

List of Supervisors and Research Fields

As of April 1, 2026

Master's Course

Department of Mathematics, Graduate School of Science

Fields	Supervisors		Keywords	Remarks
Algebra	Professor	ASAKURA Masanori	Arithmetic geometry	
	Professor	SHIBUKAWA Youichi	Yang-Baxter equations and quantum groups	
	Professor	YASUDA Seidai	Number theory, arithmetic geometry	
	Specially Appointed Professor	MATSUMOTO Keiji	Special functions	<small>Scheduled to retire in March, 2027.</small>
	Associate Professor	OUCHI Genki	Algebraic geometry, derived category of coherent sheaves, moduli space	
	Associate Professor	CAI, Yuanqing	Number theory, representation theory, automorphic L-functions, automorphic representations, covering groups	
	Associate Professor	SCRIMSHAW, Travis	Combinatorics, representation theory, schubert calculus	
	Associate Professor	MATSUSHITA Daisuke	Algebraic geometry	
Geometry	Professor	AKITA Toshiyuki	Algebraic topology, group cohomology, quandle	
	Professor	INOUCHI Junichi	Geometry, integrable systems, Lie group, homogeneous spaces	
	Professor	KOBAYASHI Shimpei	Differential geometry, integrable systems	
	Professor	FURUHATA Hitoshi	Differential geometry	
	Associate Professor	KASUYA Naohiko	Differential topology, contact structures, complex structures	
	Associate Professor	KAWASAKI Morimichi	Symplectic geometry, geometric group theory, differential topology	
	Associate Professor	NOZAKI Yuta	Low-dimensional topology, knot, mapping class group of surfaces	
	Assistant Professor	KANDA Yutaka	Differential topology	
	Assistant Professor	SUGAWARA Sakumi	Low-dimensional topology, hyperplane arrangement	
Analysis	Professor	KUBO Hideo	Partial differential equations associated with nonlinear dynamics	
	Professor	KOBAYASHI Masaharu	Harmonic Analysis	
	Professor	HONDA Naofumi	Algebraic analysis	
	Professor	MIYAO Tadahiro	Mathematical physics, functional analysis, condensed matter physics	
	Specially Appointed Professor	HORA Akihito	Functional analysis, probability theory	<small>Scheduled to retire in March, 2027.</small>
	Associate Professor	UMETA Yoko	Exact WKB analysis, asymptotic analysis, higher order Painlevé equations, stokes geometry	
	Associate Professor	SUZUKI Yuhei	Operator algebras	
	Associate Professor	HASEBE Takahiro	Probability theory, functional analysis	
	Associate Professor	HAMAMUKI Nao	Nonlinear partial differential equations, theory of viscosity solutions	
	Assistant Professor	SATO Ryosuke	Probability theory, Operator algebras	
Applied Mathematics	Professor	SAKAI Akira	Probability theory, statistical mechanics, mathematical physics	
	Professor	NAGAYAMA Masaharu	Reaction-diffusion systems, mathematical modeling, numerical simulation	
	Professor	NAMIKI Takao	Ergodic theory, dynamical systems, complex systems	
	Professor	MASAKI Satoshi	Partial differential equations, harmonic analysis, variational analysis	
	Associate Professor	UEDA Yuki	Partial differential equations, numerical analysis	
	Associate Professor	KURODA Hiroto	Partial differential equations, variational analysis	
	Associate Professor	SATO Yuzuru	Complex systems, chaotic dynamical systems	
	Associate Professor	TASAKI Sohei	Mathematical life sciences, microbiology	
	Associate Professor	TABATA Koji	Online learning, data science, theory of computation	
	Associate Professor	NAKANO Yushi	Dynamical systems, ergodic theory, chaos	
	Assistant Professor	ISHII Hiroshi	Partial differential equations, reaction-diffusion systems, nonlocal effect	
	Assistant Professor	KITA Kosuke	Evolution equations, partial differential equations, nonlinear semigroups	
	Assistant Professor	FUKUSHIMA KIMURA, Bruno Hideki	Probability theory, statistical mechanics, mathematical physics	

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Department of Condensed Matter Physics, Graduate School of Science

