulation Methods for Soft Matter Systems (TRR 146)	2014	http://trr146.de
Mainz	Johannes Gutenberg-Universität Mainz			
Darmstadt	Technische Universität Darmstadt	Hysteresis Design of Magnetic Materials for Efficient Energy Conversion: HoMMage (TRR 270)	2020	www.tu-darmstadt.de/sfb270/about_crc/index.en.jsp
Duisburg	Universität Duisburg-Essen			
Dortmund	Technische Universität Dortmund	Tailored Nonlinear Photonics: From Fundamental Concepts to Functional Structures (TRR 142)	2013	http://trr142.uni-paderborn.de
Paderborn	Universität Paderborn			

Location	Institution	Title	Funded Since	Contact
<p>■ Dortmund</p> <p>St. Petersburg (Russia)</p>	<p>Technische Universität Dortmund</p> <p>St. Petersburg State University</p>	<p>Coherent Manipulation of Interacting Spin Excitations in Tailored Semiconductors (TRR 160)</p>	2014	<p>http://trr160.tu-dortmund.de</p>
<p>■ Erlangen</p> <p>Mainz</p> <p>Saarbrücken</p>	<p>Friedrich-Alexander-Universität Erlangen-Nürnberg</p> <p>Johannes Gutenberg-Universität Mainz</p> <p>Universität des Saarlandes</p>	<p>Quantum Cooperativity of Light and Matter – QuCoLiMa (TRR 306)</p>	2021	<p>www.qucolima.de</p>
<p>■ Frankfurt/Main</p> <p>Karlsruhe</p> <p>Mainz</p>	<p>Goethe-Universität Frankfurt am Main</p> <p>Karlsruher Institut für Technologie</p> <p>Johannes Gutenberg-Universität Mainz</p>	<p>Elastic Tuning and Response of Electronic Quantum Phases of Matter (ELASTO-Q-MAT) (TRR 288)</p>	2020	<p>https://transregio288.org/</p>
<p>■ Kaiserslautern</p> <p>Mainz</p>	<p>Technische Universität Kaiserslautern</p> <p>Johannes Gutenberg-Universität Mainz</p>	<p>Spin+X – Spin in its Collective Environment (TRR 173)</p>	2015	<p>www.uni-kl.de/trr173</p>
<p>■ Munich</p>	<p>Ludwig-Maximilians-Universität München</p> <p>Technische Universität München</p>	<p>Emergence of Life – Exploring Mechanisms with Cross-Disiplinary Experiments (TRR 235)</p>	2018	<p>www.emergence-of-life.de</p>



RESEARCH UNITS

- FUNDED BY DFG -

Research Units (FOR) often contribute to establishing new research directions. Research Units are made up of a team of researchers working together on a research project which is often of an interdisciplinary nature. Research Units consist of several researchers and subprojects. The subprojects of a Research Unit are often located at several locations throughout Germany. Research Units are generally funded for up to six years.

Research Units are not shown on the map. Only the titles of the thematic focus and the project websites are listed.



RESEARCH UNITS

Title	Funded Since	Contact
Future Methods for Studying Confined Gluons in QCD (FOR 5269)	2021	https://gepris.dfg.de/gepris/projekt/451886959
Quantitative Spatio-Temporal Model-Building for Correlated Electronic Matter (FOR 5249)	2021	https://for5249.org
Proximity-Induced Correlation Effects in Low Dimensional Systems (FOR 5242)	2021	www.epigraphene.de
Searching for Charged Lepton Flavour Violation with the Mu3e Experiment (FOR 5199)	2021	https://gepris.dfg.de/gepris/projekt/443478861
Relativistic Jets in Active Galaxies (FOR 5195)	2021	https://gepris.dfg.de/gepris/projekt/443220636
The eROSITA View of Stellar Endpoints (eRO-STEP) (FOR 2990)	2021	www.ero-step.de
Periodic Low-Dimensional Defect Structures in Polar Oxides (FOR 5044)	2020	https://gepris.dfg.de/gepris/projekt/426703838
Reducing Complexity of Nonequilibrium Systems (FOR 5099)	2020	www.for5099.uni-freiburg.de
Next Generation Perturbative QCD for Hadron Structure: Preparing for the Electron-Ion Collider (FOR 2926)	2019	http://www.physik.uni-regensburg.de/for2926/index.html
Copper Iodide as Multifunctional Semiconductor (FOR 2857)	2019	https://research.uni-leipzig.de/for2857/index.htm
Probing the Quantum Vacuum at the High-Intensity Frontier (FOR 2783)	2019	www.quantumvacuum.org/
Thermal Machines in the Quantum World (FOR 2724)	2018	www.quantumthermo.de/
Fundamental Aspects of Statistical Mechanics and the Emergence of Thermodynamics in Non-Equilibrium Systems (FOR 2692)	2017	www.for2692.uni-osnabrueck.de
Planet Formation Witnesses and Probes: Transition Discs (FOR 2634)	2017	www.transitiondiscs.com/
Blue Planets around Red Stars (FOR 2544)	2017	www.uni-goettingen.de/de/575252.html
Matter Under Planetary Interior Conditions – High-Pressure, Planetary and Plasma Physics (FOR 2440)	2016	www.for2440.uni-rostock.de
Artificial Gauge Fields and Interacting Topological Phases in Ultracold Atoms (FOR 2414)	2016	www.for2414.de
From Few to Many-Body Physics with Dipolar Quantum Gases (FOR 2247)	2016	www.for2247.uni-hannover.de
Charmonium Physics Experiments with the BES III Detector (FOR 2359)	2015	www.ep1.ruhr-uni-bochum.de/en/research/dfg2359/
Bestimmung der Neutrino-Massenhierarchie mit dem JUNO-Experiment (FOR 2319)	2015	http://gepris.dfg.de/gepris/projekt/268668443

