



Hokkaido University

GRADUATE SCHOOL OF SCIENCE

2015 - 2016

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 welcome you to the Graduate School of Science at Hokkaido University, one of Japan's top research universities. Graduate studies have become essential to professional development and career advancement. The Graduate School of Science offers master's and doctoral programs related to advanced graduate studies in a wide range of sciences including mathematics, physics, cosmosciences, earth and planetary sciences, biodiversity, and science communication.

The Graduate School of Science has a teaching staff of 180 professionals serving over 400 graduate students. Our education reflects the devotion of these outstanding faculty members to teaching, mentoring, and supervision. We provide education to international students with full support in English. The education objectives of the Graduate School of Science are to improve research capabilities by practicing advanced research, developing of a high-level of expertise and internationality, and cultivating human resources who possess project execution capabilities and problem identification-solving abilities. We nurture students who actively participate in various occasions and situations in which they can contribute to the betterment of global society.

I hope you will find our booklet informative and friendly. You can find more information on our website. We welcome your comments and inquiries. If you are not currently a student here, I encourage you to contact our faculty and staff members. If you have an opportunity to visit our Sapporo campus, you will definitely recognize that the Graduate School of Science at Hokkaido University is the right place for your graduate studies.

With best wishes,
Noriyuki Suzuki, Dr. Sci.
Dean, Graduate School of Science

Fact Sheet

Graduate School of Science

- Originally established in 1953 (School of Science was established in 1930)
- Teaching staff: 180
- Graduate student enrollment: Master's course 295 Doctoral Course 128
- International student enrollment: Master's course 13 Doctoral Course 22 Research Student 5
- Distinguished alumni including Prof. Akira Suzuki, Nobel Prize Winner Chemistry 2010

Hokkaido University

- Originally established in 1876
- One of seven original comprehensive universities in Japan
- Member of RU11 (Research University) in Japan
- One of 13 universities selected for government's Top Global University Project (Category A)
- First institution of higher education in Japan to award bachelor's degrees
- Total student enrollment: Approximately 18,000
- International student enrollment: Approximately 1,800
- Teaching Staff: Approximately 2,000
- Highest student satisfaction ratings in Japan (2012)

Sapporo

- Fifth largest city in Japan (Population approximately 1.9 Million)
- Hosted 1972 Winter Olympics (First in Asia)
- Voted as the most desirable city to live in Japan (2007, 2010 and 2012)
- Low cost of living: Housing ¥30,000-40,000 per a month
- Member City of UNESCO Creative Cities Network

Department of Mathematics

<http://www.math.sci.hokudai.ac.jp/en/>



The Department of Mathematics was established in 1930 along with the establishment of the Faculty of Science at Hokkaido University. With approximately 40 academic staff, 20 young researchers, and more than 200 students (undergraduate and graduate), it is now considered one of the best math departments in Japan. 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. To provide a sense

of research areas in which students may study when enrolled in our master's or doctoral programs, here is a representative sample of recent thesis titles:

- Generalization of Brace and dynamical Yang-Baxter maps
- Measurable sensitivity for infinite measure-preserving transformations
- Stable and semi-stable configurations of linear subspaces
- Affine geometry of space curves and homogeneous surfaces
- Surface evolution for the Landau-Lifshitz equation and mean curvature flow with a transport term
- Transitory memory retrieval in a biologically plausible neural network model

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 in 2014 gives a sense of the high level of research activity in our department:

- The 10th HU and SNU symposium on Mathematics (held annually)
- Mathematics Conference for Young Researchers (organized annually by graduate students)
- The 2nd Franco-Japanese-Vietnamese Symposium on Singularities
- Workshop on Potential Theory 2014
- Sapporo Symposium on Partial Differential Equations (held annually)

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 90,000 books and 525

journals, 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 include: (1) the 21st Century Center of Excellence (COE) Program "Mathematics of Nonlinear Structure via Singularity" from 2003 to 2008, and (2) the Japan Society for the Promotion of Science (JSPS) International Training Program "The international sending-elevating project for young mathematicians based on singularity, topology and mathematical analysis: Hokudai model" from 2008 to 2012. The fruitful success of the COE program resulted in our founding the Research Center for Integrative Mathematics in 2008. Our department provides an advanced integrated education program "Ambitious leader's program" for graduate students from 2014.



