



Hokkaido University

INTERNATIONAL COURSE IN GRADUATE SCHOOL OF SCIENCE

2021 - 2022

MATHEMATICS

CONDENSED MATTER PHYSICS

COSMOSCIENCES

NATURAL HISTORY SCIENCES

- EARTH AND PLANETARY DYNAMICS
- EARTH AND PLANETARY SYSTEM SCIENCE
- SEISMOLOGY AND VOLCANOLOGY
- BIODIVERSITY
- SCIENCE COMMUNICATION

Message from the Dean



I am delighted to introduce you to the Graduate School of Science at Hokkaido University, one of the top-10 research-intensive universities in Japan. The Graduate School of Science offers master's and doctoral programs covering a wide range of scientific fields, including mathematics, physics, cosmo sciences, earth and planetary sciences, biodiversity, and science communication. The programs give today's graduate students the resources and cutting-edge instruction they need to be active in their future lives. We expect that the students, having acquired advanced knowledge of nature and the ability to discover universal truths hidden in nature, would contribute to the progress of the human society.

Graduate studies will enable you to deeply pursue your major as well as develop practical skills and knowledge for various future careers. Under the passionate guidance of our faculty and expert staff, you will acquire advanced knowledge and skills and can enjoy a scientific journey to the universal truths of nature. Our school has more than 180 faculty members who are not only highly experienced educators but also top researchers who have garnered recognition for their commitment to excellence in research. The course also provides you with interdisciplinary learning opportunities by linking up with the inter-graduate school classes provided by Hokkaido University, where you will have the opportunity to improve your leadership skills for the betterment of the global society.

With a world-class faculty, a community of students with diverse interests and state-of-the-art facilities, the Graduate School of Science at Hokkaido University is an ideal place for developing a rewarding career. If you are not currently a student here, I encourage you to explore our website and to contact us for more information. When you have an opportunity to visit our Sapporo campus, you will realize that this is the right place for your graduate studies.

I welcome your interest in joining the Graduate School of Science at Hokkaido University.

Best wishes,

Dr. NAGAI Takaya

Dean and Professor of the Graduate School of Science

Fact Sheet

Graduate School of Science

- Originally established in 1953 (School of Science was established in 1930)
- Teaching staff: 181
- Graduate student enrollment
Master's course: 288, Doctoral Course: 157
- International student enrollment
Master's course: 28, Doctoral Course: 46,
Research Student: 3
- Distinguished alumni, including Prof. Akira Suzuki, 2010 Nobel Prize Laureate in Chemistry

Hokkaido University

- Originally established in 1876
- Member of RU11 (Research University) in Japan
- One of 13 universities selected for government's Top Global University Project (Type A)
- Total student enrollment: 18,106
- International student enrollment: 2,135
- Teaching Staff: 1,988

Sapporo

- Fifth largest city in Japan
(Population approximately 1.9 million)
- Hosted 1972 Winter Olympics (First in Asia)
- Low cost of living
Average monthly rent: ¥30,000-40,000
- Member city of UNESCO Creative Cities Network
- Regular direct flights to major Asian cities
(Beijing, Seoul, Shanghai, Taipei, Hong Kong, Vladivostok, Bangkok, Singapore, Manila, Kuala Lumpur, etc.)

Department of Mathematics

<https://www2.sci.hokudai.ac.jp/gs/en/dm>



Our department covers a wide range of research areas—from theory-driven approaches that mainly seek to achieve theoretical sophistication to more empirically oriented approaches that employ computers for calculations on various phenomena. Our research includes diverse fields such as hyperplane arrangements, representation theory, differential geometry, singularity theory, partial differential equations, mathematical physics, chaos, probability theory, and dynamical systems.

Every year, the department sponsors or participates in several research conferences in Sapporo that attract several hundred domestic and foreign researchers. A partial list of the

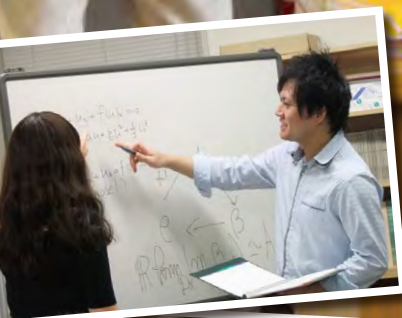
conferences below shows the high level of research activity in our department. The following are the examples of 2019:

- Mathematics Conference for Young Researchers (organized annually by graduate students)
- Sapporo Symposium on Partial Differential Equations (held annually)
- Northeastern Symposium on Mathematical Analysis (held annually)
- Homotopy Theory Symposium
- Workshop on Shimura varieties, representation theory and related topics, 2019
- Lefschetz pencils and Low dimensional Topology

For 2020, despite the impact of COVID-19, we held almost the same events as usual, by online.

