

List of Supervisors and Research Fields

As of November 1, 2019

Department of Mathematics, Graduate School of Science

Doctoral Course

Fields	Supervisors		Keywords	Remarks
Algebra	Professor	Masanori Asakura	Arithmetic geometry	
	Professor	Mutsumi Saito	Algebraic analysis, rings of differential operators	
	Professor	Keiji Matsumoto	Special functions	
	Professor	Hiroshi Yamashita	Representation theory	
	Associate Professor	Youichi Shibukawa	Yang-Baxter equations and quantum groups	
	Associate Professor	Simona Settepanella	Singularity theory, combinatorics	
	Associate Professor	Kenichiro Tanabe	Vertex algebras, algebraic combinatorics	
	Associate Professor	Daisuke Matsushita	Algebraic geometry	
Geometry	Professor	Toshiyuki Akita	Algebraic topology, group cohomology, discrete groups	
	Professor	Goo Ishikawa	Real algebraic geometry, singularity theory	
	Professor	Katsunori Iwasaki	Complex geometry, dynamical systems, Painlevé systems	
	Professor	Masahiko Yoshinaga	Algebraic geometry, combinatorics	
	Associate Professor	Shimpei Kobayashi	Differential geometry	
	Associate Professor	Masao Jinzenji	Mathematical physics	
	Associate Professor	Hitoshi Furuhashi	Differential geometry	
Analysis	Professor	Akihito Hora	Functional analysis, probability theory	
	Professor	Naofumi Honda	Algebraic analysis	
	Professor	Jun Masamune	Global Analysis	
	Associate Professor	Masaharu Kobayashi	Harmonic Analysis	
	Associate Professor	Reiji Tomatsu	Operator algebras	
	Associate Professor	Takahiro Hasebe	Probability theory, complex analysis, functional analysis	
	Associate Professor	Nao Hamamuki	Nonlinear partial differential equations, Theory of viscosity solutions	
	Associate Professor	Tadahiro Miyao	Mathematical physics, functional analysis, condensed matter physics	
Applied Mathematics	Professor	Shin-ichiro Ei	Nonlinear analysis, nonlinear partial differential equations	
	Professor	Hideo Kubo	Partial Differential Equations associated with Nonlinear Dynamics	
	Professor	Shuichi Jimbo	Applied analysis, Partial differential equations, Spectral theory	
	Professor	Masaharu Nagayama	Reaction-diffusion systems, mathematical modeling, numerical simulation	
	Professor	Takao Namiki	Ergodic theory, dynamical systems, complex systems	
	Professor	Michiko Yuri	Ergodic theory, dynamical systems, complex systems	
	Associate Professor	Hiroto Kuroda	Partial differential equations, variational analysis	
	Associate Professor	Yasuaki Kobayashi	Nonlinear dynamics	
	Associate Professor	Akira Sakai	Probability theory, statistical mechanics, mathematical physics	
	Associate Professor	Yuzuru Sato	Complex systems, chaotic dynamical systems	
	Associate Professor	Hiroshi Teramoto	Dynamical systems, singularity theory, chemical reaction dynamics	
	Associate Professor	Kenji Matsumoto	Biophysical complex systems, chaotic dynamical systems	

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Department of Condensed Matter Physics, Graduate School of Science