Laboratories	Supervisors		Keywords	Remarks
Electronic Properties of Solids	Professor	YOSHIDA Hiroyuki	We develop new materials in strongly correlated electron systems by various chemical methods including high pressure synthesis, and elucidate their properties by both bulk physical properties measurements (electrical resistivity, magnetization, specific heat measurements, and precise measurements in ultra-high magnetic fields, etc) and microscopic measurements (μ SR, neutron and synchrotron X-ray scattering, etc). Specifically, we develop frustrated magnetic materials, multipole materials, skyrmion materials, novel actinide compounds and also search for quantum many-body states in high magnetic fields, cross-correlational phenomena, and new superconducting states and odd-parity multipoles.	
	Assistant Professor	KON Fusako		
	Assistant Professor	KITAZAWA Takafumi		
J-Material: Physics of Strongly Correlated Systems	Professor	AMITSUKA Hiroshi	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	
	Professor	YANAGISAWA Tatsuya		
	Associate Professor	TAKESADA Masaki		
	Lecturer	HIDAKA Hiroyuki		
Electronic Properties of Low-dimensional Material	Professor	KAWAMOTO Atsushi	NMR, Strongly-correlated electron systems, Superconductivity, Magnetism 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, Topological phenomena, Semiconductor, Nanocrystals, Laser Spectroscopy	No acceptance for FY2027
	Associate Professor	MATSUNAGA Noriaki		
	Associate Professor	IHARA Yoshihiko		
	Assistant Professor	YAMAMOTO Sekika		
	Assistant Professor	NOBUKANE Hiroyoshi		
	Assistant Professor	FUKUOKA Syuhei		
Quantum functional Materials	Associate Professor	HATANO Takafumi	We study the development of high-performance devices based on functional materials, as well as the elucidation of the underlying fundamental physical properties inherent in such devices, by integrating high-quality thin-film growth using molecular beam epitaxy (MBE), microfabrication enabled by semiconductor processing technologies, and advanced interface control incorporating heterojunctions and strain effects. Our primary research targets material systems containing Group 15 elements, most notably iron-based superconductors; in addition, we explore a wide range of other functional materials. Our recent research topics include the following: 1. Development of quantum technologies enabled by iron-based superconductors 2. Thin-film growth of high-performance Group 15 compounds and investigation of their fundamental physical properties 3. Exploration of novel optoelectronic hybrid phenomena using artificially structures	

Laboratories	Professors		Keywords	Remarks
Statistical Physics	Professor	HAYAMI Satoru	<p>We theoretically study novel physical phenomena in strongly-correlated electron systems based on quantum mechanics and statistical physics. We aim to systematically understand physical phenomena and explore the possibility of new electronic states and quantum phenomena. The recent research topics are the following.</p> <p>(1) Classification of electronic physical properties based on microscopic multipoles (2) Topological magnetism including magnetic skyrmions (3) Emergent spin-orbit-coupled physics in magnetic materials (4) Cross-correlated phenomena over electric, magnetic, elastic, heat, and light (5) Exploring novel physics by using a machine-learning method (6) Development of effective model calculation method based on DFT calculation and electronic multipole theory (7) Elucidation of universal properties of chiral and ferroaxial materials</p> <p>We also study efficiency of heat engines using nonequilibrium statistical mechanics and complex dynamics in pattern formation and chaos of coupled-oscillator systems, using not only theoretical analysis but also numerical simulation.</p>	
	Lecturer	OIWA Rikuto		
	Assistant Professor	OKUDA Koji		
Mathematical physics	Professor	YAMAMOTO Shoji	<p>Making full use of various—both analytical and numerical—quantum statistical methods, we explore novel quantum cooperative phenomena in strongly correlated electron systems. A recent keyword is "topology". Interpretation of phenomena must be our ultimate goal, but we often take further interest in the mathematical and methodological ways we can accomplish this. We construct microscopic theories on a variety of physics such as quantum spin liquid, photoinduced magnetism, nuclear magnetic resonance, inelastic neutron scattering, Raman scattering, optical conductivity, and angle-resolved photoemission spectroscopy. We sometimes enjoy theoretical formulation in itself and sometimes interpret observations in cooperation with experimentalists and chemist.</p>	
	Associate Professor	OHARA Jun		
	Assistant Professor	INOUE Takashi		
Nanostructure Physics (RIES)	Professor	KOBAYASHI Kaya	<p>Superconductors and magnets, novel materials synthesis, layered materials, transition metal dichalcogenides, van der Waals heterostructure, material characterization, thin flake devices, thin film, MBE, TEM</p>	
	Assistant Professor	OISHI Ryohei		
	Associate Professor	KONDO Kenji		<p>Quantum field theory, Many-body perturbation theory, Spintronics devices, Magnetism, Electronic correlations, Dirac electron, Topological insulator</p>

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Department of CosmoSciences, Graduate School of Science

