

Graduate School of Science and Faculty of Science Tohoku University Japan



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Tohoku University
Japan

Photography by Kohei SHIKAMA(akaoni)

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Message from the Dean

Tadahiro HAYASAKA,
Professor

Dean, Graduate School of Science and Faculty of Science
What is science? We can define science as the study of the laws of nature based on objective facts and the process of exploring the causes of natural phenomena. We must ask what objective facts are and if everyone sees nature in the same way. Can we be objective as we try to determine nature's properties, like temperature and air pressure? The natural phenomena that we can observe, study, and experiment on are extremely limited. The laws that enable us to recognize the scale of space in our everyday lives may not apply to the atomic scale or the macro scale of the universe. What would we see if we could see the world of light waves beyond the region visible to our eyes? We think that we understand the nature around us, but in fact, our knowledge is limited. There is much that we do not know. Our daily experience of nature is like a piece of a jigsaw puzzle, from which we can only imagine what the completed picture is.

Remembering this, we need curiosity and imagination to explore the truth of nature and to truly study science. We must learn aggressively on our own, set research goals, and fully use our current knowledge to advance the understanding of science and bring about a whole new world. In the Graduate School of Science and the Faculty of Science at Tohoku University, our study and research cover a wide range of basic sciences, including Mathematics, Physics, Astronomy, Geophysics, Chemistry, Earth Science and Biology, and we actively nurture curiosity and imagination toward the study of nature. Using theory, experiments, observation, and more, we work hard to expand the boundaries of science while promoting cutting edge research. On the basis of our education policy, we train students not only to be researchers but also to be leaders who play active roles in various fields of society. The School of Science has been designed to attract excellent students and researchers to our campus, which is situated in an area richly endowed with nature, to work together to continually redefine science.

Tadahiro HAYASAKA
Dean
Professor



About of Tohoku University

Tohoku University has been committed to the principles of "Research First" and an "Open Door" policy since its foundation and is internationally recognized for its outstanding standards in education and research. The university contributes to world peace and equity by devoting itself to research useful in solving societal problems and educating human resources in leadership skills.

"Research First" and "Open Door"

Tohoku Imperial University, College of Science (currently, the Faculty of Science) was founded in 1907 as the third Imperial University after Tokyo and Kyoto. Since then, it has made remarkable achievements in research and has provided important human resources to our society. Of special note in our history are the ideas of "Research First" and "Open Door". "Research First" is our policy of giving research our highest priority, meaning that research is our ultimate mission. We believe that it is possible to provide true education to students through research. This long-standing philosophy of creativity and originality has been proven by producing many recipients of the Order of Culture, the Japan Academy Medal, and so on.

Our door is always widely open to the world. In other words, we have always operated with an "Open Door" policy. We willingly give our educational and research resources back to society, which in turn helps us to find undiscovered genius and develop it.

In the early years of our history, on the bases of competence and ability without adherence to custom, we accepted female students and those who had not graduated from high schools of the old education system, such as graduates of technical institutes. The latter were called "collateral" during that era. This is an example of the "Open Door" policy, which allowed Chika KURODA, Ume TANGE, and Raku MAKITA to join us as the first three Japanese female students. Seiji KAYA, former President of the University of Tokyo, is an example of "collateral" and is a graduate from the Kuramae Institute of Technology (the former Tokyo Institute of Technology). In addition, Professors Cheng Jian Gong and Su Bu Qing, prominent people in Mathematics in China, are both graduates from our Faculty and the first two foreign people to obtain doctorate degrees in Japan.

Those two philosophies are indispensable for distinguished and productive research. Some 40%–45% of our teaching staff each year are not graduates from Tohoku University, which is another example of our "Open Door."

Introduction to Faculty of Science

The Faculty of Science is responsible for education and research in the basic sciences. It encompasses all disciplines of natural science. Our activities are rooted in original questions about nature and are centered around a strong appetite for learning. The outcomes of our activities contribute to the welfare of humankind after they have been applied to technology. Original and creative research done in the Faculty of Science will be extremely important in the coming age as society increasingly focuses on concerns other than economic ones, such as a sustainable global environment and an improved quality of life. Doors to great success are open wide before you.

Introduction to Graduate School of Science

We provide high-quality educational and high-level research opportunities to foster professionals so that they can become proficient in specialized knowledge and research methodologies. Scholars from the Research Institutes of Tohoku University and other domestic and foreign research institutes are working jointly with us.

All six of our departments adopted the "Program for Leading Graduate Schools" in 2014. We have developed an "attractive campus" and have made this university a highly advanced center of education and scientific research in the world based on the fruits of the "Program for Leading Graduate Schools" .