RESEARCH UNITS

Title	Funded Since	Contact
Correlations in Integrable Quantum Many-Body Systems (FOR 2316)	2015	http://for2316.uni-wuppertal.de/doku.php
Debris Disks in Planetary Systems (FOR 2285)	2015	www.astro.uni-jena.de/FOR2285
New Physics at the LHC (FOR 2239)	2015	https://web.physik.rwth-aachen.de/service/wiki/bin/view/Kraemer/NewPhysicsattheLHC
Neutrino Mass Determination by Electron Capture in Holmium-163 (ECHO) (FOR 2202)	2015	www.kip.uni-heidelberg.de/for2202



PRIORITY PROGRAMMES

- FUNDED BY DFG -

Priority Programmes (SPP) have a programmatic focus and the purpose of advancing knowledge in an emerging field of research through collaborative networked support. They are characterised by their enhanced quality of research through the use of new methods and forms of collaboration in emerging fields. As a rule, one programme can consist of up to 30 individual subprojects located at several institutions across Germany; it usually has one coordinating person. Priority Programmes normally receive funding for a period of six years.

Priority Programmes are not shown on the map. Only the titles of the overall themes and the project website are listed.

PRIORITY PROGRAMMES

Title	Funded Since	Contact
2D Materials – Physics of van der Waals [Hetero]Structures (2DMP) (SPP 2244)	2020	https://2dmp.tu-dresden.de/
Perovskite Semiconductors: From Fundamental Properties to Devices (SPP 2196)	2019	www.perovskite-spp.uni-konstanz.de/spp-2196
Dynamic Wetting of Flexible, Adaptive and Switchable Surfaces (SPP 2171)	2019	www.uni-muenster.de/SPP2171/index.html
Skyrmionics: Topological Spin Phenomena in Real-Space for Applications (SPP 2137)	2017	www.skyrmionics.ph.tum.de
Exploring the Diversity of Extrasolar Planets (SPP 1992)	2017	www-astro.physik.tu-berlin.de/exoplanet-diversity
Giant Interactions in Rydberg Systems (GiRyd) (SPP 1929)	2016	www.giryd.de
Quantum Dynamics in Tailored Intense Fields (QUTIF) (SPP 1840)	2015	www.qutif.de



NON-UNIVERSITY RESEARCH INSTITUTIONS

Fraunhofer Society is one of the world's leading organisations for applied research with an annual research budget of 2.8 billion euros, 74 institutes and more than 28,000 employees. Fraunhofer's R&D portfolio covers a wide range of fields, including health, security, communications, transport, energy and the environment. www.fraunhofer.de

The Helmholtz Association contributes to solving major challenges facing society, science and industry with world-level research in six areas: energy, earth and environment, health, key technologies, structure of matter and aeronautics, space and transport. With more than 40,000 employees in 19 research centres and an annual budget of approximately 4.8 billion euros, the Helmholtz Association is Germany's largest scientific organisation. www.helmholtz.de

The Leibniz Association is an umbrella organisation of 95 research institutes. The annual budget amounts to 1.9 billion euros. Some 11,500 researchers – approximately 25% of them from abroad – work on a widely diverse range of subjects, including the humanities and social sciences, economics, spatial and life sciences, mathematics, natural and engineering sciences and environmental research. www.leibniz-association.eu