Doctoral Course

Laboratories	Supervisors		Keywords	Remarks
Electronic Properties of Solids	Professor	Migaku Oda	High-temperature cuprate superconductors, Frustrated spin systems, Surface & nano-structure magnetism, Material research, Scanning tunneling microscopy/spectroscopy (STM/STS), Spin-polarized STM	
	Associate Professor	Hideo Matsuyama		
	Associate Professor	Hiroyuki Yoshida		
	Assistant Professor	Tohru Kurosawa		
Electronic Properties of Low-Dimensional Conductors	Associate Professor	Noriaki Matsunaga	Low-dimensional organic conductors, Scanning tunneling microscopy (STM), Scanning tunneling spectroscopy (STS), Nonlinear conductivity, Symmetry of Cooper pairs, Spin density waves (SDWs), Chiral superconductivity, Mesoscopic systems	
	Assistant Professor	Hiroyoshi Nobukane		
J-Material: Physics of Strongly Correlated Systems	Professor	Hiroshi Amitsuka	J-material, superconductivity, Magnetism, Heavy fermion, Quantum phase transition, Magnetoelectric effects, Very low temperatures, High magnetic fields, High pressure, Ultrasonic measurements, MuSR, Neutron scattering, RXS, Ferroelectrics, Multiferroics, Electronic ferroelectricity, Phase transition, Photoinduced cooperative phenomena	
	Associate Professor	Masaki Takesada		
	Associate Professor	Tatsuya Yanagisawa		
	Assistant Professor	Hiroyuki Hidaka		
Low Temperature Physics	Professor	Atsushi Kawamoto	NMR, Strongly-correlated electrom systems, Superconductivity, Magnetism	
	Lecturer	Yoshihiko Ihara		
	Assistant Professor	Syuhei Fukuoka		
Condensed Matter Dynamics	Professor	Ryusuke Nozaki	Microscopic dynamics of condensed matters, Dielectric and optical spectroscopy from 1microHz to 10 PHz, Raman scattering, Femtosecond pump-probe spectroscopy, Terahertz time-domain spectroscopy, Solids, Complex liquids, Hydrogen-bonding systems, Semiconductors, Nonlinear optical phenomena, Biological materials	
	Associate Professor	Tomobumi Mishina		
	Assistant Professor	Sekika Yamamoto		
Statistical Physics	Professor	Koji Nemoto	Statistical physics, Non-equilibrium, Non-linearity, Random systems, Complex networks, Phase transition, Self-organization, Critical phenomena, Scale-free structures, Numerical simulation, Superconductivity, Superfluidity, Bose-Einstein condensation, Condensed matter physics, Magnetism, Multiferroics, Heavy fermion	
	Associate Professor	Takafumi Kita		
	Assistant Professor	Koji Okuda		
Mathematical Physics	Professor	Shoji Yamamoto	Making full use of various—both analytical and numerical—quantum statistical methods, we explore novel quantum cooperative phenomena in low-dimensional electron systems. Understanding of phenomena must be our ultimate goal, but we often take furthermore interest in the mathematical and methodological ways we can accomplish this. We construct microscopic theories on a variety of physics such as spin liquid, nuclear magnetic resonance, inelastic neutron scattering, Raman scattering, optical conductivity, and photoinduced phase transition in geometric lattice magnets, transition metal complexes, and organic polymers. We sometimes enjoy theoretical formulation in itself and sometimes interpret observations in cooperation with experimentalists and chemist.	
	Lecturer	Jun Ohara		

Laboratories	Supervisors		Keywords	Remarks
Nanostructure Physics (RIES)	Professor	Akira Ishibashi	Nano-structured devices, New photovoltaic devices, Next-generation solar cells, Clean unit system platforms	
	Associate Professor	Kenji Kondo	Quantum field theory, Many-body perturbation theory, Spintronics devices, Magnetism, Electronic correlations, Dirac electron, Topological insulator	
Condensed Matter Theory Field of Advanced Functional Materials and Physics (NIMS).	Visiting Professor	Hiroyuki Yamase	Quantum many-body theory, Superconductivity, Magnetism, Critical phenomena, Electronic nematic liquids	
Nano-system Photonics Field of Advanced Functional Materials and Physics (NIMS)	Visiting Professor	Tadaaki Nagao	Surface physics, Nanophotonics, Energy conversion, Nanomaterials	
Solid State of Physics in High Magnetic Fields Field of Advanced Functional Materials and Physics (NIMS)	Visiting Professor	Yasutaka Imanaka	We have been studying electronic and spin properties in various materials such as quantum Hall systems, Graphene and Topological insulators with high field magnets in NIMS. In particular, we use the spectroscopic technique in the wide range of the frequency between the millimeter-wave and the ultraviolet region for exploring anomalous and unusual features in solid. (Spectroscopy, High magnetic field, Terahertz wave, Quantum Hall effect, Dirac Fermion, Topological insulator)	
Surface Quantum Phase Materials Field of Advanced Functional Materials and Physics (NIMS)	Visiting Professor	Takashi Uchihashi	Surface and interface, Atomic layer, Two-dimensional, Quantum materials, Superconductivity, Topological state, Ultrahigh vacuum, Nanotechnology, Scanning tunneling microscopy, Electron transport	
Muon Spin Resonance Laboratory Field of Spin Resonance Material Science (RIKEN)	Visiting Professor	Isao Watanabe	μ SR material science at the RIKEN-RAL Muon Facility in the UK. Experimental and theoretical studies on the magnetism, superconductivity, industrial applications, non-destructive element analysis, muon hyperfine interactions in metals, insulators and organic molecules. Muon site and magnetic spin structural analysis by the density functional theory.	
Electron Spin Resonance Laboratory Field of Spin Resonance Material Science (RIKEN)	Visiting Associate Professor	Yugo Oshima	Electron Spin Resonance (ESR) from X-band to millimeter and sub-millimeter waves, High magnetic field, Strongly-correlated materials, Molecular magnets, Molecular conductors, Spin-Liquid system, Nano-carbon materials.	

