

## Appendix 6

### Research Fields in the Helmholtz Association

<b>RF-Coordinator</b> Programme Spokesman	<b>Research Field</b> Programme Programme Topic	<b>Participating Centres</b>
<b>Prof. Dr. Eberhard Umbach, KIT</b>	<b>Energy</b>	<b>DLR, FZJ, KIT, GFZ, HZB, IPP, UFZ</b>
Prof. Dr. Bernd Rech, HZB	Renewable Energies	DLR, FZJ, KIT, GFZ, HZB, UFZ
	Thin Film Photovoltaics	FZJ, HZB
	Concentrating Solar Systems	DLR
	Geothermal Technologies	KIT, GFZ, UFZ
	Refining Biomass into Chemical Energy	KIT, UFZ
Prof. Dr. Manfred Aigner, DLR	Efficient Energy Conversion and Use	DLR, FZJ, KIT
	Fuel Conversion and Gas Cleaning	KIT
	Power Plants	DLR, FZJ, KIT
	Fuel Cells	DLR, FZJ
	Superconductivity	KIT
	Energy-efficient Processes	DLR, KIT
Prof. Dr. Robert Wolf, IPP	Nuclear Fusion	FZJ, KIT, IPP
	Stellarator research	FZJ, KIT, IPP
	Tokamak physics for ITER and beyond	FZJ, IPP
	Fusion technology for ITER	FZJ, KIT, IPP
	Fusion technology beyond ITER	KIT, IPP
	Plasma-wall interactions	FZJ, KIT, IPP
	Plasma theory	FZJ, IPP
Dr.-Ing. Joachim U. Knebel, KIT	Nuclear Safety Research	FZJ, KIT
	Safety Research for Nuclear Reactors	FZJ, KIT, HZDR
	Safety Research for Nuclear Waste Disposal	FZJ, KIT, HZDR
	Radiation Research	KIT
Prof. Dr. Armin Grunwald, KIT	Technology, Innovation & Society - joint programme with the RF key technologies	DLR, FZJ, KIT, UFZ
	Science and Technology in Society: Challenges and Expectations	FZJ, KIT
	Key Technologies and Innovation Processes	FZJ, KIT
	Transformation of Energy Systems	FZJ, KIT
	Renewable Energies	DLR, KIT, UFZ
	Efficient Energy Conversion and Use	FZJ, KIT
<b>Prof. Dr. Karin Lochte, AWI</b>	<b>Earth and Environment</b>	<b>AWI, FZJ, KIT, GFZ, HZG, HMGU, UFZ</b>
Prof. Dr. Onno Oncken, GFZ	Geosystem: The Changing Earth	GFZ
	Earth System Monitoring: Global Processes and Change	GFZ
	Earth System Dynamics: Coupled Processes and Regional Impact	GFZ
	Natural Hazards: Understanding, Assessment and Disaster Reduction	GFZ
	Georesources: Sustainable Use and Environmental Engineering	GFZ
	<i>MESI (Modular Earth Science Infrastructure)</i>	GFZ
Prof. Dr. Christoph Kottmeier, KIT	Atmosphere and Climate	FZJ, KIT, GFZ
	Climate and Water Cycle	KIT, GFZ
	Regionale Klimaänderungen und –auswirkungen	KIT
	Processes of trace constituents in the troposphere	FZJ, KIT
	Composition and Dynamics of the Upper Troposphere and Stratosphere	FZJ, KIT, GFZ