Laboratories	Supervisors		Keywords	Remarks
Observational Astronomy	Professor	SORAI Kazuo	Observational astronomy, extragalactic astronomy, interstellar matter, development of observational instruments and system for the Antarctic THz telescope and small ultraviolet telescopes	
Theoretical Particle Physics and Cosmology	Professor	KOBAYASHI Tatsuo	Particle physics, beyond the standard model, dark matter, dark energy, grand unified theory, superstrings, supersymmetry, early universe	
	Professor	SETO Osamu		
	Associate Professor	SUGISHITA Sotaro		
	Lecturer	SUEHIRO Kazuhiko		
	Assistant Professor	DAS Arindam		Institute for Academic Innovation
Theoretical Nuclear Physics	Associate Professor	NOMURA Kosuke	Nuclear structure and dynamics, and related quantum many-body techniques; Microscopic description of nuclear deformations and collective motions, nuclear density functional theory, collective models; exotic nuclear deformations and collective excitations, octupole deformation, and shape coexistence; beta decays relevant to the nucleosynthesis in the early universe, neutrinoless double beta decay, electric dipole moments, fundamental nuclear processes; numerical simulations using high-performance computers; international collaborations.	
Theoretical Astrophysics	Professor	OKAMOTO Takashi	Theoretical astronomy, numerical simulations, semi-analytic modelling, first star formation, first galaxy formation, galaxy evolution, galaxy clusters, supermassive black holes, interstellar matter, star formation	
	Assistant Professor	SUGIMURA Kazuyuki		
Planetary and Space Group	Professor	KURAMOTO Kiyoshi	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	TAKAHASHI Yukihiko		
	Professor	ISHIWATARI Masaki		
	Professor	SATO Mitsuteru		
	Associate Professor	KAMATA Shunichi		
	Lecturer	TAKAGI Seiko		

Laboratories	Supervisors		Keywords	Remarks
Astrophysical Chemistry	Professor	WATANABE Naoki	Interstellar molecules, ice dust, amorphous solid water, surface reactions, nanoparticle, crystallization, nucleation, electron microscopy, microgravity	
	Professor	KIMURA Yuki		
	Associate Professor	OBA Yasuhiro		
	Associate Professor	YAMAZAKI Tomoya		
	Assistant Professor	HIDAKA Hiroshi		
Phase Transition Dynamics	Professor	SAZAKI Gen	Phase transition dynamics, crystal growth, ice, snow, interferometry, advanced optical microscopy, atomic force microscopy	
	Assistant Professor	NAGASHIMA Ken		
	Assistant Professor	MURATA Ken-ichiro		
Information Media Science	Professor	FUSE Izumi	Learning science, learning platforms, open education	
	Assistant Professor	YAMAMOTO Yuichi		
Spacecraft Observation Group	Visiting Professor	SATO Takehiko	Planetary exploration, infrared astronomy from space, radio astronomy from space	Inter-field Cooperation with the Japan Aerospace Exploration Agency (JAXA) in the field of spacecraft observation.
	Visiting Professor	FUJIMOTO Ryuichi		
	Visiting Associate Professor	YAMAMURA Issei		

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Department of Natural History Sciences, Graduate School of Science

As of April 1, 2026

Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Earth and Planetary Dynamics	Meteorology	Professor	INATSU Masaru	Meteorology, dynamics and forecast, cyclones and fronts, observation, theory and numerical modelling, development of numerical model, meso-scale phenomena, cloud, rain, snow, aerosol, lightning, material transport, and meteorological application.	
		Associate Professor	WADA Yuuki		
	Physical Oceanography and Climate	Professor	MINOBE Shoshiro	Physical oceanography, meteorology, air-sea interactions, climate variability & change, oceans' role in climate, multidisciplinary challenges, numerical modelling, data analysis	
		Associate Professor	SASAKI Yoshinori		
	Space Geodesy	Professor	FURUYA Masato	Space geodesy, GNSS, GPS, INSAR, GRACE, gravity, Earth rotation, atmospheric sensing, crustal deformation, glaciology, planetary geodesy, ionosphere	
		Associate Professor	TAKADA Youichiro		
	Seismology	Professor	YOSHIZAWA Kazunori	Seismic wave propagation, Earth structure, seismic tomography, waveform analysis, seismic source process, microfracture, heterogeneity and anisotropy	
		Associate Professor	NAOI Makoto		

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Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Earth and Planetary System Science	Petrology and Volcanology	Professor	KURITANI Takeshi	Field geology, igneous petrology, experimental volcanology, geochemistry, material circulation, magma genesis, magmatic differentiation, magma plumbing system, volcanic eruption, crystal growth	
		Associate Professor	YOSHIMURA Shumpei		
		Assistant Professor	MUJIN Mayumi		
		Assistant Professor	PYTHON Marie	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	
		Assistant Professor	KITANO Ippei	Geology, metamorphic petrology, metamorphic rocks, plutonic rocks, mobile belts, crustal evolution	
	Geochemistry	Associate Professor	KAWASAKI Noriyuki	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	BAJO Ken-ichi		
	Earth Materials Science	Professor	NAGAI Takaya	Mineralogy, crystallography, crystal growth, physics and chemistry of minerals	
		Associate Professor	KAWANO Jun		
		Associate Professor	SHINOZAKI Ayako		
	Paleobiology	Professor	YAMADA Toshihiro	Paleontology, Paleobotany, Stratigraphy	Hokkaido University Museum
		Professor	KOBAYASHI Yoshitsugu	Vertebrate evolution, dinosaurs, reptiles, birds, phylogenetic relationships, functional morphology, comparative anatomy, embryology	
		Associate Professor	IBA Yasuhiro	Evolution of Mesozoic marine biota, paleobiogeographic responses, global environmental change, origin of modern marine biota	