These conferences provide students with first-hand glimpses into current research activities as well as opportunities to present their research results to world-renowned mathematicians. In addition, there are several weekly seminars that students are encouraged to attend. The department has an in-house library containing about 100,000 books and 350 titles of journal are accepted annually, where students may study in a spacious and quiet environment. Graduate students are provided with their own desks in the department building. Our recent major achievements in receiving large research grants and participating programs are: (1) Japan Science and Technology Agency, Strategic Basic Research Programs (CREST), Research

Area: Modeling Methods allied with Modern Mathematics, Project: Theory on mathematical modeling for spatio-temporal patterns arising in biology (Research Supervisor: Shin-Ichiro Ei); (2) Japan Science and Technology Agency, Strategic Basic Research Programs (CREST), Research Area: Technology for Computing Revolution for Society 5.0, Project: Optimization problems and their solutions with safe and secure quality validation based on mathematics (Research collaborator: Akira Sakai); (3) Promotion Office for Integrative Mathematics; (4) Hokkaido University Ambitious Leader's Program; (5) Ph. Discover (A project of Graduate school of Science, Hokkaido University).



Research Groups

Algebra

Keywords : Algebraic combinatorics, Algebraic geometry, Arithmetic geometry, Combinatorics, Representation theory, Rings of differential operators, Singularity theory, Special functions, Vertex algebras, Yang-Baxter equations and quantum groups

Geometry

Keywords : Complex geometry, Differential geometry,

Differential topology, Dynamical systems, Mathematical physics, Painlevé systems, Real algebraic geometry, Singularity theory, Topology, Hyperplane arrangement

Analysis

Keywords : Algebraic analysis, Differential equations, Functional analysis, Harmonic analysis, Mathematical fluid dynamics, Mathematical physics, Operator algebras, Partial differential equations, Potential theory, Probability theory, Real analysis

Applied Mathematics

Keywords : Applied analysis, Biophysical complex systems, Biophysics, Chaotic dynamical systems, Complex systems, Computational neuroscience, Computational topology, Ergodic theory, Free boundary problems, Mathematical modeling, Nonequilibrium statistical mechanics, Numerical analysis, Numerical simulation, Partial differential equations, Probability theory, Reaction-diffusion system, Scattering theory, Time series analysis, Variational methods

Department of Condensed Matter Physics

<https://www2.sci.hokudai.ac.jp/gs/en/dcmp> 

In the Department of Condensed Matter Physics, our staff members conduct cutting-edge research on the physical properties of materials and provide quality physics education. Our department branches into the fields of theoretical physics (2 laboratories), experimental physics (5 laboratories), advanced functional materials and physics (4 laboratories), and material science (2 laboratories). Research in the department covers a wide range of areas, including complex liquids, semi-conductors, high- T_c superconductors, organic molecular crystals and organic polymers, nano-materials, multiferroic materials, complex networks, electron correlations in quantum materials, thermally-, pressure-, and photo-induced phase transitions, glass transitions, magnetism, spin electronics, nonlinear optics and photovoltaic devices as well as many other topics. These studies not only provide us with a greater understanding of natural phenomena but can also lead to a discovery of

novel functional materials. Condensed matter physics is thus one of the most important research fields for the progress in science and technology in our society.

Part of our department belongs to the cooperative graduate school with "National Institute for Materials Science (NIMS)" and "RIKEN", which are the leading research institutions in Japan. The laboratories in the field of "advanced functional materials and physics" and those in the field of "material science" are operated by researchers from NIMS and RIKEN, respectively. These laboratories accept doctoral students from our department. The students can study physics and take part in research projects within the excellent environment at NIMS and RIKEN. Our department is further participating in an interdisciplinary education and research program provided by the "Center of Education & Research for Topological Science & Technology". This program covers



the fields of mathematics, condensed matter physics, astrophysics, material science, life science, information engineering and economics. Graduate students as well as young researchers from our department will find an opportunity to interact with the different fields and gain a new insight into their own projects.

Based on this closer connection among the various fields, we aim to cross-fertilize research and education, and foster world-class human resources with creative talent. Students can expand their knowledge of modern physics through the curriculum and can improve their logical thinking skills and capabilities for problem-finding and problem-solving through their research activities. Our graduates will open up a new frontier in natural science and will be bearers of the future of science and technology.