The Max Planck Society for the Advancement of Science is one of Germany's largest independent non-profit research organisations. The Max Planck Society has been allocated approximately 1.86 billion euros for 2019. A combined total of 15,300 researchers, postdoctoral/junior researchers and visiting researchers at 86 Max Planck Institutes conduct basic research in the natural sciences, life sciences, social sciences and humanities. One third of the researchers and more than half of the junior and visiting researchers come from abroad. www.mpg.de

NON-UNIVERSITY RESEARCH INSTITUTIONS

Location	Institution	Contact
FRAUNHOFER INSTITUTES		
● Aachen	Fraunhofer Institute for Laser Technology (ILT)	www.ilt.fraunhofer.de
● Berlin	Fraunhofer Institute for Telecommunications, Heinrich Hertz Institute (HHI)	www.hhi.fraunhofer.de
● Braunschweig	Fraunhofer Institute for Surface Engineering and Thin Films (IST)	www.ist.fraunhofer.de
● Chemnitz	Fraunhofer Institute for Electronic Nano Systems (ENAS)	www.enas.fraunhofer.de
● Dresden	Fraunhofer Institute for Material and Beam Technology (IWS)	www.iws.fraunhofer.de
● Dresden	Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology (FEP)	www.fep.fraunhofer.de
● Dresden	Fraunhofer Institute for Photonic Microsystems (IPMS)	www.ipms.fraunhofer.de
● Erlangen	Fraunhofer Institute for Integrated Circuits (IIS)	www.iis.fraunhofer.de
● Erlangen	Fraunhofer Institute for Integrated Systems and Device Technology (IISB)	www.iisb.fraunhofer.de
● Freiburg	Fraunhofer Institute for Applied Solid State Physics (IAF)	www.iaf.fraunhofer.de
● Freiburg	Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institut (EMI)	www.emi.fraunhofer.de
● Freiburg	Fraunhofer Institute for Physical Measurement Techniques (IPM)	www.ipm.fraunhofer.de
● Freiburg	Fraunhofer Institute for Solar Energy Systems (ISE)	www.ise.fraunhofer.de
● Freiburg Halle/Saale	Fraunhofer Institute for Mechanics of Materials (IWM)	www.iwm.fraunhofer.de
● Jena	Fraunhofer Institute for Applied Optics and Precision Engineering (IOF)	www.iof.fraunhofer.de
● Munich	Fraunhofer Research Institution for Microsystems and Solid State Technologies (EMFT)	www.emft.fraunhofer.de
● Stuttgart	Fraunhofer Institute for Building Physics (IBP)	www.ibp.fraunhofer.de
● Wachtberg	Fraunhofer Institute for High Frequency Physics and Radar Techniques (FHR)	www.fhr.fraunhofer.de
HELMHOLTZ CENTRES		
● Berlin	Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)	www.helmholtz-berlin.de
● Cologne	German Aerospace Center (DLR)	www.dlr.de
● Darmstadt	GSI Helmholtzzentrum für Schwerionenforschung	www.gsi.de
● Dresden-Rossendorf	Helmholtz-Zentrum Dresden-Rossendorf (HZDR)	www.hzdr.de
● Hamburg	Deutsches Elektronen-Synchrotron (DESY)	www.desy.de
● Jülich	Forschungszentrum Jülich (FZ Jülich)	www.fz-juelich.de