The "Program for Leading Graduate Schools" has been designed and implemented in order to guide top students in their efforts to become global leaders with a commanding and creative presence in industry, academia, and government. By bringing together first class educators and students from all over the world and with the participation of industry, academia, and government, the program supports the radical reform of doctoral degree curriculums to go beyond specialized fields in order to develop internationally recognized degree programs. Moreover, the program is designed to promote the formation of graduate schools worthy of the highest institutes of education.



Motoko KOTANI

Research Area:

My research area is Discrete Geometric Analysis, in which we endeavor to discover the relations between discrete matter and continua or between microscopic structures and macroscopic properties. Recently, I started collaborative research with the Materials Scientists in the Advanced Institute for Materials Research.

Research Topics:

- 1) Discrete Geometric Analysis
- 2) Discrete Differential Geometry
- 3) Analysis of amorphous structures

We have infinite possibilities, although we are weak and mortal. We explore and discover things beyond our physical limitations by using our imaginations.

Mathematics provides a framework for our imagination, which we turn into breakthroughs in Science and Technology. This is why Mathematics is said to be fundamental to Science and Technology, and why it fascinates me so much.

I am a geometer, working in the research area called Discrete Geometric Analysis, which tries to make bridges between microscopic structures and macroscopic properties and enables us to observe things beyond the visible scale.

I am currently studying the structures and functions of matter and materials by using Discrete Geometric Analysis. Please join us in the project.



Kunio INOUE

Research Area:

My research area is Neutrino Science which covers studies of neutrino properties and application of neutrino detection. These studies are connected with resolving Big Mysteries of the Universe and Particle Physics such as “matter dominance in the universe” and with revealing the history of the universe.

Research Topics:

- 1) Long baseline reactor neutrino oscillation
- 2) Neutrino geophysics and neutrino astronomy
- 3) Neutrino-less double beta decay
- 4) Ultra-low Background Experiment

Neutrino is the most dominant matter particle in the universe. It reacts only through weak interaction and consequently very elusive. The world largest liquid scintillator neutrino detector, KamLAND, has established ultra-low radioactivity environment and is successfully measuring anti-neutrinos from nuclear power reactors and those from the earth. These measurements resulted in the most precise measurement of neutrino oscillations and the first measurement of radiogenic heat produced in the earth. Its huge and ultra-clean environment is also adequate to perform studies of rare phenomena such as double beta decay and dark matter detection. My recent focus is investigation of “Majorana nature of neutrinos” by searching for neutrino-less double beta decay. If neutrino has the Majorana nature, it means neutrinos and anti-neutrinos are the same particle and yet unknown heavy neutrino can be naturally introduced in the framework of particle physics. This heavy neutrino is thought to be the origin of “matter dominance or anti-matter absence in the universe,” “light neutrino mass” and “dark matter.” Our experiment, KamLAND-Zen, has achieved the world best sensitivity on the search and will continue to lead this field. It is an international collaboration from the beginning. We welcome well-motivated young talent. Why don't you join us and resolve the big mysteries of the universe and particle physics together?