Research Groups and Laboratories

Theoretical Physics

Statistical Physics

Keywords : 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

Mathematical Physics

Keywords : Transition-metal complexes, Organic polymers, Single-molecule nanomagnets, Photoinduced phase transition, Optically switchable magnetism, Nuclear magnetic relaxation

Experimental Physics

Electronic Properties of Solids

Keywords : High-temperature cuprate superconductors, Frustrated spin systems, Surface & nano-structure magnetism, material research, Scanning tunneling microscopy/spectroscopy (STM/STS), Spin-polarized STM

J-Material: Physics of Strongly Correlated Systems

Keywords : J-material, Superconductivity, Magnetism, Heavy fermion, Quantum phase transition, Magnetoelectric effects, Very low temperatures, High magnetic fields, High pressure, Ultrasonic measurements, μ SR, Neutron scattering, Resonant X-ray Scattering (RXS), Ferroelectrics, Multiferroics, Electronic ferroelectricity, Phase transition, Photoinduced cooperative phenomena

Electronic Properties of Low-dimensional Materials

Keywords : Low-dimensional organic conductors, Strongly-correlated electron systems, Superconductivity,

Magnetism, Spin liquid, Symmetry of Cooper pairs, Spin density wave (SDW), Chiral superconductivity, Mesoscopic systems, NMR, Scanning Tunneling Microscopy (STM), Scanning Tunneling Spectroscopy (STS), Nonlinear conductivity, Specific heat measurement

Condensed Matter Dynamics

Keywords : Microscopic dynamics of condensed matters, Dielectric and optical spectroscopy from 1 μ Hz 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

Nanostructure Physics

(Research Institute for Electronic Science)

Keywords : Nano-structured devices, New photovoltaic devices, Next-generation solar cells, Clean unit system platforms, Quantum field theory, Many-body perturbation theory, Spintronics devices, Magnetism, Electronic correlations, Dirac electron, Topological insulator

Advanced Functional Materials and Physics

(Cooperative Graduate School with National Institute for Materials Science)

Condensed Matter Theory

Keywords : Quantum many-body theory, Superconductivity, Magnetism, Critical phenomena, Electronic nematic liquids

Nanosystem Photonics

Keywords : Surface physics, Nanophotonics, Energy conversion, Nanomaterials

Solid State Physics in High Magnetic Field

Keywords : Spectroscopy, High magnetic field, Terahertz wave, Quantum Hall effect, Dirac fermion, Topological insulator

Surface Quantum Phase Materials

Keywords : Atomic-layer superconductors, STM, Metal nanostructures, Molecular motors

Material Science

(Cooperative Graduate School with RIKEN)

Muon Spin Resonance

Keywords : 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

Keywords : 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

Department of CosmoSciences

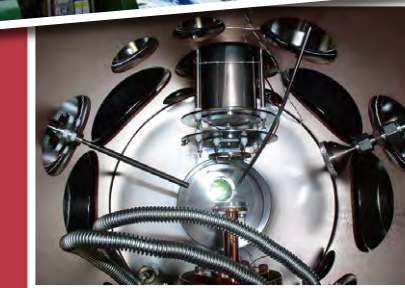
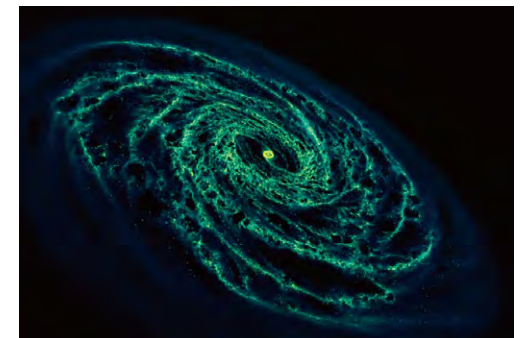
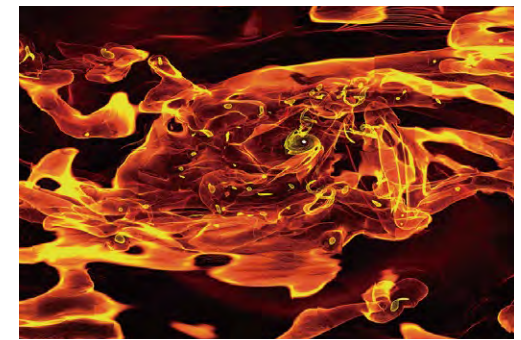
<https://www2.sci.hokudai.ac.jp/gs/en/dc> 

Many discoveries about the Universe in recent years have prompted us to reshape established paradigms, academic disciplines and our view of the world. For example, we now know that the expanding Universe is also accelerating, that there are many planets outside of our Solar System, that dark matter and dark energy are the dominant components in the Universe, and that cosmic dust was present even in the very early Universe. These advances have been obtained by breaking down the conventional boundaries between physics, astronomy, planetary science and Earth science, allowing scientists to understand the Universe from its smallest elements through a range of cutting-edge scientific methods.