<b>RF-Coordinator</b> Programme Spokesman	<b>Research Field</b> Programme Programme Topic	<b>Participating Centres</b>
Prof. Dr. Heinrich Miller, AWI	Marine, Coastal and Polar Systems	AWI, HZG
	The Changing Arctic and Antarctic	AWI, HZG
	Coastal responses to global change	AWI, HZG
	Lessons from the past	AWI
	Earth system analysis and synthesis	AWI, HZG
	Infrastructure	AWI
	<i>Polar Research Ships</i>	AWI
	<i>Polar Research Aircrafts</i>	AWI
	<i>Polar Research Stations</i>	AWI
Prof. Dr. Bernd Hansjürgens, UFZ	Terrestrial Systems	FZJ, HMGU, UFZ
	Land Use Options in Response to Climate and Global Change	HMGU, UFZ
	Sustainable Bio-Production	FZJ, HMGU, UFZ
	Management of Water Resources Systems	UFZ
	Safeguarding Drinking Water Resources	HMGU, UFZ
	Chemicals in the Environment	FZJ, UFZ
	Methods and Technologies for Monitoring and for Integrated Assessment	FZJ, HMGU, UFZ
	<i>Safira</i>	UFZ
<b>Prof. Dr. Otmar D. Wiestler, DKFZ</b>	<b>Health</b>	<b>DKFZ, FZJ, HZG, HMGU, GSI, HZI, MDC, UFZ</b>
Prof. Dr. Otmar D. Wiestler, DKFZ	Cancer Research	DKFZ, GSI, MDC
	Signaling Pathways, Cell and Tumor Biology	DKFZ, MDC
	Structural and Functional Genomics	DKFZ, MDC
	Cancer Risk Factors and Prevention	DKFZ
	Tumor Immunology	DKFZ, MDC
	Imaging and Radiooncology	DKFZ, GSI, HZDR
	Infection and Cancer	DKFZ
	Translational Cancer Research	DKFZ, MDC
Prof. Dr. Thomas Willnow, MDC	Cardiovascular and Metabolic Diseases	DKFZ, HZG, MDC
	Molecular and Cellular Concepts of Cardiovascular Function	DKFZ, MDC
	Genetics and Pathophysiology of Cardiovascular Diseases	DKFZ, HZG, MDC
	Regenerative Medicine and Active Biomaterials	HZG
Prof. Dr. Karl Zilles, FZJ	Function and Dysfunction of the Nervous System	FZJ, MDC
	Signalling Pathways and Mechanisms in the Nervous System	FZJ, MDC
	Imaging the Living Brain	FZJ, MDC
	Pathophysiological Mechanisms of Neurological and Psychiatric Diseases	FZJ, MDC
Prof. Dr. Dirk Heinz (kommissarisch), HZI	Infection and Immunity	HZI
	Microbial Pathogenesis	HZI
	Host Resistance and Susceptibility	HZI
	Inflammation and Immunity	HZI
	Pharmaceutical Research	HZI
	Strategies for Prevention and Therapy	HZI
	Translational Infection Research	HZI
Prof. Dr. Pierluigi Nicotera	Start-up phase of programme: Neurodegenerative disorders	DZNE
	Translational Infection Research	HZI
Prof. Dr. Martin Göttlicher, HMGU	Environmental Health	HMGU, UFZ
	Mechanisms of Response	HMGU
	Immune System	HMGU
	Respiratory System	HMGU, UFZ
	Epidemiology and Health Economics	HMGU, UFZ
	Ionizing Radiation	HMGU

Prof. Dr. Martin Hrabé de Angelis, HMGU	Systemic Analysis of Multifactorial Diseases	HMGU
	Systemic Approaches to Human Health	HMGU
	Deciphering Mechanisms of Pathways and Diseases in vivo and in vitro	HMGU
	Functional Modules in Systems Biology	HMGU
<b>Prof. Dr. Achim Bachem, FZJ</b>	<b>Key Technologies</b>	<b>FZJ, KIT, HZG</b>
Prof. Dr. Dr. Thomas Lippert, FZJ	Supercomputing	FZJ, KIT
	Computational Science and Mathematical Methods	FZJ, KIT
	Grid Technologies and Infrastructures	FZJ, KIT
	<i>Supercomputer Facility</i>	FZJ
Prof. Dr.-Ing. Rainer Waser, FZJ	Fundamentals of Future Information Technology	FZJ
	Frontiers of charge based electronics	FZJ
	Spin-based and quantum information	FZJ
	Sensorics and bioinspired systems	FZJ
	Exploratory materials and phenomena	FZJ
	<i>Peter Grünberg-Centre (PG-C)</i>	FZJ
Prof. Dr. Horst Hahn, KIT	NANOMICRO: Science, Technology and Systems	KIT
	Condensed Matter and Molecular Building Blocks	KIT
	Tailored and Tuneable Properties of Nanomaterials	KIT
	Process Development	KIT
	Optics and Photonics	KIT
	Energy Storage	KIT
	<i>Karlsruhe Nano Micro Facility (KNMF)</i>	KIT
Prof. Dr. Norbert Huber, HZG	Advanced Engineering Materials	HZG
	Leight-Weight Structural Materials	HZG
	Mechanics and Joining of Light-weight Materials	HZG
	Functionalised Materials	HZG
Prof. Dr. Gerhard Gompper, FZJ	BioSoft: Molecular Systems and Biological Information Processing	FZJ
	Soft Matter Composites	FZJ
	Structural Biology	FZJ
	Physics of the Cell	FZJ
Prof. Dr. Uwe Strähle, KIT	Molecular and Cellular Interactions at Functional Interfaces	KIT
	Biological Key Targets	KIT
	Synthetic Biomimetic Tools	KIT
	Biofunctional Surfaces	KIT
	Biofilms on technical surfaces	KIT
Prof. Dr. Jürgen Faßbender, HZDR	New Electronic Materials <sup>1</sup>	HZDR
	Materials Processing and Nanofabrication	HZDR
	Complex and Correlated Materials	HZDR
	Dynamics at the Nanoscale	HZDR
	<i>High Magnetic Field Laboratory Dresden</i>	HZDR
Prof. Dr. Armin Grunwald, KIT	Technology, Innovation & Society - joint programme with the RF key technologies, see RF energy	FZJ, KIT
<b>Prof. Dr. Horst Stöcker, GSI</b>	<b>Structure of Matter</b>	<b>DESY, FZJ, KIT, HZG, GSI, HZB</b>
Prof. Dr. Joachim Mnich, DESY	Elementary Particle Physics	DESY, KIT
	HERA	DESY
	LHC	DESY
	Preparation for a future lepton collider	DESY
	Theoretical Particle Physics	DESY
	Experimental Facilities	DESY
	<i>GridKa</i>	KIT
	<i>DESY Grid Centre</i>	DESY

