

List of Supervisors and Research Fields

As of April 1, 2023

Master's Course

Department of Mathematics, Graduate School of Science

| Fields | Supervisors | | Keywords | Remarks |
|---------------------|-------------------------------|--------------------|---|---------|
| Algebra | Professor | ASAKURA Masanori | Arithmetic geometry | |
| | Professor | SAITO Mutsumi | Algebraic analysis, rings of differential operators | |
| | Professor | MATSUMOTO Keiji | Special functions | |
| | Professor | YASUDA Seidai | Number theory, arithmetic geometry | |
| | Specially Appointed Professor | YAMASHITA Hiroshi | Representation theory | |
| | Associate Professor | ATOBE Hiraku | Theory of automorphic representations | |
| | Associate Professor | SHIBUKAWA Youichi | Yang-Baxter equations and quantum groups | |
| | Associate Professor | MATSUSHITA Daisuke | Algebraic geometry | |
| | Assistant Professor | SCRIMSHAW, Travis | Crystal basis, Yang-Baxter equation, Schubert calculus | |
| Geometry | Professor | AKITA Toshiyuki | Algebraic topology, group cohomology, quandle | |
| | Professor | INOUCHI Junichi | Geometry, integrable systems, Lie group, homogeneous spaces | |
| | Professor | FURUHATA Hitoshi | Differential geometry | |
| | Specially Appointed Professor | IWASAKI Katsunori | Complex geometry, dynamical systems, Painlevé systems | |
| | Associate Professor | KASUYA Naohiko | Differential topology, contact structures, complex structures | |
| | Associate Professor | KOBAYASHI Shimpei | Differential geometry | |
| | Assistant Professor | KANDA Yutaka | Differential topology | |
| Analysis | Professor | KUBO Hideo | Partial Differential Equations associated with Nonlinear Dynamics | |
| | Professor | HORA Akihito | Functional analysis, probability theory | |
| | Professor | HONDA Naofumi | Algebraic analysis | |
| | Professor | MIYAO Tadahiro | Mathematical physics, functional analysis, condensed matter physics | |
| | Associate Professor | UMETA Yoko | Exact WKB analysis, asymptotic analysis, higher order Painlevé equations, Stokes geometry | |
| | Associate Professor | KOBAYASHI Masaharu | Harmonic Analysis | |
| | 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 | |
| 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 | |
| | Specially Appointed Professor | EI Shin-Ichiro | Nonlinear analysis, nonlinear partial differential equations | |
| | Specially Appointed Professor | JIMBO Shuichi | Applied analysis, Partial differential equations, Spectral theory | |
| | Associate Professor | KURODA Hirotohi | Partial differential equations, variational analysis | |
| | Associate Professor | KOBAYASHI Yasuaki | Nonlinear dynamics | |
| | 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 | |
| | Assistant Professor | Yikan Liu | Partial differential equations, inverse problems | |

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Department of Condensed Matter Physics, Graduate School of Science

| Laboratories | Supervisors | | Keywords | Remarks |
|--|---|--------------------|--|-----------------------------|
| Electronic Properties of Solids | Professor | ODA Migaku | High-temperature cuprate superconductors, Frustrated spin systems, Surface & nano-structure magnetism, Material research, Scanning tunneling microscopy/spectroscopy (STM/STS), Spin-polarized STM | Will retire in March, 2024. |
| | Professor | YOSHIDA Hiroyuki | | |
| | Specially Appointed Associate Professor | MATSUYAMA Hideo | | Will retire in March, 2024. |
| 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 | | |
| | Assistant Professor | 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 | |
| | Associate Professor | MATSUNAGA Noriaki | | |
| | Lecturer | IHARA Yoshihiko | | |
| | Assistant Professor | NOBUKANE Hiroyoshi | | |
| | Assistant Professor | FUKUOKA Syuhei | | |
| Condensed Matter Dynamics | Associate Professor | MISHINA Tomobumi | 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 | |
| | Assistant Professor | YAMAMOTO Sekika | | |
| Statistical Physics | Professor | NEMOTO Koji | 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 | |
| | Professor | KITA Takafumi | | |
| | Associate Professor | HAYAMI Satoru | | |
| | Assistant Professor | OKUDA Koji | | |

| Laboratories | Professors | | Keywords | Remarks |
|------------------------------|---------------------|-----------------|---|---------|
| Mathematical physics | Professor | YAMAMOTO Shoji | 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. | |
| | Lecturer | OHARA Jun | 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. | |
| Nanostructure Physics (RIES) | Professor | ISHIBASHI Akira | Nano-structured devices, New photovoltaic devices, Next-generation solar cells, Clean unit system platforms | |
| | Associate Professor | KONDO Kenji | Quantum field theory, Many-body perturbation theory, Spintronics devices, Magnetism, Electronic correlations, Dirac electron, Topological insulator | |

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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 | Institute for the Advancement of Higher Education |
| | Assistant Professor | SALAK Dragan | | |
| Theoretical Particle Physics and Cosmology | Professor | SUZUKI Hisao | Particle physics, beyond the standard model, dark matter, dark energy, grand unified theory, superstrings, supersymmetry, early universe | Institute for the Advancement of Higher Education |
| | Professor | KOBAYASHI Tatsuo | | |
| | Associate Professor | SETO Osamu | | |
| | Lecturer | SUEHIRO Kazuhiko | | |
| | Assistant Professor | DAS Arindam | | |
| Theoretical Nuclear Physics | Associate Professor | NOMURA Kosuke | Quantum many-body problems, nuclear force, unstable nuclei, nucleosynthesis, fundamental symmetries, hadronic matter | |
| Theoretical Astrophysics | Professor | OKAMOTO Takashi | Theoretical astronomy, numerical simulations, galaxy formation, galaxy clusters, supermassive black holes, interstellar matter, star formation, interstellar dust | |
| | 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 | | |
| | Specially Appointed Associate Professor | KUBOTA Hisayuki | | |
| | Lecturer | TAKAGI Seiko | | |