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

Analysis

Keywords : Algebraic analysis, Differential equations, Functional analysis, Geometric measure theory, 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, Brain theory, 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

<http://phys.sci.hokudai.ac.jp/quantum/index-e.html> 

In the Department of Condensed Matter Physics, our 30 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 (8 laboratories), and advanced functional materials and physics (2 laboratories). Research in the department covers a wide range of areas, including complex liquids, semi-conductors, high-Tc superconductors, organic molecular crystals and organic polymers, nano-materials, multiferroic materials, complex networks, electron correlations in quantum materials, thermal-, 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)". NIMS is located at Tsukuba and is one of the leading research institutions in Japan. The two laboratories in the field of advanced functional materials and physics, Advanced NMR and Condensed Matter Theory, are operated by researchers from NIMS and accept doctoral students from our department. These students can study physics and take part in research projects within the excellent environment at NIMS. 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

Condensed Matter Theory I

Keywords : Statistical physics, Non-equilibrium, Non-linearity, Random systems, Complex networks, Phase transition, Self-organization, Critical phenomena, Scale-free structures, Numerical simulation

Condensed Matter Theory II

Keywords : Superconductivity, Superfluidity, Bose-Einstein condensation, Non-equilibrium statistical mechanics, Quantum field theory

Condensed Matter Theory III

Keywords : Transition-metal complex, Organic polymer, Single-molecule nanomagnet, Photoinduced phase transition, Optically switchable magnetism, Nuclear magnetic relaxation

Experimental Physics

High-Pressure Physics

Keywords : High-Tc superconductivity, Cuprates, Scanning tunneling microscopy, Scanning Tunneling Spectroscopy

Electronic Properties of Low-dimensional Conductors

Keywords : Low-dimensional organic conductors, Scanning Tunneling Microscopy (STM), Scanning Tunneling Spectroscopy (STS), Nonlinear conductivity, Symmetry of Cooper pairs, Spin density wave (SDW), Chiral superconductivity, Mesoscopic systems

Magnetism in Strongly Correlated Electron Systems

Keywords : Spin, Nano, Surface, Thin film, Spin-Polarized Scanning Electron Microscope (spin SEM), Spin-polarized scanning tunneling microscope (SP-STM), Spin-polarized spectroscopy, Superconductivity, Magnetism, Heavy fermion behavior, Quantum criticality, Non-Fermi-liquid behavior, Very low temperature, High magnetic field, High pressure, Transport measurements, Ultrasonic measurements, μ SR, XRS

Low Temperature Physics

Keywords : NMR, Strongly-correlated electron systems, Superconductivity, Magnetism

Optical Science and Semiconductor Physics

Keywords : Laser spectroscopy, THz time domain spectroscopy, Femtosecond pump-probe spectroscopy

Laboratory of Dielectrics

Keywords : Complex liquids, Glass transition, Broadband dielectric spectroscopy, Ferroelectrics, Multiferroics, Electronic ferroelectricity, Phase transition, Photoinduced cooperative phenomena

Nanostructure Physics

(Research Institute for Electronic Science)

Keywords : Nano-structured devices, Quantum-cross devices, New photovoltaic devices, Next-generation solar cells, Spin quantum-cross structure, Many-body perturbation theory, Density functional theory, Clean unit system platforms, Electronic correlations, Spin correlations in nanostructures

Phase Transition

(Research Institute for Electronic Science)

Keywords : Time domain light scattering, Ferroelectrics, Quantum ferroelectrics, Glass transition, Frequency domain light scattering, Complex liquids, Relaxor ferroelectrics

Advanced Functional Materials and Physics

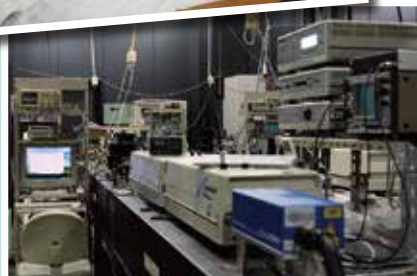
(Cooperative Graduate School with National Institute for Materials Science)