IGPAS master's student in Chemistry from United States of America

Jenna Wen Ju Wu

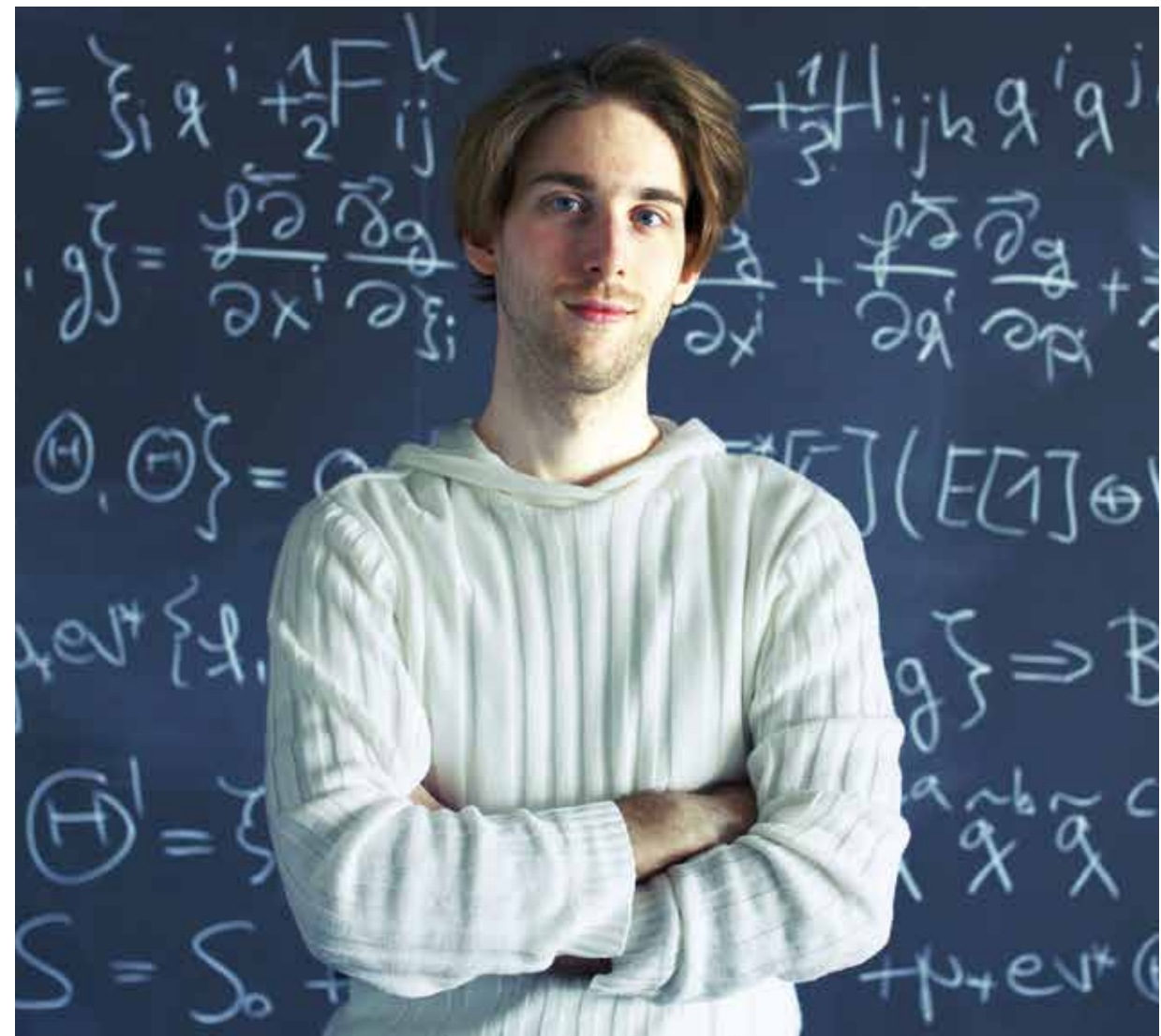
As an undergraduate student who had participated in Education Abroad Program with Tohoku University, I was pretty familiar with the environment of Sendai, and of course, the environment of Tohoku University before participating in the IGPAS program for graduate degree. I enjoyed the short 5 months of time that I spent at Tohoku University and did not hesitate when I found the chance to study here again.

Now as a graduate student of Tohoku University, I spend quite a large amount of time on campus, especially in the laboratory. Not only do we operate experiment apparatus and collect experimental data, but we also have discussions with professors and students in the laboratory. The laboratory environment provides the students motivation to learn, and it helps international students to communicate with Japanese students! I was able to have valuable discussions, and to learn a great deal of living techniques, including Japanese, from the Japanese students and staff.

Sendai is a small city, much smaller than the bustling Tokyo, yet the city is equipped with everything you can find in a big city, except the sense of being “busy”. The city of Sendai is also known as the City of Trees in Japanese because of the great nature surrounding it and the greens they preserve in the city. That being said, it is very nice to spend some time exploring the city and its nature. I usually spend my weekends trying out some good restaurants or café, or have a little walk along the Hirose River, the river that runs through the city. Another charming point of Japan is its expression of the four seasons and the beauty of seasonal changes and sceneries overwhelmed me every single day here!

I like the city of Sendai especially because of its efforts in trying to help foreigners live comfortably! The city provides opportunities to help foreigners understand Japanese culture, and to introduce foreign cultures to the community. In this small city, you can enjoy not only the Japanese culture but also the sense of welcoming.

For prospective international students, Tohoku University provides you a great opportunity to challenge yourself and experience a new life while learning and doing valuable research! I am looking forward to achieve some personal growth by the time I finish studying here at Tohoku University, and you can too.