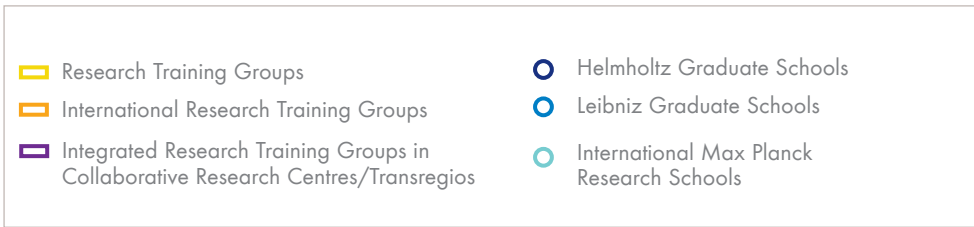
NON-UNIVERSITY RESEARCH INSTITUTIONS

Location	Institution	Contact
● Karlsruhe	Karlsruhe Institute of Technology (KIT)	www.kit.edu
● Mainz	Helmholtz Institute Mainz (HIM)	www.hi-mainz.de/
LEIBNIZ INSTITUTES		
● Aachen	DWI – Leibniz Institute for Interactive Materials	www.dwi.rwth-aachen.de
● Berlin	Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik (FBH)	www.fbh-berlin.com
● Berlin	Leibniz Institute for Crystal Growth (IKZ)	www.ikz-berlin.de
● Berlin	Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy im Forschungsverbund Berlin (MBI)	www.mbi-berlin.de
● Berlin	Paul-Drude-Institut für Festkörperelektronik (PDI)	www.pdi-berlin.de
● Berlin	Leibniz-Institut für Analytische Wissenschaften (ISAS)	www.isas.de
● Dortmund		
● Dresden	Leibniz Institute of Polymer Research Dresden (IPF)	www.ipfdd.de
● Dresden	Leibniz Institute for Solid State and Materials Research Dresden (IFW)	www.ifw-dresden.de
● Freiburg	Kiepenheuer Institute for Solar Physics (KIS)	www.leibniz-kis.de
● Greifswald	Leibniz Institute for Plasma Science and Technology (INP Greifswald)	www.inp-greifswald.de/en/
● Jena	Institute of Photonic Technology (IPHT)	www.leibniz-ipht.de/en.html
● Leipzig	Leibniz Institute for Surface Modification (IOM)	www.iom-leipzig.de
● Potsdam	Leibniz Institute for Astrophysics Potsdam (AIP)	www.aip.de
● Saarbrücken	Leibniz Institute for New Materials (INM)	www.leibniz-inm.de
MAX PLANCK INSTITUTES		
● Berlin	Fritz Haber Institute of the Max Planck Society (FHI-Berlin)	www.fhi.mpg.de
● Bonn	Max Planck Institute for Radio Astronomy (MPIfR)	www.mpifr-bonn.mpg.de
● Dresden	Max Planck Institute for Chemical Physics of Solids (CPFS)	www.cpfs.mpg.de
● Dresden	Max Planck Institute for the Physics of Complex Systems (MPIPKS)	www.mpi PKS-dresden.mpg.de
● Düsseldorf	Max Planck Institute for Iron Research (MPIE)	www.mpie.de
● Erlangen	Max Planck Institute for the Science of Light (MPL)	www.mpl.mpg.de
● Garching (Munich)	Max Planck Institute for Astrophysics (MPA-Garching)	www.mpa-garching.mpg.de
● Garching (Munich)	Max Planck Institute for Extraterrestrial Physics (MPE)	www.mpe.mpg.de

NON-UNIVERSITY RESEARCH INSTITUTIONS

Location	Institution	Contact
● Garching (Munich)	Max Planck Institute of Quantum Optics (MPQ)	www.mpg.de
● Garching (Munich) Greifswald	Max Planck Institute for Plasma Physics (IPP)	www.ipp.mpg.de
● Göttingen	Max Planck Institute for Biophysical Chemistry (BPC)	www.mpibpc.mpg.de
● Göttingen	Max Planck Institute for Dynamics and Self-Organization (DS)	www.ds.mpg.de
● Göttingen	Max Planck Institute for Solar System Research (MPS)	www.mps.mpg.de
● Halle/Saale	Max Planck Institute of Microstructure Physics (MPI-Halle)	www.mpi-halle.mpg.de
● Hamburg	Max Planck Institute for the Structure and Dynamics of Matter (MPSD)	www.mpsd.mpg.de
● Heidelberg	Max Planck Institute for Astronomy (MPIA)	www.mpia.de
● Heidelberg	Max Planck Institute for Nuclear Physics (MPIK)	www.mpi-hd.mpg.de
● Magdeburg	Max Planck Institute of Dynamics of Complex Technical Systems	www.mpi-magdeburg.mpg.de/2316/en
● Mainz	Max Planck Institute for Polymer Research (MPIP)	www.mpip-mainz.mpg.de
● Munich	Max Planck Institute for Physics (MPP)	www.mpp.mpg.de
● Potsdam-Golm	Max Planck Institute of Colloids and Interfaces (MPIKG)	www.mpi kg.mpg.de
● Potsdam-Golm Hannover	Max Planck Institute for Gravitational Physics (AEI)	www.aei.mpg.de
● Stuttgart	Max Planck Institute for Solid State Research (FKF)	www.fkf.mpg.de
● Stuttgart Tübingen	Max Planck Institute for Intelligent Systems (IS)	www.is.mpg.de
OTHERS		
● Berlin Braunschweig	Physikalisch-Technische Bundesanstalt (PTB)	www.ptb.de/cms/en/
● Potsdam	Potsdam Institut für Klimafolgenforschung (PIK)	www.pik-potsdam.de/en

GRADUATE TRAINING



GRADUATE TRAINING












- FUNDED BY DFG -

Research Training Groups (RTG) combine an ambitious research programme at universities with comprehensive training, tailored supervision and academic freedom to form an ideal environment for a successful doctorate. Research Training Groups can also have an interdisciplinary approach. They are funded for a period of up to nine years.