Advanced NMR

Keywords : Solid-state-NMR, Highly magnetic fields, Condensed matter physics, Advanced NMR techniques

Condensed Matter Theory

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



Department of CosmoSciences

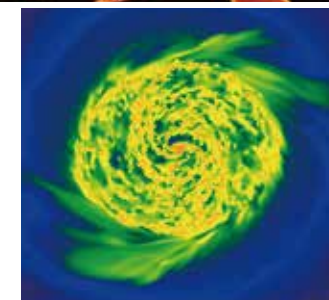
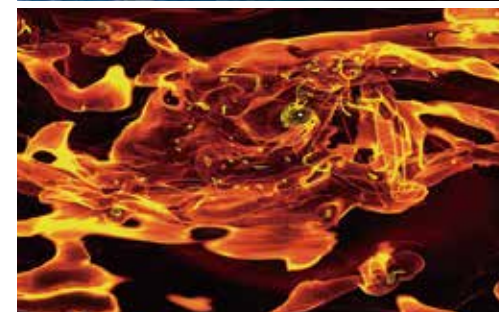
<http://www.cosmo.sci.hokudai.ac.jp/index-e.htm> 

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 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 has been discovered 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 full range of 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 scale and formation of the Universe itself. In

addition, we are committed to sharing these research activities through continuous education.

Our department, which was newly established in 2006, consists of four laboratories belonging to the Department of Physics, one laboratory belonging to the Department of Earth and Planetary Sciences, three laboratories belonging to the Institute of Low Temperature Science (ILTS), and one laboratory belonging to the Information Initiative Center (IIC). In addition to this, researchers in the Nuclear Reaction Data Center, and Spacecraft Observation join our department. 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 hope that our students will go on to use their knowledge both in science, and also throughout society with their wide and flexible knowledge base.



Laboratories

Observational Astronomy

Keywords : Observational astronomy, Galactic and extragalactic astronomy, Interstellar matter, Star formation

Theoretical Astrophysics

Keywords : Theoretical astronomy, Numerical simulations, Galaxy formation, Galaxy clusters, Supermassive blackholes, Interstellar matter, Star formation, Interstellar dust

Theoretical Particle Physics

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

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, Experimental studies, Theory and hierarchical numerical simulation models, Applications of information technology

Theoretical Planetary Science (ILTS)

Keywords : Planet formation, Cosmic dust, Protoplanetary disks, Nucleation theory

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

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

<http://www.sci.hokudai.ac.jp/english/index.html>



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 research across a broad range of temporospatial scales to better understand the Earth as a dynamic system comprising the Earth's crust, the oceans, and the atmosphere. We investigate diverse topics in geophysics, including mantle dynamics, earthquakes, volcanic activity, surface and ground water, 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: Physical Oceanography and Climatology, Physical Hydrology, 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, Earth Environmental History, Geochemistry, Earth Materials Science, Earth System Evolution, 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 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, including physics, chemistry, mathematics, and earth science, to real earthquakes and volcanoes.

Biodiversity (Division)

There exists today an amazing diversity of organisms, all of which are the consequence of evolution. In addition, during the evolutionary history of the earth, many more species have gone extinct than those surviving today. In the Division of Biodiversity, we investigate patterns of diversity and the processes generating these patterns. Through molecular, morphological, and ecological analyses, we study diversity at various levels of the biological hierarchy, including geographic patterns of genetic variation, patterns of phylogenetic relationships relevant to macroevolution and the classification of life, the process of speciation by which new biological species arise, and the changes in reproductive, developmental, and regenerative systems that can lead to evolutionary novelty. This

Division includes four laboratories: I. Animal Systematics; II. Algal and Protist Systematics; III. Evolutionary Developmental Biology; and IV. Genetic Diversity.

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.