IGPAS graduate student in Physics from Germany

Heller, Marc Andre

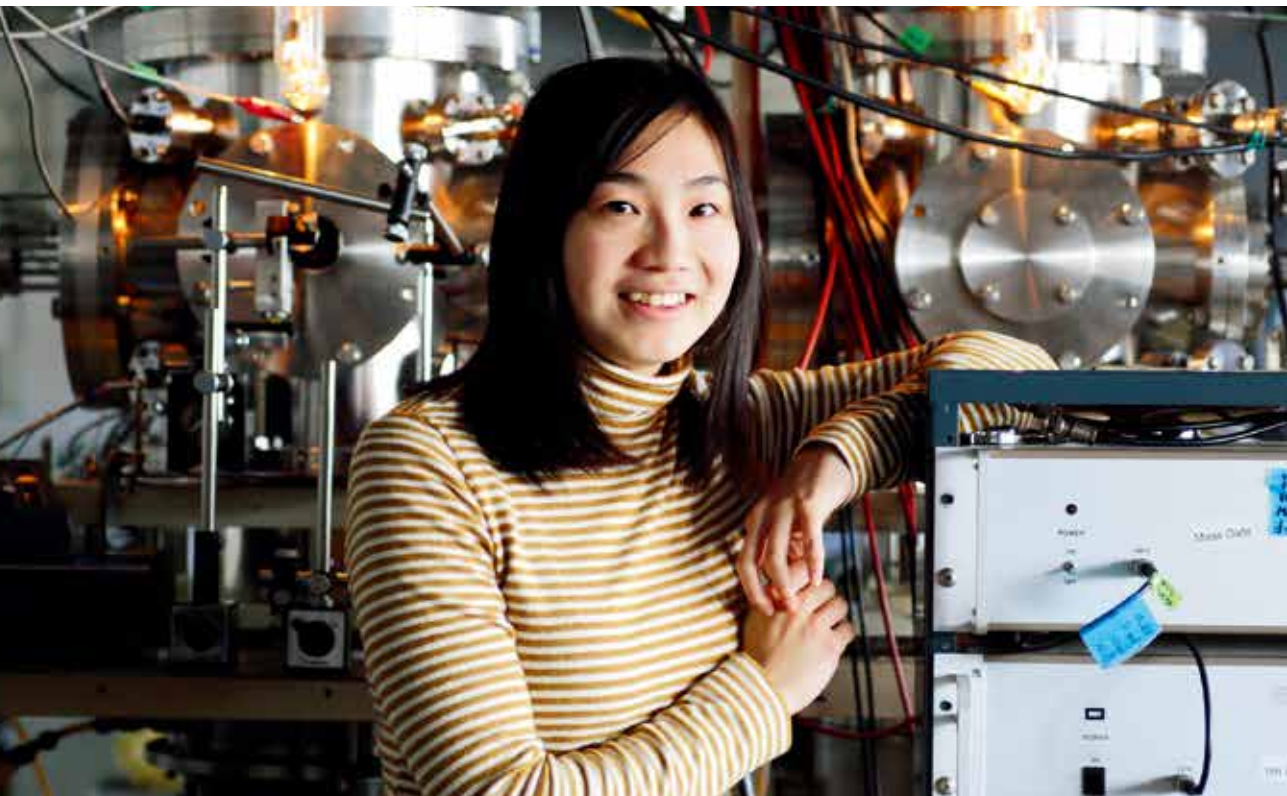
Three years ago, when I was a Master's student at the University of Göttingen, Germany, I came to Tohoku University for the first time as an exchange student (COLABS program). At that time, I came to be very interested in Japanese culture and language and looked for a good place, where I could pursue research in that direction, about which I am most excited. Tohoku University appeared to be a very good choice for this purpose. Since my experiences turned out to be very positive, I decided to apply for the Doctoral course at Tohoku University after the completion of the exchange program and graduation from Göttingen University.