International Research Training Groups (IRTG) provide opportunities for joint doctoral training programmes between German universities and universities abroad. The research and study programmes are jointly developed and supervised. Doctoral students in the programme spend six months at the partner institution.

Integrated Research Training Groups (within Collaborative Research Centres/ Transregios) offer ideal research environments for doctoral researchers. The main aim of these structured training programmes is to provide young scientists and academics with opportunities to independently carry out research at an early stage of their career. The programmes further take care to closely integrate early career researchers into an academic network. Working in Collaborative Research Centres projects, doctoral researchers achieve additional qualifications. As research assistants in these projects, they contribute to the Research Centre's success. They are closely involved with the projects and have access to the entire project infrastructure.










GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
RESEARCH TRAINING GROUPS				
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Quantum Many-Body Methods in Condensed Matter Systems (RTG 1995)	2014	www.rtg1995.rwth-aachen.de
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Energy, Entropy, and Dissipative Dynamics (RTG 2326)	2017	www.eddy.rwth-aachen.de
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	The Physics of the Heaviest Particles at the Large Hadron Collider (RTG 2497)	2019	www.physik.rwth-aachen.de/cms/Physik/Forschung/forschungsverbuende/Graduiertenkollegs/~bpfzo/Graduiertenkolleg/lidx/1/
 Berlin	Humboldt-Universität zu Berlin	Rethinking Quantum Field Theory (RTG 2575)	2020	www2.hu-berlin.de/rtg2575/
 Braunschweig	Technische Universität Braunschweig	Metrology for Complex Nanosystems (NANOMET) (RTG 1952)	2014	www.tu-braunschweig.de/mib/nanomet
 Bremen	Universität Bremen	Quantum Mechanical Materials Modelling – QM ³ (RTG 2247)	2016	www.rtg-qm3.de
 Bremen Oldenburg	Universität Bremen Carl von Ossietzky Universität Oldenburg	Models of Gravity (RTG 1620)	2011	www.models-of-gravity.org
 Darmstadt Mainz	Technische Universität Darmstadt Johannes Gutenberg-Universität Mainz	Accelerator Science and Technology for Energy Recovery Linacs (AccelencE) (RTG 2128)	2015	www.ikp.tu-darmstadt.de/accelence_main/uebersicht_accelence.en.jsp
 Freiburg	Albert-Ludwigs-Universität Freiburg	Mass and Symmetries after the Discovery of the Higgs Particle at the LHC (RTG 2044)	2014	www.grk2044.uni-freiburg.de
 Freiburg	Albert-Ludwigs-Universität Freiburg	Dynamics of Controlled Atomic and Molecular Systems (RTG 2717)	2022	http://rtg-dyncam.de
 Hannover	Gottfried Wilhelm Leibniz Universität Hannover	Quantum Mechanical Noise in Complex Systems (RTG 1991)	2014	www.rtg1991.uni-hannover.de

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 Heidelberg	Ruprecht-Karls-Universität Heidelberg	High Resolution and High Rate Detectors in Nuclear and Particle Physics (HighRR) (RTG 2058)	2015	www.physik.uni-heidelberg.de/highrr
 Heidelberg	Ruprecht-Karls-Universität Heidelberg	Particle Physics Beyond the Standard Model (RTG 1940)	2013	www.thphys.uni-heidelberg.de/~gk_ppbsm/doku.php?
 Mainz	Johannes Gutenberg-Universität Mainz	Control of Structure Formation in Soft Matter at and through Interfaces (RTG 2516)	2020	https://grk2516.uni-mainz.de/
 Marburg	Philipps-Universität Marburg	Functionalization of Semiconductors (RTG 1782)	2011	www.uni-marburg.de/en/grk1782
 Münster	Westfälische Wilhelms-Universität Münster	Strong and Weak Interactions – From Hadrons to Dark Matter (RTG 2149)	2015	www.uni-muenster.de/Physik.GRK2149
 Rostock	Universität Rostock	Imaging of Quantum Systems: Photons, Molecules and Materials (RTG 2676)	2022	tba
 Würzburg	Julius-Maximilians-Universität Würzburg	Molecular Biradicals: Structure, Properties and Reactivity (RTG 2112)	2015	www.uni-wuerzburg.de/grk2112
INTERNATIONAL RESEARCH TRAINING GROUPS				
 Jena	Friedrich-Schiller-Universität Jena	Tailored Metasurfaces – Generating, Programming and Detecting Light (IRTG 2675)	2022	https://gepris.dfg.de/gepris/projekt/437527638
 Canberra (Australia)	The Australian National University			
 Jena	Friedrich-Schiller-Universität Jena	Guided Light, Tightly Packed: Novel Concepts, Components and Applications (IRTG 2101)	2014	www.light.uni-jena.de/en/irtg-2101.html
 Québec (Canada)	Université Laval Université du Québec			
 Toronto (Canada)	University of Toronto			
INTEGRATED RESEARCH TRAINING GROUPS IN COLLABORATIVE RESEARCH CENTRES				
 Bochum	Ruhr-Universität Bochum	Integrated Research Training Group within: Transient Atmospheric Plasmas – from Plasmas to Liquids to Solids (CRC 1316)	2017	https://sfb1316.rub.de/index.php