| Laboratories | Supervisors | | Keywords | Remarks |
|---|------------------------------|-----------------------|--|--|
| Astrophysical Chemistry / Ice and Planetary Science | Professor | WATANABE Naoki | Interstellar molecules, ice dust, amorphous solid water, surface reactions | |
| | Professor | KIMURA Yuki | | |
| | Associate Professor | OBA Yasuhiro | | |
| | Assistant Professor | HIDAKA Hiroshi | | |
| | Assistant Professor | TSUGE Masashi | | |
| 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 | | |
| Nuclear Reaction Data Science | Associate Professor | HIRABAYASHI Yoshiharu | Nuclear data, nuclear reactions, evaluation | Information Initiative Center |
| | Visiting Professor | FUKAHORI Tokio | | Inter-field Cooperation with the Japan Atomic Energy Agency (JAEA) in the field of nuclear data. |
| | Visiting Professor | IWAMOTO Nobuyuki | | |
| 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 Associate Professor | MURATA Yasuhiro | | |
| | Visiting Associate Professor | YAMAMURA Issei | | |

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Department of Natural History Sciences, Graduate School of Science

As of April 1, 2023

| Research Fields | Research Groups & Laboratories | Supervisors | | Keywords | Remarks |
|------------------------------|-----------------------------------|---|--------------------|--|---------|
| Earth and Planetary Dynamics | Meteorology | Professor | INATSU Masaru | 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. | |
| | | Associate Professor | SATO Yousuke | | |
| | | Specially Appointed Assistant Professor | HONDA Takumi | | |
| | 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, broadband waveform analysis, lateral heterogeneity and anisotropy | |

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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 | |
| | | Assistant Professor | YOSHIMURA Shumpei | | |
| | 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 | | |
| | | Assistant 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 | |
| | Earth Biosphere Geoscience | Professor | SAWADA Ken | Paleoenvironmental reconstruction, Organic sedimentology, Molecular paleobiology, Macromolecular biogeochemistry, biomarker paleoclimatology | |
| | | Lecturer | WATANABE Tsuyoshi | High-resolution reconstruction of palaeoenvironments, biogeochemical cycles in reef ecosystems on the geological time scale | |
| Assistant Professor | | NAKAMURA Hideto | Organic Geochemistry, paleobiochemistry, biomarker proxies for paleodiversity and paleoenvironments, molecular fossils, plant evolution, paleovegetation reconstruction | | |

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| Research Fields | Research Groups & Laboratories | Supervisors | | Keywords | Remarks |
|------------------------------------|--------------------------------|---------------------|--------------|--|----------------------------|
| Earth and Planetary System Science | Geotectonics | Associate Professor | KAMEDA Jun | Subduction zone seismogenesis, water-rock interactions, diagenesis, electron microscopy, clay mineralogy | |
| | | 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 | |
| | | Assistant Professor | KITANO Ippei | Geology, metamorphic petrology, metamorphic rocks, plutonic rocks, mobile belts, crustal evolution | Hokkaido University Museum |

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| Research Fields | Research Groups & Laboratories | Supervisors | | Keywords | Remarks |
|-----------------|--------------------------------|---------------------|------------------|---|---|
| Biodiversity | Biodiversity | Professor | MASUDA Ryuichi | Biodiversity IV (Laboratory of Genetic Diversity): Molecular phylogenetics, population genetics, biogeography, mammals | |
| | | Professor | TAKAGI Masaoki | Biodiversity III: Ecology, evolution, island, bird | |
| | | 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 | Institute for the Advancement of Higher Education |

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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 | CoSTEP |
| | Philosophy of Science and Technology | Professor | MATSUOU Masahiro | Philosophy of science, ethics of science and technology, philosophy of risk, statistical inference of cause | |
| | STEAM Education | Professor | IKEDA Fumihito | STEAM Education, Teacher Education, Research Question, Statistics, Instructional Design | Institute for the Advancement of Higher Education |
| | | Associate Professor | IWAMA Norikazu | | Institute for the Advancement of Higher Education |
| | | Assistant Professor | ISHIKAWA Naoko | | Institute for the Advancement of Higher Education |
| | 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 the Advancement of Graduate Education |
| | | Associate Professor | YAMAMOTO Kenichi | | Institute for the Advancement of Graduate Education |
| | | Assistant Professor | FUJIOKA Kazuya | | Institute for the Advancement of Graduate Education |

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| Research Fields | Research Groups & Laboratories | Supervisors | | Keywords | Remarks |
|----------------------------|-------------------------------------|-------------------------------|-------------------|--|---------|
| Seismology and Volcanology | Seismological Observation | Professor | TAKAHASHI Hiroaki | 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 | KATSUMATA Kei | | |
| | | Associate Professor | OHZONO Mako | | |
| | Ocean Bottom Seismology and Tsunami | Specially Appointed Professor | TANIOKA Yuichiro | 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 | MURAI Yoshio | | |
| | | Associate Professor | NISHIMURA Yuichi | | |
| | | Lecturer | YAMANAKA Yusuke | | |
| | Volcano Physics | Professor | AOYAMA Hiroshi | Volcanology, volcanic seismology, eruption prediction, transport processes, volcano hydrology, crustal deformation, space geodesy, geo-electromagnetism, spectroscopy of volcanic plume, volcano monitoring system | |
| | | Assistant Professor | TANAKA Ryo | | |
| | 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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