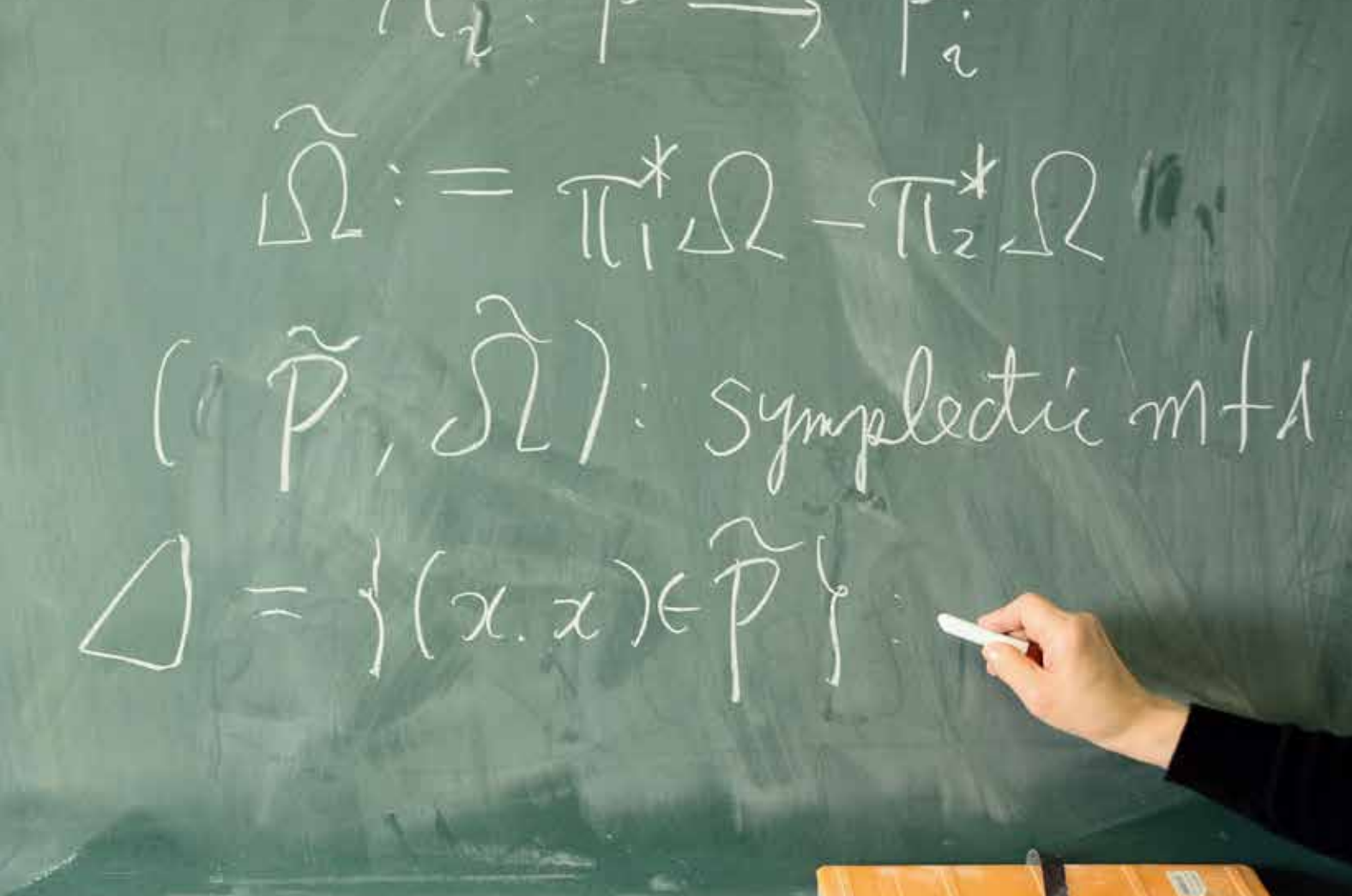
At the moment I am working as a teaching assistant in physics and German, beside my research in string theory. Since I enjoy playing the electric guitar, I participate in the metal/hard rock music club “strangers” at Tohoku University.

I like living in Sendai very much, because this city elegantly combines the urban flavour of metropolitan Tokyo or Osaka with the beauty of rural spots, in which you can enjoy the calm and take a rest. In this sense, you can enjoy an evening with friends by diving into the night life of Sendai or just take a book and find a silent place in nature. The many philosophical influences that are inherent in the cultural paradigm of the Japanese society are very well blended with the scientific influences of a modern society. Integration of new knowledge and technology while maintaining cultural integrity. This is a very difficult task for any modern society. I see it well done in the case of Japan.

Tohoku University provides a very fruitful atmosphere for open-minded research discussions. Many seminars on different topics help broaden the horizon and deepen the understanding of the own subject.

To prospective students: If you are still comparing many offers from different universities, I definitely can recommend Tohoku University not only since it provides an appropriate atmosphere for studying but also since Sendai is a pleasant place to live.





Physics

Theoretical Physics

Particle Physics and Cosmology
Condensed Matter Physics
Nuclear Physics
Statistical Physics

Experimental Nuclear and Particle Physics

High Energy Physics
Neutrino Science
Nuclear and Hadron Physics
Accelerator Science

Experimental Condensed Matter Physics

Electronic Properties of Condensed Matter
Metal Physics
Quantum Condensed Matter Physics
Soft Matter and Biophysics
Solid State Spectroscopy
Crystal Physics

The Department of Physics at Tohoku University is one of the oldest and largest in Japan, having almost a 100-year history since its foundation in 1911, and it now has a faculty of more than 160 professors and about 250 students in the graduate school. Not only the faculty members but also those from research institutes and laboratories are actively involved in the school's programs. Research in our department covers all fields of physics from particle and nuclear physics to condensed-matter physics and extends even further to biophysics and industrial physics. Our graduate students are undertaking world-class research at the highest levels at the frontiers of physics under the guidance of their experienced supervisors. The advanced research facilities of our department assist in their activities.