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Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Earth and Planetary System Science	Earth Biosphere Geoscience	Professor	SAWADA Ken	Paleoenvironmental reconstruction, Organic sedimentology, Molecular paleobiology, Macromolecular biogeochemistry, biomarker paleoclimatology	
		Associate Professor	WATANABE Tsuyoshi	High-resolution reconstruction of palaeoenvironments, biogeochemical cycles in reef ecosystems on the geological time scale	
		Assistant Professor	IKEDA Masashi	Organic Geochemistry, Biogeochemistry, Paleomycology, Paleocology, molecular fossils, evolution of fungi, lichen	

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Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Biodiversity	Biodiversity	Professor	TAKAGI Masaoki	Biodiversity III: Ecology, evolution, island, bird	
		Specially Appointed Professor	KOGAME Kazuhiro	Biodiversity II: Taxonomy, phylogeny, evolution, seaweeds	
		Professor	KAJIHARA Hiroshi	Biodiversity I: Marine invertebrates, Nemertea, taxonomy, phylogeny, morphology	
		Associate Professor	KATOH Toru	Biodiversity I: Evolution, phylogeny, populations, insects	
		Associate Professor	ABE Tsuyoshi	Biodiversity II: Seaweeds, taxonomy, phylogeny, chemotaxonomy	Hokkaido University Museum
		Lecturer	KAKUI Keiichi	Biodiversity I: Marine invertebrates, Crustacea, Tanaidacea, taxonomy, phylogeny, morphology	
		Lecturer	NAKADA Takashi	Biodiversity II: Taxonomy, phylogeny, evolution, microalgae, Chlorophyceae	
		Assistant Professor	Kevin Wakeman	Biodiversity II : Biodiversity, evolution, protists, Apicomplexa, dinoflagellates	
		Assistant Professor	SAWADA Akira	Biodiversity III: Ecology, evolution, island, bird, population	

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Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Science Communication	Communication of Science and Technology	Associate Professor	KAWAMOTO Shishin	science and technology studies, communication in science and technology, transdisciplinary, dual-use	
	Philosophy of Science and Technology	Professor	MATSUOU Masahiro	Philosophy of science, ethics of science and technology, philosophy of risk, statistical inference of cause	
	Educational Design	Associate Professor	IWAMA Norikazu	Psychological Statistics, Educational Measurement, Test Theory, Educational Technology, Instructional Design, Self-regulated Learning	Institute for Academic Innovation
		Associate Professor	OKUMOTO Motoko		Institute for Academic Innovation
		Associate Professor	ISHIKAWA Naoko		Institute for Academic Innovation
	Communication Media	Professor	SHIGETA Katsusuke	Communication Media, Educational Technology, Information and Communication Technology, Learning Effectiveness, e-learning, Hybrid Learning, Educational Practice Research.	Information Initiative Center, Hokkaido University
		Associate Professor	SUGIURA Mayumi		Institute for Academic Innovation
		Associate Professor	YAMAMOTO Kenichi		Institute for Academic Innovation
		Associate Professor	FUJIOKA Kazuya		Institute for Academic Innovation

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Research Fields	Research Groups & Laboratories	Supervisors		Keywords	Remarks
Seismology and Volcanology	Seismological Observation	Professor	OHZONO Mako	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	
		Professor	TAKAHASHI Hiroaki		
		Associate Professor	KATSUMATA Kei		
	Ocean Bottom Seismology and Tsunami	Associate Professor	MURAI Yoshio	Subsurface structure at subduction zones, elastic wave propagation, earthquake source processes, generation and propagation of tsunamis, international field science, disaster mitigation	
		Associate Professor	YAMANAKA Yusuke		
		Assistant Professor	FUKUSHIMA Shun		
	Volcano Physics	Professor	AOYAMA Hiroshi	Volcanology, eruption prediction, transport processes, volcano seismology, volcano acoustics, volcano hydrology, crustal deformation, space geodesy, geo-electromagnetism, spectroscopy of volcanic plume, volcano monitoring system	
		Assistant Professor	TANAKA Ryo		
		Assistant Professor	MURAMATSU Dan		
	Subsurface Structure	Professor	HASHIMOTO Takeshi	Subsurface exploration in seismogenic zones and active volcanoes, tectono-electromagnetism, magnetotellurics, geomagnetic field observation, conductivity anomaly	

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