Special Program

International Graduate Program in the Natural History Sciences

<http://www.sci.hokudai.ac.jp/dnhs/inhs/>



Divisions and Laboratories

Earth and Planetary Dynamics

Physical Oceanography and Climatology

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

Physical Hydrology

Keywords : Drainage basin, Water and material cycles, Sedimentation, Lake hydrodynamics

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

Earth Environmental History

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 System Evolution

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

Geotectonics

Keywords : Microtectonics, Seismogenesis, Soft-sediment deformation, 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

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

Volcano Physics

Keywords : Geodesy, Volcano physics, Geomagnetism and geoelectricity, Physical volcanology, Volcanic eruption prediction, Seismology

Subsurface Structure

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

Biodiversity

Animal Systematics

Keywords : Bryozoa, Nemertea, Insect, 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, Protists, Seaweeds, Taxonomy, Ultrastructure.

Evolutionary and Developmental Biology

Keywords : Evo-devo, Reproduction, Development, Regeneration, Animal models

Genetic diversity

Keywords : Molecular phylogenetics, Population genetics, Biogeography, Mammals, Birds, Archaeological remains, Osteology, Bone collagen, DNA

Science Communication

Communication of Science and Technology

Keywords : Sociology of science, Science and technology studies, 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 and Media

Keywords : Museum communication, Museum education, Museum evaluation, Media studies, Museum video productions

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	Keiji Matsumoto Mutsumi Saito Hiroaki Terao Hiroshi Yamashita
Associate Professor	Noriyuki Abe Masanori Asakura Daisuke Matsushita Youichi Shibukawa Kenichiro Tanabe Masahiko Yoshinaga Simona Settepanella*
Lecturer	Assistant Professor Kazuma Morita

Geometry (Research Group)

Professor	Goo Ishikawa Katsunori Iwasaki Shyuichi Izumiya Toru Ohmoto
Associate Professor	Toshiyuki Akita Hitoshi Furuhashi Shimpei Kobayashi Masao Jinzenji
Assistant Professor	Kenta Hayano Yutaka Kanda

Analysis (Research Group)

Professor	Hiroaki Aikawa Asao Arai Akihito Hora Hideo Takaoka
Associate Professor	Masaharu Kobayashi Naofumi Honda Tadahiro Miyao Reiji Tomatsu
Assistant Professor	Nao Hamamuki Takahiro Hasebe

Applied Mathematics (Research Group)

Professor	Shin-ichiro Ei Shuichi Jimbo Hideo Kubo Masaharu Nagayama(RIES) Ichiro Tsuda (RIES) Michiko Yuri
Associate Professor	Zin Arai Chun Biu Li (RIES) Kenji Matsumoto Takao Namiki Akira Sakai Yuzuru Sato
Assistant Professor	Masakazu Akiyama (RIES) Elliott Ginder (RIES) Yutaka Yamaguchi (RIES)

Department of Condensed Matter Physics

Theoretical Physics (Research Group)

Condensed Matter Theory I (Laboratory)
Professor Koji Nemoto
Assistant Professor Koji Okuda

Condensed Matter Theory II (Laboratory)
Associate Professor Takafumi Kita

Condensed Matter Theory III (Laboratory)
Professor Shoji Yamamoto
Lecturer Jun Ohara

Experimental Physics (Research Group)

High-Pressure Physics (Laboratory)
Professor Migaku Oda
Assistant Professor Tohru Kurosawa
Hiroyuki Yoshida

Electronic Properties of Low-dimensional Conductors (Laboratory)
Professor Kazushige Nomura
Associate Professor Noriaki Matsunaga
Assistant Professor Hiroyoshi Nobukane

Magnetism in Strongly Correlated Electron Systems (Laboratory)
Professor Hiroshi Amitsuka
Kazuyuki Koike*
Associate Professor Hideo Matsuyama
Tatsuya Yanagisawa
Hiroyuki Hidaka| Assistant Professor | Hiroyuki Hidaka |

Low Temperature Physics (Laboratory)
Professor Atsushi Kawamoto
Lecturer Yoshihiko Ihara

Optical Science and Semiconductor Physics (Laboratory)
Associate Professor Tomobumi Mishina
Assistant Professor Sekika Yamamoto

Dielectrics (Laboratory)
Professor Akira Onodera*
Associate Professor Ryusuke Nozaki
Masaki Takesada