Researchers at Hokkaido University have applied their wide selection of expertise to exploring the Universe over its breathtaking scale. Our interests run from elementary particles and atomic nuclei through to celestial objects such as the Earth and planets and the formation of the Universe itself. In addition, we are committed to sharing these research activities through

educational efforts, with undergraduate and graduate students from a wide range of backgrounds taking part in research projects under faculty tutorage.

Our department, established in 2006, consists of four laboratories belonging to the Department of Physics, one laboratory belonging to the Department of Earth and Planetary Sciences, two laboratories belonging to the Institute of Low Temperature Science (ILTS), and one laboratory belonging to the Information Initiative Center (IIC). In addition, we are also joined by researchers in the Nuclear Reaction Data Centre, and Spacecraft Observation group. In our department, education and research in physics, astronomy, planetary science and Earth science are combined closely with the goal of breaking free from the boundaries separating observation, experiment and theory. We strive to ensure our students go on to use their detailed knowledge and problem-solving expertise to contribute both to the international scientific community, and positively to society as a whole.



Laboratories

Observational Astronomy

Keywords : Observational astronomy, Galaxies, Galaxy evolution, Interstellar matter, Star formation

Theoretical Particle Physics and Cosmology

Keywords : Particle physics, Beyond the standard model, Dark matter, Dark energy, Grand unified theory, Superstring, Supersymmetry, Early Universe

Theoretical Nuclear Physics

Keywords : Quantum many body problems, Nuclear force, Unstable nuclei, Nucleosynthesis, Hadronic Matter

Theoretical Astrophysics

Keywords : Theoretical astronomy, Numerical simulations, Galaxy formation, Galaxy clusters, Supermassive blackholes, Interstellar matter, Star formation, Interstellar dust, the Milky Way, Galactic morphology

Planetary and Space Group

Keywords : 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, Theory and hierarchical numerical simulation models, Applications of information technology

Astrophysical Chemistry / Ice and Planetary Science (ILTS)

Keywords : Interstellar molecules, Ice dust, Amorphous solid water, Surface reactions

Phase Transition Dynamics (ILTS)

Keywords : Phase transition dynamics, Crystal growth, Ice, Snow, Surface/Interface science, In-situ observation

Information Media Science (IIC)

Keywords : Learning science, Learning platforms, Open education

Nuclear Reaction Data Science

Keywords : Nuclear data, Nuclear reactions, Evaluation

Spacecraft Observation

(Cooperative Graduate School with
Japan Aerospace Exploration Agency)

Keywords : Planetary exploration, Infrared astronomy from space, Radio-astronomy from space

Department of Natural History Sciences

<https://www2.sci.hokudai.ac.jp/gs/en/dnhs>



The Department of Natural History Sciences encompasses three main research areas: 1) Earth and Planetary Sciences, 2) Biodiversity and Organismal Evolution, and 3) Science Communication. The scientific interests of this department span a size scale from molecules to the solar system, and a time scale from microseconds to billions of years. We also recognize the importance of disseminating cutting-edge scientific results to the public.

Earth and Planetary Dynamics (Division)

The Division of Earth and Planetary Dynamics conducts basic researches across a broad range of both temporal and spatial scales to better understand the Earth as a dynamic system constituted by the solid Earth, the oceans, and the atmosphere. We investigate diverse topics in geophysics, including crust and mantle dynamics, earthquakes, volcanic activity, and atmosphere-ocean circulation. To elucidate the nature of the dynamic Earth, we take a comprehensive approach based on theoretical and experimental studies, analyses of geophysical data, and fieldwork that takes advantage of the distinctive location of Hokkaido University. There are four laboratories in this Division: Meteorology, Physical

Oceanography and Climate, Space Geodesy, and Seismology

Earth and Planetary System Science (Division)

The Division of Earth and Planetary System Science has a rich tradition of leadership in geoscience research and education, consolidated through 80 years of accumulated experience and expanding in new directions. The Division offers graduate courses in a wide range of fields in the modern Earth and planetary sciences to allow students to understand the Earth as a system of interrelated physical, chemical, and biological processes, encompassing the lithosphere, atmosphere, hydrosphere, and biosphere. There are six laboratories in this Division: Petrology and Volcanology, Paleobiology, Geochemistry, Earth Materials Science, Earth Biosphere Geoscience, and Geotectonics.