Mathematics

Algebra

Geometry

Analysis

Global Analysis

Applied Mathematics

Mathematics is the language for describing the natural world. Its progress has been directly linked to that of other scientific fields, as notably seen in the case of Einstein's formulation of general relativity, which was made possible by the timely development of Riemannian geometry. The Mathematical Institute of Tohoku University was established in 1911. Many important contributions to various fields of modern mathematics have since originated from the Institute. Among these are Tannaka's Duality Theorem by Tadao TANNAKA and the concept of Sasakian Manifolds by Shigeo Sasaki, which has recently drawn renewed interest due to its connection to Superstring Theory. The Institute is currently a base of many researchers and students, both undergraduate and graduate, who are actively engaged in a wide range of research fields, which cover algebra, analysis, geometry, and logic. The Institute houses one of the best libraries in the country, which holds more than 60,000 books and journals. The members of the Institute have full access to the resources, and it offers a welcome environment for active learning and research. In addition, since the founding of the Institute in 1911, it has continued to publish the "Tohoku Journal of Mathematics", which was the very first of its kind in Japan and is now internationally recognized for its academic authority.





Geophysics

Solid Earth Physics

Atmospheric and Oceanic Science

Planetary and Space Physics

[Affiliated Centers]

Center for Atmospheric and Oceanic Studies (CAOS)

Planetary Plasma and Atmospheric Research Center (PPARC)

Research Center For Prediction of Earthquakes and Volcanic Eruptions

Geophysics is a broad research field involving studies on solid Earth, oceans, atmosphere, upper atmosphere, ionosphere, and planets. Geophysicists use physical approaches to investigate various phenomena in these areas and study their structures as well as their long-term and short-term variations in order to clarify the formation and evolution processes of our mother Earth and the solar system. In recent years, as a natural science, geophysics has been developing in close relation with human society. During the last 60 years, the Department of Geophysics has made great efforts and important contributions to establishing the framework of geophysics. We treasure the history and traditions of many of our seniors in our department, and at the same time, we are working to open new frontiers of geophysics.