<sup>1</sup> HZDR proposed this new programme in the Research Field Key Technologies; it has to be finalized

<b>Prof. Dr. Johannes Blümer, KIT</b>	<b>Astroparticle Physics</b>	<b>DESY, KIT</b>
	Ultra-high energy cosmic rays	KIT
	High-energy neutrino astrophysics	DESY
	High-energy gamma-ray astronomy	DESY
	Direct search for Dark Matter	KIT
	Neutrino physics	KIT
	<i>Pierre Auger Observatory</i>	KIT
	<i>Karlsruhe Tritium Neutrino Experiment KATRIN</i>	KIT
<b>Prof. Dr. Klaus Peters, GSI</b>	<b>Physics of Hadrons and Nuclei</b>	<b>FZJ, GSI</b>
	Hadrons Structure and Dynamics (HSD)	FZJ, GSI
	Nuclear and Quark Gluon Matter (NQM)	GSI
	Exotic Nuclei and Nuclear Astrophysics (ENNA)	GSI
	<i>Participation in FAIR</i>	FZJ, GSI
	<i>COSY</i>	FZJ
	<i>SIS 18/UNILAC</i>	GSI
<b>Prof. Dr. Andreas Schreyer, HZG</b>	<b>Research with Photons, Neutrons and Ions (PNI)</b>	<b>DESY, FZJ, KIT, HZG, GSI, HZB</b>
	Photons	DESY, KIT, HZG, HZB
	<i>ANKA</i>	KIT
	<i>BESSY II</i>	HZB
	<i>DORIS III</i>	DESY
	<i>PETRA III</i>	DESY
	<i>GEMS-P</i>	HZG
	<i>FLASH</i>	DESY
	<i>DESY-participation in XFEL</i>	DESY
	<i>Center for High Power Radiation Sources</i>	HZDR
	<i>Rossendorf Beamline at ESRF Grenoble (ROBL)</i>	HZDR
	Neutrons	FZJ, HZG, HZB
	<i>FRG-1</i>	HZG
	<i>GEMS-N</i>	HZG
	<i>BER II</i>	HZB
	<i>JCNS</i>	FZJ
	Ions	GSI
	<i>Accelerator facilities at GSI</i>	GSI
	<i>GSI-participation in FAIR</i>	GSI
	<i>Ion Beam Center</i>	HZDR
	In-house Research with PNI	DESY, FZJ, KIT, HZG, GSI, HZB, HZDR
<b>Prof. Dr.-Ing. Johann-Dietrich Wörner, DLR</b>	<b>Aeronautics, Space and Transport</b>	<b>DLR</b>
<b>Dipl.-Ing. Horst Hüners, DLR</b>	<b>Aeronautics</b>	<b>DLR</b>
	Fixed-Wing Aircraft	DLR
	Rotorcraft	DLR
	Propulsion Systems	DLR
	ATM and Operation	DLR
<b>Dr. Hubert Reile, DLR</b>	<b>Space</b>	<b>DLR</b>
	Earth Observation	DLR
	Communication/ Navigation	DLR
	Space Science	DLR
	Research under Space Conditions	DLR
	Space Transport	DLR
	Space Technology	DLR
<b>Dr.-Ing. Christian Piehler, DLR</b>	<b>Transport</b>	<b>DLR</b>
	Terrestrial Vehicles	DLR
	Traffic Management	DLR
	Transport System	DLR