Seismology and Volcanology (Division)

When, where, and why do earthquakes and volcanic eruptions take place, and how large will they be? While earthquakes, tsunamis and volcanic eruptions are often a threat to public safety, they can also provide important clues to

understanding Earth dynamics and evolution. Earthquakes and volcanoes are surface manifestations of the internal activity of the Earth, and thus understanding their mechanisms and processes is a fundamental issue in the geosciences. We investigate the physical background of seismic and volcanic activity based on a multi-disciplinary approach, including seismology, geodesy, geothermics, fluid dynamics, electromagnetics, and geology, in collaboration with domestic and international universities and research institutes. Hokkaido provides good opportunities for students to apply the wide range of knowledge they have learned to real earthquakes, tsunamis and volcanoes.

Biodiversity (Division)

There exists today an amazing diversity of organisms, all of which are the consequence of evolution. Through the prism of evolution, the Division of Biodiversity investigates patterns of organismal change and the processes through which it arose. Using molecular, morphological, and ecological analyses, we study diversity at various levels within the biological hierarchy, including geographic patterns of genetic variation, phylogenetic relationships between closely and

distantly related groups, and the organization of organisms into classification schemes.

Science Communication (Division)

Science communication has received much more attention in recent years than previously. This is due to increased awareness that science communication plays important roles in helping the public understand the aims and significance of scientific research, and in fostering greater interest in science among young students. It also behooves scientific researchers to be involved in science communication, because this helps scientists understand what the public expects of them, and in the process helps them gain the public's confidence. The Division of Science Communication was founded in response to the above needs. Its fields of study include social studies of science, philosophy of science, museum studies, and science education.

Divisions and Laboratories

Earth and Planetary Dynamics

Meteorology

Keywords : Meteorology, Dynamics and Forecast, Cyclones and Fronts, Theory and Numerical Modelling, Meso-scale phenomena, Cloud, Rain and Snow, Material Transport, Applied meteorology

Physical Oceanography and Climate

Keywords : Physical oceanography, Meteorology, Air-Sea interaction, Climate variability & change, Ocean's role in climate, Multi-disciplinary challenges, Numerical modelling, Data analysis

Space Geodesy

Keywords : Space geodesy, GNSS, GPS, InSAR, GRACE, Gravity, Earth rotation, Atmospheric sensing, Crustal deformation, Glaciology, Planetary geodesy, Ionosphere

Seismology

Keywords : Seismic wave propagation, Internal structure of the Earth, Seismic tomography, Broadband waveform analysis, Lateral heterogeneity and anisotropy

Earth and Planetary System Science

Petrology and Volcanology

Keywords : Petrology and geochemistry of igneous rocks, Magmatology, Volcanic geology and physical volcanology, Long-term eruption forecasting and mitigation of volcanic disaster

Paleobiology

Keywords : Vertebrate, Marine biota, Evolution, Phylogenetic relationships, Comparative anatomy, Embryology, Extinction, Biogeography, Global environmental change

Geochemistry

Keywords : Cosmochemistry, Galaxies, Planets, Meteorites, Earth, Environment, Life, Geofluid, Mass spectrometry, Microscopy, Solar system evolution, Planetary exploration

Earth Materials Science

Keywords : Mineralogy, Crystallography, Crystal growth, Physics and chemistry of minerals

Earth Biosphere Geoscience

Keywords : Organic Geochemistry, Earth's hydrocarbon resources, Molecular paleobiology, Biogeochemistry of sedimentary organic matter, Carbonate geochemistry, Paleoenvironmental reconstruction

Geotectonics

Keywords : Microtectonics, Seismogenesis, Formation of continental crust, Magmatic processes in mid-ocean ridge, Oman ophiolite, Water-rock interaction

Seismology and Volcanology

Seismological Observation

Keywords : Seismology, Tsunamis, Earthquake prediction, Observational seismology and volcanology, Crustal deformation, Earthquake source physics

Ocean Bottom Seismology and Tsunami

Keywords : Ocean bottom seismology, Elastic wave propagation theory, Paleo-seismology, Tsunami science, Disaster mitigation

Volcano Physics

Keywords : Physical volcanology, Volcanic eruption prediction, Geodesy, Geomagnetism and geoelectricity, Seismology, Remote sensing, Geothermics

Subsurface Structure

Keywords : Subsurface structure, Seismogenic zone, Volcanoes, Electromagnetic field change, Airborne geophysical exploration