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Department of CosmoSciences, Graduate School of Science

Doctoral Course

Laboratories	Supervisors		Keywords	Remarks
Observational Astronomy	Associate Professor	Kazuo Sorai	Observational astronomy, extragalactic astronomy, interstellar matter, development of observational instruments and system for the Antarctic THz telescope	
Theoretical Particle Physics and Cosmology	Professor	Hisao Suzuki	Particle physics, beyond the standard model, dark matter, dark energy, grand unified theory, superstrings, supersymmetry, early universe	
	Professor	Tatsuo Kobayashi		
	Associate Professor	Ryuichi Nakayama		
	Specially Appointed Associate Professor	Osamu Seto		
	Lecturer	Kazuhiko Suehiro		
	Assistant Professor	Eun-Kyung Park		
Theoretical Nuclear Physics	Associate Professor	Masaaki Kimura	Quantum many-body problems, nuclear force, unstable nuclei, nucleosynthesis, hadronic matter	
	Lecturer	Wataru Horiuchi		
Theoretical Astrophysics	Visiting Associate Professor	Elizabeth Jane Tasker	Theoretical astronomy, numerical simulations, galaxy formation, galaxy clusters, supermassive black holes, interstellar matter, star formation, interstellar dust	Inter-field Cooperation with the Japan Aerospace Exploration Agency (JAXA) in the field of spacecraft observation.
	Lecturer	Takashi Okamoto		
	Assistant Professor	Alexander Pettitt		
Planetary and Space Group	Professor	Kiyoshi Kuramoto	Origin and evolution of planets and satellites, material evolution during planetary system formation, structure and dynamics of Earth and planetary atmospheres, comparative planetology, space exploration and ground-based observation, experimental studies, theory and hierarchical numerical simulation models, applications of information technology	
	Professor	Yukihiro Takahashi		
	Professor	Masaki Ishiwatari		
	Associate Professor	Shunichi Kamata		
	Specially Appointed Associate Professor	Junichi Kurihara		
	Lecturer	Mitsuteru Sato		
	Specially Appointed Assistant Professor	Tetsuro Ishida		
	Specially Appointed Assistant Professor	Seiko Takagi		

Laboratories	Supervisors		Keywords	Remarks
Astrophysical Chemistry / Ice and Planetary Science	Professor	Akira Kouchi	Interstellar molecules, ice dust, amorphous solid water, surface reactions	
	Professor	Naoki Watanabe		
	Associate Professor	Yuki Kimura		
	Assistant Professor	Hiroshi Hidaka		
	Assistant Professor	Tetsuya Hama		
	Assistant Professor	Yasuhiro Oba		
Phase Transition Dynamics	Professor	Gen Sazaki	Phase transition dynamics, crystal growth, ice, snow, interferometry, advanced optical microscopy, atomic force microscopy	
	Assistant Professor	Ken Nagashima		
	Assistant Professor	Ken-ichiro Murata		
Information Media Science	Professor	Izumi Fuse	Learning science, learning platforms, open education	
	Assistant Professor	Yuichi Yamamoto		
Nuclear Reaction Data Science	Associate Professor	Yoshiharu Hirabayashi	Nuclear data, nuclear reactions, evaluation	Information Initiative Center
	Visiting Professor	Tokio Fukahori		Inter-field Cooperation with the Japan Atomic Energy Agency (JAEA) in the field of nuclear data.
	Visiting Professor	Nobuyuki Iwamoto		
Spacecraft Observation Group	Visiting Professor	Takehiko Sato	Planetary exploration, infrared astronomy from space, radio astronomy from space	Inter-field Cooperation with Japan Aerospace Exploration Agency (JAXA) in the field of spacecraft observation.
	Visiting Associate Professor	Yasuhiro Murata		
	Visiting Associate Professor	Issei Yamamura		