Astronomy

Cosmology

General Relativity

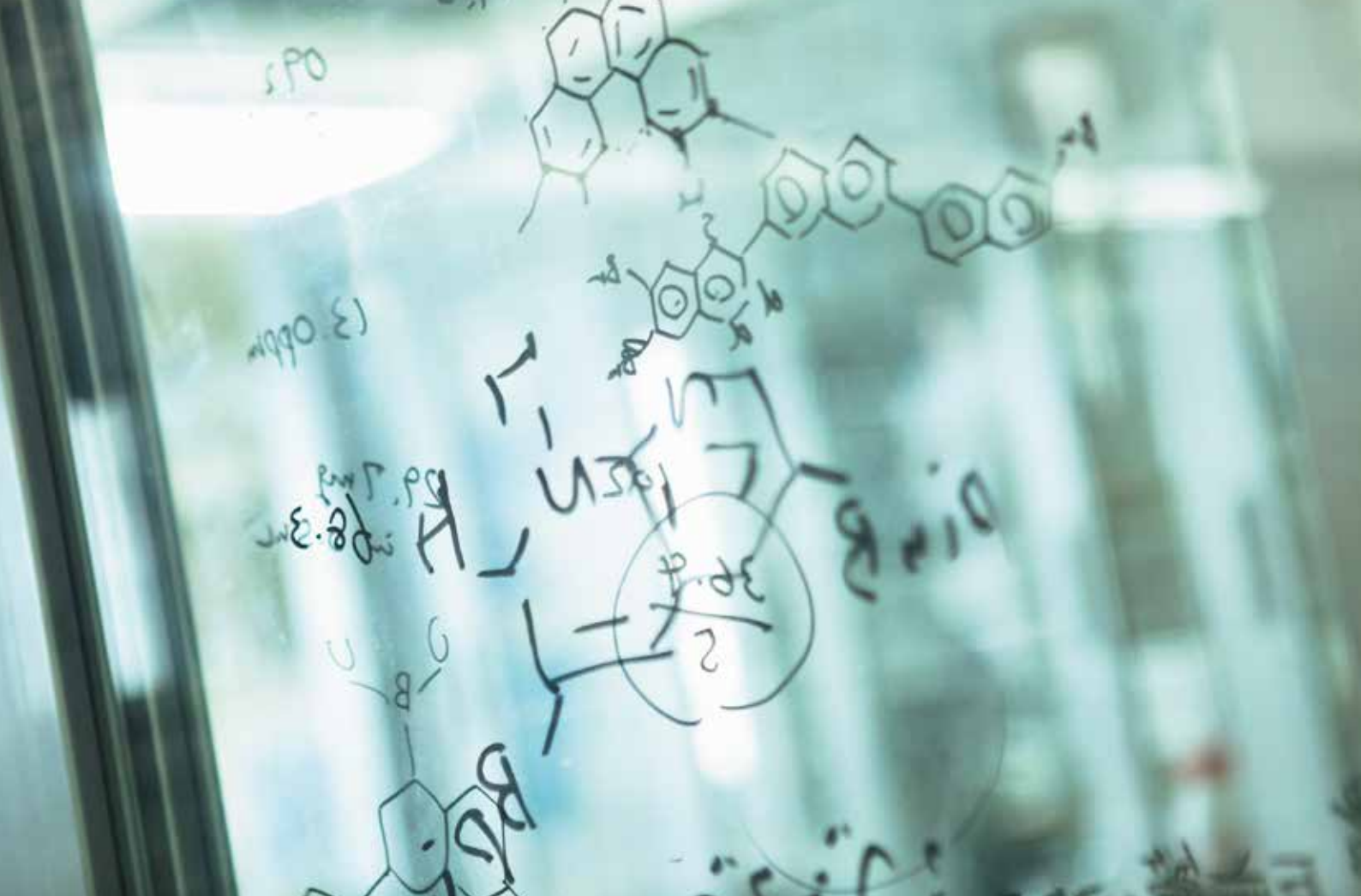
Galactic Astronomy

Stellar Physics

Experimental Astronomy

A total of 70 members in the institute, including faculty members, postdoctoral researchers, and students, are working on a wide variety of problems related to astronomical objects. The research activities cover 1) searching for planets in nearby stars, 2) understanding the physical properties of stars in our galaxy, 3) revealing the formation and evolution processes of galaxies in the distant universe, and 4) understanding the cosmological framework of the universe. These subjects are studied in two ways. The first is through theoretical research, where models are created and analyzed to understand a variety of fundamental astronomical phenomena on the basis of physics and mathematics, occasionally using computational resources, such as super-computers. The second is through observational research. Astronomical phenomena are observed with electromagnetic waves at all wavelengths, such as radio, infrared, optical, ultraviolet, X-ray, and gamma-rays, using various modern telescopes, such as the 8.2m Subaru Telescope at the summit of the 4,200-m Mauna Kea on the island of Hawaii. The data obtained with such observations are analyzed and compared with physical models of the astronomical phenomena to open even more windows into unexplored parts of the universe. Moreover, the development of new telescopes and cutting-edge instruments is a unique and important activity in the institute.





Earth Science

Division of
GeoEnvironmental
Science

- Paleo-Environment Change
- Paleo-Bioevents and Paleontology
- Fault and Geodynamics
- Geomorphology
- Human Geography
- Climate

The Earth's integrated system of the atmosphere, hydrosphere, and biosphere is driven by the energy of solar radiation just as we are, whereas the solid Earth (lithosphere) is driven by the decay energy of the radioactive elements in the Earth. The boundary between these four spheres is called the Geosphere, and these four spheres interact through the circulation of energy and materials. A huge variety of episodes has occurred and evolved in the Geosphere during the long history of the Earth, and we human beings are the newest product of this sphere. The Department of Geoenvironmental Science is looking at the past, present, and future in the Geosphere's environment, examining ancient rocks and sediments with a current knowledge of physics, chemistry, and biology. However, these changes cannot yet be fully understood by using today's observational techniques alone since they only produce snapshots of the evolving Geosphere. Our Department is coming to a better understanding of the Earth's environmental system in order to combat the serious problems caused by human activities.