Biodiversity

Animal Systematics

Keywords : Bryozoa, Nemertea, Insects, Crustaceans, Invertebrates, Evolution, Taxonomy, Biodiversity, Population, Phylogeography, Ocean acidification, Molecular phylogeny, DNA

Algal and Protist Systematics

Keywords : Biodiversity, Chemotaxonomy, Endosymbiosis, Environmental DNA, Macroalgae, Microalgae, Molecular phylogeny, Prokaryotes, Seaweeds, Taxonomy, Ultrastructure

Ornithology, Island Biology

Keywords : Ornithology, Life history, Breeding biology, Inbreeding avoidance, Acoustic communication, Oceanic island, Continental island

Genetic Diversity

Keywords : Molecular phylogenetics, Population genetics, Biogeography, Mammals

Science Communication

Communication of Science and Technology

Keywords : Science and technology studies, Environmental sociology, Public participation, Governance and policy, Technology assessment

Philosophy of Science and Technology

Keywords : Philosophy of science, Ethics of science and technology, Philosophy of risk, Statistical inference of cause

Museum Education

Keywords : Museum communication, Museum education, Museum evaluation, Museum management

Science Education

Keywords : Self-efficacy, Cognitive bias, Creativity, Human-computer interactions, Higher education, Educational technology, Open education, Faculty development, research

Faculty Listings

Department of Mathematics

Algebra (Research Group)

Professor	ASAKURA Masanori SAITO Mutsumi MATSUMOTO Keiji YASUDA Seidai YAMASHITA Hiroshi
Associate Professor	ATOBE Hiraku SHIBUKAWA Youichi Simona Settepanella TANABE Kenichiro MATSUSHITA Daisuke

Geometry (Research Group)

Professor	AKITA Toshiyuki ISHIKAWA Goo IWASAKI Katsunori YOSHINAGA Masahiko
Associate Professor	KOBAYASHI Shimpei FURUHATA Hitoshi
Assistant Professor	KANDA Yutaka

Analysis (Research Group)

Professor	KUBO Hideo HORA Akihito HONDA Naofumi MASAMUNE Jun
Associate Professor	KOBAYASHI Masaharu SUZUKI Yuhei HASEBE Takahiro HAMAMUKI Nao MIYAO Tadahiro

Applied Mathematics (Research Group)

Professor	Ei Shin-ichiro SAKAI Akira JIMBO Shuichi NAGAYAMA Masaharu (RIES) NAMIKI Takao YURI Michiko*
Associate Professor	KURODA Hirotohi KOBAYASHI Yasuaki (RIES) SATO Yuzuru (RIES) MATSUMOTO Kenji
Assistant Professor	Borislav Yordanov (IAHE) Yikan Liu (RIES)

Department of Condensed Matter Physics

Theoretical Physics (Research Group)

Statistical Physics (Laboratory)	
Professor	NEMOTO Koji KITA Takafumi OKUDA Koji
Assistant Professor	

Mathematical Physics (Laboratory)	
Professor	YAMAMOTO Shoji
Lecturer	OHARA Jun

Experimental Physics (Research Group)

Electronic Properties of Solids (Laboratory)	
Professor	ODA Migaku
Associate Professor	MATSUYAMA Hideo YOSHIDA Hiroyuki
Assistant Professor	KUROSAWA Tohru

J-Material: Physics of Strongly Correlated Systems (Laboratory)	
Professor	AMITSUKA Hiroshi
Associate Professor	TAKESADA Masaki YANAGISAWA Tatsuya
Assistant Professor	HIDAKA Hiroyuki

Electronic Properties of Low-dimensional Materials (Laboratory)	
Professor	KAWAMOTO Atsushi
Associate Professor	MATSUNAGA Noriaki
Lecturer	IHARA Yoshihiko
Assistant Professor	NOBUKANE Hiroyoshi FUKUOKA Shuhei

Condensed Matter Dynamics (Laboratory)	
Professor	NOZAKI Ryusuke
Associate Professor	MISHINA Tomobumi
Assistant Professor	YAMAMOTO Sekika

Nanostructure Physics (Laboratory) (RIES)	
Professor	ISHIBASHI Akira
Associate Professor	KONDO Kenji

Advanced Functional Materials and Physics (Research Group)(Cooperative Graduate School with NIMS)

Condensed Matter Theory (Laboratory) (NIMS)	
Professor	YAMASE Hiroyuki

Nanosystem Photonics (Laboratory) (NIMS)	
Professor	NAGAO Tadaaki

Solid State Physics in High Magnetic Field (Laboratory) (NIMS)	
Professor	IMANAKA Yasutaka