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Department of Natural History Sciences, Graduate School of Science

Doctoral Course

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Earth and Planetary Dynamics	Meteorology	Professor	Masaru Inatsu	Meteorology, dynamics and forecast, cyclones and fronts, theory and numerical modelling, development of numerical model, meso-scale phenomena, cloud, rain, snow, aerosol, lightning, material transport, and their application.	
		Specially Appointed Associate Professor	Yousuke Sato		
	Physical Oceanography and Climate	Professor	Shoshiro Minobe	Physical oceanography, meteorology, air-sea interactions, climate variability & change, oceans' role in climate, multidisciplinary challenges, numerical modelling, data analysis	
		Associate Professor	Yoshinori Sasaki		
	Space Geodesy	Professor	Kosuke Heki	Space geodesy, GNSS, GPS, INSAR, GRACE, gravity, Earth rotation, atmospheric sensing, crustal deformation, glaciology, planetary geodesy, ionosphere	
		Professor	Masato Furuya		
		Associate Professor	Youichiro Takada		
	Seismology	Professor	Kiyoshi Yomogida	Seismic wave propagation, Earth structure, seismic tomography, broadband waveform analysis, lateral heterogeneity and anisotropy	
		Associate Professor	Kazunori Yoshizawa		
	Earth and Planetary System Science	Petrology and Volcanology	Professor	Mitsuhiro Nakagawa	Processes of evolution and eruption in magma plumbing systems in volcanos, processes of magma generation and eruption in caldera volcanos, spatial and temporal variation in arc volcanism, long-term forecasting of volcanic activity, mitigation of volcanic disasters
Associate Professor			Takeshi Kuritani	Petrological, geochemical, experimental, and theoretical studies for understanding generation, ascent, evolution, and eruption processes of magmas, differentiation processes of the lunar, and evolutionary processes of the Earth.	
Assistant Professor			Shumpei Yoshimura	Experimental and theoretical studies on igneous and volcanic processes	

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
	Geochemistry	Professor	Hisayoshi Yurimoto	Geochemistry, cosmochemistry, planetary chemistry, galaxies, stars, planetary systems, protoplanetary disks, planets, meteorites, Earth, core, mantle, crust, oceans, atmosphere, life, magma, geofluids, mass spectrometry, spectroscopy, microscopy, dust formation, crystal growth, high pressure, solar system evolution, planetary exploration	
		Assistant Professor	Kenichi Bajo		
		Assistant Professor	Noriyuki Kawasaki		
		Associate Professor	Junji Yamamoto		Hokkaido University Museum
Earth and Planetary System Science	Earth Materials Science	Professor	Takaya Nagai	Mineralogy, crystallography, crystal growth, physics and chemistry of minerals	
		Associate Professor	Jun Kawano		
		Assistant Professor	Ayako Shinozaki		
	Earth Environmental History · Paleontology	Professor	Yoshitsugu Kobayashi	Vertebrate evolution, dinosaurs, reptiles, birds, phylogenetic relationships, functional morphology, comparative anatomy, embryology	Hokkaido University Museum
		Associate Professor	Yasuhiro Iba	Evolution of Mesozoic marine biota, paleobiogeographic responses, global environmental change, origin of modern marine biota	
	Earth System Evolution	Associate Professor	Ken Sawada	Paleoenvironmental reconstruction, Organic sedimentology, Molecular paleobiology, Macromolecular biogeochemistry, biomarker paleoclimatology	
		Lecturer	Tsuyoshi Watanabe	High-resolution reconstruction of palaeoenvironments, biogeochemical cycles in reef ecosystems on the geological time scale	
	Geotectonics	Specially Appointed Professor	Toru Takeshita	Structural geology, tectonics, rheology, microstructures, metamorphic geology	
		Assistant Professor	Marie Python	Petrography and chemistry of the crust and mantle in ophiolites and the Pacific Ocean, mantle melting, magmatic evolution of the oceanic crust, hydrothermal circulation, interactions within the oceanic crust and mantle	
		Associate Professor	Jun Kameda	Subduction zone seismogenesis, water-rock interactions, diagenesis, electron microscopy, clay mineralogy	