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 Darmstadt	Technische Universität Darmstadt	Integrated Research Training Group within: Nuclei: From Fundamental Interactions to Structure and Stars (CRC 1245)	2015	www.sfb1245.tu-darmstadt.de/mgk.html
 Dresden	Technische Universität Dresden	Integrated Research Training Group within: Correlated Magnetism: From Frustration to Topology (CRC 1143)	2014	https://tu-dresden.de/mn/physik/sfb1143
 Dresden	Technische Universität Dresden	Integrated Research Training Group within: Chemistry of Synthetic Two-Dimensional Materials (CRC 1415)	2020	https://tu-dresden.de/mn/chemie/sfb1415
 Duisburg	Universität Duisburg-Essen	Integrated Research Training Group within: Non-Equilibrium Dynamics of Condensed Matter in the Time Domain (CRC 1242)	2016	www.uni-due.de/sfb1242/irtg.php
 Göttingen	Georg-August-Universität Göttingen	Integrated Research Training Group within: Atomic Scale Control of Energy Conversion (CRC 1073)	2013	www.uni-goettingen.de/en/irtg/438103.html
 Hamburg	Universität Hamburg	Integrated Research Training Group within: Light Induced Dynamics and Control of Correlated Quantum Systems (CRC 925)	2011	www1.physik.uni-hamburg.de/en/sfb925.html
 Hannover	Gottfried Wilhelm Leibniz Universität Hannover	Integrated Research Training Group within: Relativistic and Quantumbased Geodesy (TerraQ) (CRC 1464)	2021	www.terraq.uni-hannover.de/en/support-structures/research-training-group
 Konstanz	Universität Konstanz	Integrated Research Training Group within: Fluctuations and Nonlinearities in Classical and Quantum Matter beyond Equilibrium (CRC 1432)	2021	www.sfb1432.uni-konstanz.de/irtg-fan
 Munich	Ludwig-Maximilians-Universität München	Integrated Research Training Group within: Nanoagents for Spatiotemporal Control of Molecular and Cellular Reactions (CRC 1032)	2012	www.sfb1032.physik.uni-muenchen.de/graduate_program1/index.html

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 Munich	Technische Universität München	Munich School on Neutrinos and Dark Matter within: Neutrinos and Dark Matter in Astro- and Particle Physics (NDM) (CRC 1258)	2016	www.sfb1258.de/graduate-school
 Regensburg	Universität Regensburg	Integrated Research Training Group within: Emergent Relativistic Effects in Condensed Matter: From Fundamental Aspects to Electronic Functionality (CRC 1277)	2017	www.sfb1277-regensburg.de/
 Würzburg	Julius-Maximilians-Universität Würzburg	Integrated Research Training Group within: Topological and Correlated Electronics at Surfaces and Interfaces (ToCoTronics) (CRC 1170)	2015	www.physik.uni-wuerzburg.de/sfb1170/i-rtg/
INTEGRATED RESEARCH TRAINING GROUPS IN COLLABORATIVE RESEARCH CENTRES/TRANSREGIOS				
 Berlin Halle/Saale	Freie Universität Berlin Martin-Luther-Universität Halle-Wittenberg	Integrated Research Training Group within: Ultrafast Spin Dynamics (TRR 227)	2017	www.trr227.de/iRTG/index.html
 Bonn Kaiserslautern	Rheinische Friedrich-Wilhelms-Universität Bonn Technische Universität Kaiserslautern	Integrated Research Training Group within: Open System Control of Atomic and Photonic Matter (OSCAR) (TRR 185)	2016	www.physik.uni-kl.de/oscar
 Darmstadt Duisburg	Technische Universität Darmstadt Universität Duisburg-Essen	Integrated Research Training Group within: Hysteresis Design of Magnetic Materials for Efficient Energy Conversion: HoMMage (TRR 270)	2020	www.tu-darmstadt.de/sfb270/research_programme/research_areas_projects_1/project_zmgk.en.jsp
 Darmstadt Mainz	Technische Universität Darmstadt Johannes Gutenberg-Universität Mainz	Integrated Research Training Group within: Multiscale Simulation Methods for Soft Matter Systems (TRR 146)	2014	http://trr146.de/en/irtg