Surface Quantum Phase Materials (Laboratory) (NIMS)	
Professor	UCHIHASHI Takashi

Material Science (Research Group)(Cooperative Graduate School with RIKEN)

Muon Spin Resonance (Laboratory) (RIKEN)	
Professor	WATANABE Isao

Electron Spin Resonance (Laboratory) (RIKEN)	
Associate Professor	OSHIMA Yugo

Department of Cosmospaces

Observational Astronomy (Laboratory)

Professor	SORAI Kazuo
-----------	-------------

Theoretical Particle Physics and Cosmology (Laboratory)	
Professor	SUZUKI Hisao KOBAYASHI Tatsuo
Associate Professor	NAKAYAMA Ryuichi SETO Osamu* (IAHE)
Lecturer	SUEHIRO Kazuhiko

Theoretical Nuclear Physics (Laboratory)	
Professor	KIMURA Masaaki
Lecturer	HORIUCHI Wataru

Theoretical Astrophysics (Laboratory)	
Lecturer	OKAMOTO Takashi
Assistant Professor	Alexander PETTITT (IAHE)

Planetary and Space Group (Laboratory)

Professor	KURAMOTO Kiyoshi TAKAHASHI Yukihiko ISHIWATARI Masaki SATO Mitsuteru KAMATA Shunichi KUBOTA Hisayuki*
Associate Professor	KURIHARA Junichi*
Assistant Professor	ISHIDA Tetsuro* TAKAGI Seiko*

Astrophysical Chemistry / Ice and Planetary Science (Laboratory) (ILTS)

Professor	KOUCI Akira WATANABE Naoki
Associate Professor	KIMURA Yuki
Assistant Professor	OBA Yasuhiro HIDAKA Hiroshi TSUGE Masashi*

Phase Transition Dynamics (Laboratory) (ILTS)

Professor	SAZAKI Gen
Assistant Professor	NAGASHIMA Ken MURATA Ken-ichiro

Information Media Science (Laboratory) (IIC)	
Professor	FUSE Izumi
Assistant Professor	YAMAMOTO Yuichi

Nuclear Reaction Data Science (Laboratory)	
Professor	FUKAHORI Tokio (JAEA) IWAMOTO Nobuyuki (JAEA)
Associate Professor	HIRABAYASHI Yoshiharu (IIC)

Spacecraft Observation (Laboratory) (JAXA)	
Professor	SATO Takehiko (JAXA)
Associate Professor	MURATA Yasuhiro (JAXA) YAMAMURA Issei (JAXA)

Department of Natural History Sciences

Earth and Planetary Dynamics (Division)

Meteorology (Laboratory)	
Professor	INATSU Masaru
Associate Professor	SATO Yousuke*

Physical Oceanography and Climate (Laboratory)	
Professor	MINOBE Shoshiro
Associate Professor	SASAKI Yoshinori

Space Geodesy (Laboratory)	
Professor	HEKI Kosuke FURUYA Masato
Associate Professor	TAKADA Youichiro

Seismology (Laboratory)	
Professor	YOMOGIDA Kiyoshi*
Associate Professor	YOSHIZAWA Kazunori

Earth and Planetary System Science (Division)

Petrology and Volcanology (Laboratory)	
Professor	NAKAGAWA Mitsuhiko
Associate Professor	KURITANI Takeshi
Assistant Professor	YOSHIMURA Shumpei

Paleobiology (Laboratory)	
Professor	KOBAYASHI Yoshitsugu (HUM)
Associate Professor	IBA Yasuhiro

Geochemistry (Laboratory)	
Professor	YURIMOTO Hisayoshi
Assistant Professor	BAJO Ken-ichi KAWASAKI Noriyuki

Earth Materials Science (Laboratory)	
Professor	NAGAI Takaya
Associate Professor	KAWANO Jun
Assistant Professor	SHINOZAKI Ayako

Earth Biosphere Geoscience (Laboratory)	
Professor	SAWADA Ken
Lecturer	WATANABE Tsuyoshi

Geotectonics (Laboratory)	
Associate Professor	KAMEDA Jun
Assistant Professor	Marie Python

Seismology and Volcanology (Division)

Seismological Observation (Laboratory)	
Professor	TAKAHASHI Hiroaki
Associate Professor	KATSUMATA Kei KAZONO Mako

Ocean Bottom Seismology and Tsunami (Laboratory)	
Professor	TANIOKA Yuichiro
Associate Professor	MURAI Yoshio NISHIMURA Yuichi
Lecturer	YAMANAKA Yusuke