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Biodiversity	Biodiversity	Associate Professor	Hiroshi Kajihara	Biodiversity I: Marine invertebrates, Nemertea, taxonomy, phylogeny, morphology	
		Associate Professor	Helena Fortunato	Biodiversity I: Mollusks, coralline algae, Bryozoa, calcification patterns, population genetics, ecology, ocean acidification, biogeography	
		Lecturer	Keiichi Kakui	Biodiversity I: Marine invertebrates, Crustacea, Tanaidacea, taxonomy, phylogeny, morphology	
		Professor	Takeo Horiguchi	Biodiversity II: Microalgae, protists, dinoflagellates, phylogeny, endosymbiosis	
		Assistant Professor	Kevin Wakeman	Biodiversity II: Biodiversity, evolution, protists, Apicomplexa, dinoflagellates	Institute for the Advancement of Higher Education
		Professor	Ryuichi Masuda	Biodiversity IV (Laboratory of Genetic Diversity): Molecular phylogenetics, population genetics, biogeography, mammals, birds	
		Professor	Masaoki Takagi	Biodiversity III: Ecology, evolution, island, bird	
		Professor	Kazuhiro Kogame	Biodiversity II: Taxonomy, phylogeny, evolution, seaweeds	
		Associate Professor	Tsuyoshi Abe	Biodiversity II: Seaweeds, taxonomy, phylogeny, chemotaxonomy	Hokkaido University Museum
		Associate Professor	Toru Katoh	Biodiversity I: Evolution, phylogeny, populations, insects	

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Science Communication	Communication of Science and Technology	Associate Professor	Naoyuki Mikami	Sociology, science and technology, public participation, governance and policy, technology assessment	Institute for the Advancement of Higher Education
		Associate Professor	Shishin Kawamoto		CoSTEP
	Philosophy of Science and Technology	Professor	Masahiro Matsuou	Philosophy of science, ethics of science and technology, philosophy of risk, statistical inference of cause	
	Museum Education	Professor	Makiko Yuasa	Museum communication, museum education, museum evaluation	The Hokkaido University Museum
	Science Education	Professor	Makoto Suzuki	Self-efficacy, cognitive bias, creativity, human-computer interactions, higher education, educational technology, open education	Institute for the Advancement of Higher Education
		Professor	Toshiyuki Hosokawa		
		Associate Professor	Fumihito Ikeda		
		Associate Professor	Kunimasa Yamada		
		Associate Professor	Katsusuke Shigeta		
	Seismology and Volcanology	Seismological Observation	Professor	Hiroaki Takahashi	Earthquake geophysical observation, seismographs, GNSS, gravity, subduction great earthquakes, inland earthquakes, statistical seismology, land and ocean bottom crustal deformation, regional tectonics in northeastern Asia, geothermal exploration, earthquake disaster mitigation
Associate Professor			Kei Katsumata		
Associate Professor			Mako Ohzono		
Ocean Bottom Seismology and Tsunami		Professor	Yuichiro Tanioka	Subsurface structure at subduction zones, elastic wave propagation, tectonics of Northern Mid Atlantic Ridge, earthquake source processes, generation and propagation of tsunamis, pre-historical earthquakes and tsunamis, paleo-seismological analysis, international field science, disaster mitigation	
		Associate Professor	Yoshio Murai		
		Associate Professor	Yuichi Nishimura		
Volcano Physics		Specially Appointed Professor	Makoto Murakami	Volcanology, volcanic seismology, eruption prediction, transport processes, volcano hydrology, crustal deformation, space geodesy, geo-electromagnetism, spectroscopy of volcanic plume, volcano monitoring system	Retire in March 2020
		Associate Professor	Hiroshi Aoyama		
		Assistant Professor	Ryo Tanaka		
Subsurface Structure		Professor	Takeshi Hashimoto	Research on subsurface structure by means of electromagnetic methods.	

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