Nanostructure Physics (Laboratory) (RIES)
Professor Akira Ishibashi
Associate Professor Kenji Kondo

Phase Transition (Laboratory) (RIES)
Associate Professor Yuhji Tsujimi

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

Advanced NMR (Laboratory) (NIMS)
Professor Tadashi Shimizu

Condensed Matter Theory (Laboratory) (NIMS)
Associate Professor Hiroyuki Yamase

Department of CosmoSciences

Observational Astronomy (Laboratory)
Associate Professor Kazuo Sorai

Theoretical Astrophysics (Laboratory)
Professor Asao Habe
Takashi Kozasa
Takashi Okamoto
Elizabeth Jane Tasker| Assistant Professor | Elizabeth Jane Tasker |

Theoretical Particle Physics (Laboratory)
Professor Hisao Suzuki
Tatsuo Kobayashi
Associate Professor Ryouichi Nakayama
Lecturer Kazuhiko Suehiro
Assistant Professor Eun-Kyung Park

Theoretical Nuclear Physics (Laboratory)
Associate Professor Masaaki Kimura
Assistant Professor Wataru Horiuchi

Planetary and Space Group (Laboratory)
Professor Kiyoshi Kuramoto
Yukihiro Takahashi
Associate Professor Akihiko Hashimoto
Masaki Ishiwatari
Junichi Kurihara*
Lecturer Mitsueteru Sato
Assistant Professor Masatsugu Odaka
Makoto Watanabe*

Theoretical Planetary Science (Laboratory) (ILTS)
Associate Professor Hidekazu Tanaka

Astrophysical Chemistry / Ice and Planetary Science (Laboratory) (ILTS)
Professor Akira Kouchi
Naoki Watanabe
Yuki Kimura
Associate Professor Tetsuya Hama
Assistant Professor Hiroshi Hidaka
Yasuhiro Oba*

Phase Transition Dynamics (Laboratory) (ILTS)
Professor Yoshinori Furukawa*
Gen Sazaki
Assistant Professor Ken Nagashima
Ken-ichiro Murata

Information Media Science (Laboratory) (IIC)
Professor Izumi Fuse
Assistant Professor Yuichi Yamamoto

Nuclear Reaction Data Science (Laboratory)
Professor Masayuki Aikawa
Tokio Fukahori (JAEA)
Hideo Harada (JAEA)
Keiichi Shibata (JAEA)
Associate Professor Yoshiharu Hirabayashi

Spacecraft Observation (Laboratory) (JAXA)
Professor Takehiko Sato
Associate Professor Yasuhiro Murata
Issei Yamamura

Department of Natural History Sciences

Earth and Planetary Dynamics (Division)

Physical Oceanography and Climatology (Laboratory)

Professor Shoshiro Minobe
Associate Professor Masaru Inatsu
Lecturer Yoshinori Sasaki
Assistant Professor Hanna Na

Physical Hydrology (Laboratory)
Associate Professor Kazuhisa Chikita*

Space Geodesy (Laboratory)
Professor Masato Furuya
Kosuke Heiki
Associate Professor Yuichiro Takada

Seismology (Laboratory)
Professor Kiyoshi Yomogida
Associate Professor Kazunori Yoshizawa

Earth and Planetary System Science (Division)

Petrology and Volcanology (Laboratory)
Professor Mitsuhiro Nakagawa
Associate Professor Takeshi Kuritani
Assistant Professor Shumpei Yoshimura

Geochemistry (Laboratory)
Professor Hisayoshi Yurimoto
Associate Professor Shogo Tachibana
Junji Yamamoto (HUM)
Lecturer Piani Laurette
Assistant Professor Ken-ichi Bajor

Earth Materials Science (Laboratory)
Professor Takaya Nagai
Assistant Professor Jun Kawano*

Earth Environmental History and Paleontology (Laboratory)
Associate Professor Yoshitsugu Kobayashi (HUM)
Assistant Professor Yasuhiro Iba

Earth System Evolution (Laboratory)
Professor Noriyuki Suzuki
Associate Professor Ken Sawada
Lecturer Tsuyoshi Watanabe