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Integrated Research Training Group within: Quantum Cooperativity of Light and Matter – QuCoLiMa (TRR 306)	2021	www.qucolima.de/phd-program/
Mainz	Johannes Gutenberg-Universität Mainz			
Saarbrücken	Universität des Saarlandes			
 Kaiserslautern Mainz	Technische Universität Kaiserslautern Johannes Gutenberg-Universität Mainz	Integrated Research Training Group “Spin+X Young Researcher College” within: Spin+X – Spin in its Collective Environment (TRR 173)	2015	www.uni-kl.de/trr173/ycr/
 Munich	Ludwig-Maximilians-Universität München Technische Universität München	Integrated Research Training Group within: Emergence of Life– Exploring Mechanisms with Cross-Disiplinary Experiments (TRR 235)	2018	www.emergence-of-life.de/graduate-program/index.html

GRADUATE TRAINING

- AT NON-UNIVERSITY RESEARCH INSTITUTIONS -

Helmholtz Graduate Schools provide a roof under which a varied number of curricula in different fields, or across disciplines, can find a home. Helmholtz Graduate Schools constitute a valuable addition to the wide range of training programmes available within the Helmholtz Association. They offer optimal conditions for PhD students to work and enable them to create a network of contacts with fellow university researchers while also fostering the integration of participants into the research environment.

Leibniz Graduate Schools were established to foster the systematic promotion of junior researchers. Young researchers are given the opportunity to do their doctorates in an excellent, collaborative, cross-disciplinary research environment. To this end, Leibniz institutions cooperate closely with universities. As every Leibniz institution focuses on clearly defined, socially-relevant themes, doctoral candidates have a wealth of networking opportunities in a large, dedicated scientific community. The particular character of research at the institutions in the Leibniz Association, which includes fundamental, large-scale and application-oriented research, means doctoral candidates can conduct research from basic idea right through to application.

International Max Planck Research Schools (IMPRS) offer talented German and international junior scientists the opportunity to earn a doctorate under excellent research conditions. The research schools are established by one or several Max Planck Institutes. These IMPRS work in close cooperation with universities and other – sometimes international – research institutions. This provides an extraordinary framework for the graduate students to work in, and is a great advantage in interdisciplinary research projects, or in projects that require special equipment.

Max Planck Schools are a joint initiative of the Max Planck Society, German universities and the German research organizations. As national networks of graduate education, the Max Planck Schools complement the highly successful regional cooperation formats such as the International Max Planck Research Schools (IMPRS). The three pilot Schools will receive a total of nine million euros in funding from the Federal Ministry of Education and Research (BMBF) each year over an initial period of five years. Max Planck Schools are not shown on the map.

GRADUATE TRAINING

Location	Title	Contact
HELMHOLTZ GRADUATE SCHOOLS		
○ Darmstadt	Helmholtz Graduate School for Hadron and Ion Research (HGS-HiRe for FAIR)	http://hgs-hire.de
○ Garching (Munich)	International Helmholtz Graduate School for Plasma Physics (HEPP)	www.ipp.mpg.de/hepp
○ Hamburg	PIER Helmholtz Graduate School	www.pier-hamburg.de
○ Jülich	Helmholtz Interdisciplinary Doctoral Training in Energy and Climate Research (HITEC)	www.hitec-graduate-school.de/
LEIBNIZ GRADUATE SCHOOLS		
○ Potsdam	Leibniz Graduate School for Quantitative Spectroscopy in Astrophysics	www.aip.de/en/career/students/
INTERNATIONAL MAX PLANCK RESEARCH SCHOOLS (IMPRS)		
○ Berlin	IMPRS Functional Interfaces in Physics and Chemistry	www.imprs-cs.mpg.de
○ Bonn	IMPRS of Astronomy and Astrophysics	https://blog.mpifr-bonn.mpg.de/imprs/
○ Dresden	IMPRS for Chemistry and Physics of Quantum Materials	https://imprs-cpqm.mpg.de/
○ Dresden	IMPRS for Many Particle Systems in Structured Environments	www.imprs-mpsse.mpg.de
○ Düsseldorf	IMPRS for Interface Controlled Materials for Energy Conversion	www.mpie.de/2747306/doctoral_programme
○ Erlangen	IMPRS Physics of Light	www.mpl.mpg.de/de/imprs
○ Garching (Munich)	IMPRS of Advanced Photon Science	www2.mpq.mpg.de/APS
○ Garching (Munich)	IMPRS for Astrophysics	www.imprs-astro.mpg.de
○ Garching (Munich)	IMPRS for Quantum Science and Technology	www.imprs-quantum.mpg.de/
○ Göttingen	IMPRS for Physics of Biological and Complex Systems	www.uni-goettingen.de/en/58718.html
○ Göttingen	IMPRS for Solar System Science at the University of Göttingen	www.mps.mpg.de/73264/imprs
○ Hamburg	IMPRS for Ultrafast Imaging and Structural Dynamics	www.imprs-ufast.de
○ Hannover Potsdam-Golm	IMPRS on Gravitational Wave Astronomy	http://imprs-gw.aei.mpg.de