Volcano Physics (Laboratory)	
Professor	AOYAMA Hiroshi
Assistant Professor	TANAKA Ryo

Subsurface Structure (Laboratory)	
Professor	HASHIMOTO Takeshi

Biodiversity (Division)

Animal Systematics (Laboratory)	
Associate Professor	KAJIHARA Hiroshi Helena Fortunato KATOH Toru KAKUI Keiichi
Lecturer	

Algal and Protist Systematics (Laboratory)	
Professor	HORIGUCHI Takeo KOGAME Kazuhiro
Associate Professor	ABE Tsuyoshi (HUM)
Assistant Professor	Kevin Wakeman (IAHE)

Ornithology and Island Biology (Laboratory)	
Professor	TAKAGI Masaaki

Genetic Diversity (Laboratory)	
Professor	MASUDA Ryuichi

Science Communication (Division)

Communication of Science and Technology (Laboratory)	
Associate Professor	MIKAMI Naoyuki (IAHE) KAWAMOTO Shishin

Philosophy of Science and Technology (Laboratory)	
Professor	MATSUOU Masahiro

Museum Education (Laboratory)	
Professor	YUASA Makiko (HUM)

Science Education (Laboratory)	
Professor	HOSOKAWA Toshiyuki (IAHE) IKEDA Fumihito (IAHE) SUZUKI Makoto* (IAHE) IWAMA Norikazu (IAHE)

Associate Professor	YAMADA Kunimasa (IAHE) SHIGETA Katsusuke (IIC) SUGIURA Mayumi (IAHE)
---------------------	--

Useful Links

Graduate School of Science
<https://www2.sci.hokudai.ac.jp/gs/en>

Scholarship information
<https://www.global.hokudai.ac.jp/admissions/scholarships/>

Faculty of Science
<https://www2.sci.hokudai.ac.jp/faculty/en>

Facebook
<https://www.facebook.com/OIAS.Sci>

Hokkaido University
<https://www.global.hokudai.ac.jp/>

Related Graduate Schools

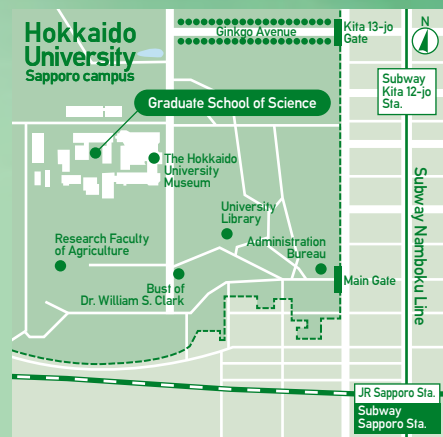
Graduate School of Life Science
<https://www.lfsci.hokudai.ac.jp/en/>

Graduate School of Chemical Sciences and Engineering
<https://www.cse.hokudai.ac.jp/english/>

Contact

Office for International Academic Support
Faculty of Science, Hokkaido University

Kita 10 Nishi 8, Kita-ku Sapporo 060-0810 JAPAN
Tel +81-(0)11-706-2916 Fax +81-(0)11-706-2907
Email: international@sci.hokudai.ac.jp



Step-by-step Guide To Entry

You need to have completed Step 1 at least six months prior to your intended enrollment!

STEP 1 Find a Supervisor

1

Graduate and research students conduct research under the guidance of a supervisor. To enter the Graduate School of Science as a research or graduate student, you need to find a faculty member who is willing to give you instruction on your research. Find a prospective supervisor from our website:

1. Graduate School of Science Website

<https://www2.sci.hokudai.ac.jp/gs/en> 🔍

Please refer to each "Department" page for the list of faculty members. A supervisor list is also available in the application guidelines in the "Admission" page.

2. Hokkaido University Website>RESEARCH AND EDUCATION>Find a Researcher

<https://researchers.general.hokudai.ac.jp/search/index.html?lng=en> 🔍

3. HUSCAP

<https://eprints.lib.hokudai.ac.jp/dspace/?locale=en&lang=en> 🔍

STEP 2 Apply to the graduate school

2

You can check how to apply in the application guidelines. Applicants must pay the examination/application fee at the time of application.

STEP 3 Take the entrance screening (For Residing Abroad)

3

Screening procedures for research students are conducted on the basis of documentation submitted whilst screening procedures for graduate level students differ between each department.

STEP 4 Commence enrollment procedures

4

After passing the screening process, you will be required to submit necessary documentation, pay the entrance fee, and complete other necessary procedures to become enrolled.