Geotectonics (Laboratory)
Professor Toru Takeshita
Associate Professor Makoto Kawamura
Junichiro Maeda*
Jun Kameda
Assistant Professor Marie Python

Seismology and Volcanology (Division)

Seismological Observation (Laboratory)
Professor Yuichiro Tanioka
Associate Professor Kei Katsumata
Hiroaki Takahashi

Ocean Bottom Seismology (Laboratory)
Associate Professor Yoshio Murai
Assistant Professor Yuichi Nishimura

Volcano Physics (Laboratory)
Professor Makoto Murakami
Takeshi Hashimoto
Associate Professor Hiromitsu Ooshima
Assistant Professor Hiroshi Aoyama
Hitoshi Mori*

Subsurface Structure (Laboratory)
Professor Toru Mogi*

Biodiversity (Division)

Biodiversity I : Animal Systematics (Laboratory)
Associate Professor Helena Fortunato
Hiroshi Kajihara
Lecturer Keiichi Kakui
Assistant Professor Toru Katoh
Assistant Chizuko Nishida

Biodiversity II : Algal and Protist Systematics (Laboratory)
Professor Takeo Horiguchi
Associate Professor Kazuhiro Kogame
Lecturer Tsuyoshi Abe (HUM)

Biodiversity III : Evolutionary Developmental Biology (Laboratory)
Professor Shin Tochinali*

Biodiversity IV : Genetic Diversity (Laboratory)
Professor Ryouichi Masuda
Lecturer Masaki Eda (HUM)
Assistant Professor Yoshinori Nishida

Science Communication (Division)

Communication of Science and Technology (Laboratory)
Professor Shigeo Sugiyama*
Associate Professor Naoyuki Mikami (IAHE)
Shishin Kawamoto

Philosophy of Science and Technology (Laboratory)
Professor Masahiro Matsuou

Museum Education and Media (Laboratory)
Associate Professor Makiko Yuasa
Yoshiharu Fujita

Science Education (Laboratory) (IAHE)
Professor Toshiyuki Hosokawa
Makoto Suzuki
Associate Professor Fumihito Ikeda
Katsusuke Shigeta
Kunimasa Yamada

Useful Links

Admission

<http://www.sci.hokudai.ac.jp/english/>

Scholarship information

<http://www.oia.hokudai.ac.jp/current-students/scholarships/>

Faculty of Science

<http://www.sci.hokudai.ac.jp/faculty/en/>

Facebook

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

Hokkaido University

<http://www.oia.hokudai.ac.jp/>

Related Graduate Schools

Graduate School of Life Science

<http://www.lfsci.hokudai.ac.jp/graduate-school/>

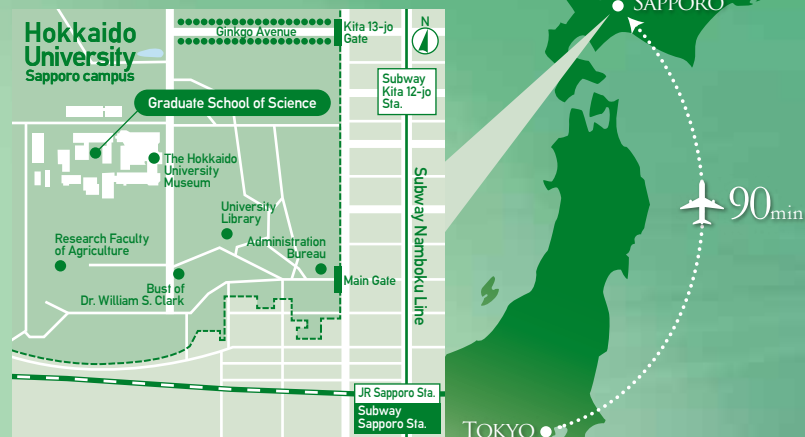
Graduate School of Chemical Sciences and Engineering

<http://www.cse.hokudai.ac.jp/english/index.html>

Contact

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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

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

<http://www.sci.hokudai.ac.jp/english/>

List of supervisors and research fields are available in the application guidelines (see "Application for Graduate School" on the top page).

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

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

3. HUSCAP

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

STEP
2

Apply to the graduate school

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 examination

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

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.