GRADUATE TRAINING

Location	Title	Contact
Heidelberg	IMPRS for Astronomy and Cosmic Physics at the University of Heidelberg	www.imprs-hd.mpg.de/
Heidelberg	IMPRS for Precision Tests of Fundamental Symmetries	www.mpi-hd.mpg.de/imprs-ptfs
Heidelberg	IMPRS for Quantum Dynamics in Physics, Chemistry and Biology	www.mpi-hd.mpg.de/imprs-qd
Magdeburg	IMPRS for Advanced Methods in Process and Systems Engineering	www.mpi-magdeburg.mpg.de/imprs
Mülheim	IMPRS on Reactive Structure Analysis for Chemical Reactions	https://imprs.cec.mpg.de/home
Munich	IMPRS on Elementary Particle Physics	www.mpp.mpg.de
Potsdam	IMPRS for Multiscale Bio-Systems	https://imprs.mpikg.mpg.de/
Potsdam-Golm	IMPRS for Mathematical and Physical Aspects of Gravitation, Cosmology and Quantum Field Theory	www.imprs-gcq.aei.mpg.de/
Stuttgart	IMPRS for Condensed Matter Science	www.imprs-cms.mpg.de
Stuttgart Tübingen	IMPRS for Intelligent Systems	http://imprs.is.mpg.de
MAX PLANCK RESEARCH SCHOOLS		
various locations	Max Planck School Matter to Life	www.maxplanck-schools.de/en/matter-to-life
various locations	Max Planck School of Photonics	www.maxplanck-schools.de/en/photonics



SOCIETIES AND ASSOCIATIONS

IN GERMANY:

- Deutsche Gesellschaft für Biophysik (DGfB): www.dgfb.org
- Deutsche Gesellschaft für Elektronenmikroskopie (DGE): www.dge-homepage.de
- Deutsche Physikalische Gesellschaft (DPG): www.dpg-physik.de
- German Astronomical Society (AG): www.astronomische-gesellschaft.org
- German Bunsen Society for Physical Chemistry (DBG): <https://bunsen.de/> (DE)
- German Crystallographic Society (DGK): <https://dgk-home.de/en/>
- German Scientific Laser Society (WLT): www.wlt.de (DE)
- German Vacuum Society (DVG): www.vakuumgesellschaft.de (DE)
- The German Branch of the European Optical Society (DGaO): www.dgao.de (DE)

OPEN POSITIONS

- Research in Germany: www.research-in-germany.org/jobs
- Fraunhofer Society: www.fraunhofer.de/en/jobs-and-career.html
- Helmholtz Association: www.helmholtz.de/en/jobs_talent
- Leibniz Society: www.leibniz-gemeinschaft.de/en/careers/jobs.html
- Max Planck Society: www.mpg.de/jobboard

FURTHER INFORMATION

RESEARCH INSTITUTIONS, PROJECTS, FUNDING, CONTACTS



The “Research in Germany” Portal: Information on research and funding opportunities, academic and research-related job portals, as well as advice on preparing a research stay or initiating a collaboration with German research organisations. www.research-in-germany.org



German Project Information System (GEPRIIS): Online database providing information about all current DFG-funded research projects and contact information for the Principal Investigators. <http://gepris.dfg.de>



German Research Institutions (GERiIT): Information on more than 25,000 institutes at German universities and non-university research institutions, searchable by geographic location, subject and other structural criteria. www.gerit.org



Website of the DFG: Further background information about DFG funding programmes, funding guidelines, and lists of currently DFG-funded activities. www.dfg.de



The German Rectors’ Conference (HRK) Research Map: The interactive HRK *Research Map* database provides information on the research priorities that are of strategic institutional importance for each university. [www.hrk.de/home/\(go to → Research Map\)](http://www.hrk.de/home/(go%20to%20Research%20Map))



The Higher Education Compass: Information on Germany’s higher education institutions, the range of courses and programmes that they offer, their worldwide cooperation, and who to contact locally. www.hochschulkompass.de/en/higher-education-compass





Contact

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DFG Deutsche
Forschungsgemeinschaft