Chemistry

- Inorganic and Analytical Chemistry
- Organic Chemistry
- Physical Chemistry
- Interdisciplinary Chemistry
- Advanced Atomic and Molecular Science
- Reaction Mechanism and Dynamics
- Solid-State Chemistry
- Biofunctional Chemistry

[Affiliated Centers]

Research and Analytical Center for
Giant Molecules

The department of chemistry was established in June 1907 with the establishment of Tohoku Imperial University, predecessor to the present Tohoku University. In the 100 years since its founding, the Department of Chemistry has grown to become the most prestigious institution of chemistry in Japan. The Department of Chemistry with its 52 faculty members in 17 research groups is now the largest in the nation. The ratio of students to faculty members is almost 1:1, which creates a highly conducive environment for student research and study. The members of the Department of Chemistry are all instilled with a strong motivation to seek out and investigate the unknown, and many of our most outstanding scientists have left a legacy of important work in their respective fields. Riko MAJIMA, Shiro AKABORI, Tetsuo NOZOE, and Koji NAKANISHI, all of whom are recipients of the National Culture Award of Japan, are four of the most distinguished members of our faculty.





Biology

Biomolecular Sciences

Developmental Biology and Neurosciences

Environmental Life Sciences

The land that we stand on, the air that we breathe, the food that we eat are all products of the past 4.6 billion years of the Earth's history. We human beings too. How were we created? Where will we go? The Department of Biology was established in 1922 and has been producing a number of graduates and postgraduates active in both academic and non-academic worlds. Since the Department was founded, the priority-in-research and open-door spirits of Tohoku University have governed the Department as well. Although the Department has kept the spirit and tradition founded by the pioneers, it has promoted updated research activities in response to the ever-developing area of biological sciences. Present research activities cover a wide range of basic biology from molecular and cellular biologies through ecology and evolutionary biology. Three facilities, the Asamushi Laboratory of Marine Biology, the Mount Hakkoda Botanical Laboratory, and the Botanical Garden, contribute to the education and research activities in the department. In 2001, the whole department was reorganized to establish the Graduate School of Life Sciences. We are more than happy to welcome talented biologists and students to promote and enjoy biological sciences in Sendai.

Earth Science

Division of
Earth and Planetary Materials
Science

Mineral

Natural Resources and Environmental

Geochemistry

Early Solar System Evolution

Earth and Planetary Material Physics

Volcanology and Geofluids

Geology and Petrology

Research on highly advanced Earth and Planetary Science is required to address new topics and find new tools to not only understand the phenomena of the Earth but also those of space. These include studies on the ultra-high pressure of planetary minerals, the evolution of materials and life on the Earth and in space, the formation of low-gravity materials in space, and various molecular-scale materials-formation mechanisms. The Department of Earth Science has not hesitated in adopting new methods and in developing advanced techniques involving synchrotrons, microgravity, and novel in-situ observation systems for crystal growth and phase transitions.



Academic Exchange Agreements with Foreign Institutions (As of Jan. 22, 2016)



Total of 205 institutions from 34 countries/regions

India	<ul style="list-style-type: none">Indian Institute of Technology BombayIndian Institute of Science	<ul style="list-style-type: none">Fudan UniversityWuhan University of Technology	<ul style="list-style-type: none">University of California, IrvineUniversity of California, Los Angeles	<ul style="list-style-type: none">Ruprecht-Karls-Universität HeidelbergJohannes Gutenberg-Universität Mainz
Sri Lanka	<ul style="list-style-type: none">University of Moratuwa	<ul style="list-style-type: none">Chongqing University	<ul style="list-style-type: none">University of California, Merced	<ul style="list-style-type: none">Deutsches Zentrum für Luft- und Raumfahrt e.V.
Thailand	<ul style="list-style-type: none">Asian Institute of TechnologySuranaree University of TechnologyKing Mongkut's Institute of Technology LadkrabangChulalongkorn UniversityThammasat UniversityChiang Mai UniversityKing Mongkut's University of Technology ThonburiThai-Nichi Institute of Technologyi	<ul style="list-style-type: none">Tongji UniversityOcean University of ChinaUniversity of Science and Technology BeijingNanjing University of Aeronautics and AstronauticsXiamen UniversityHuazhong University of Science & TechnologyXi'an Jiaotong UniversityEast China Normal University	<ul style="list-style-type: none">University of California, RiversideUniversity of California, San DiegoUniversity of California, San FranciscoUniversity of California, Santa BarbaraUniversity of California, Santa CruzUniversity of WashingtonPurdue UniversityUniversity of Alaska	France <ul style="list-style-type: none">University of PaderbornTechnische Universität ChemnitzUniversité Pierre and Marie Curie (PARIS VI)Université Rennes 2 Haute-BretagneUniversité de GrenobleUniversité de StrasbourgUniversité de Rennes 1Institut National des Sciences Appliquées de LyonUniversité de BordeauxÉcole Centrale GroupÉcole Centrale de LilleÉcole Centrale de LyonÉcole Centrale Marseille (EGIM)École Centrale de NantesÉcole Centrale ParisÉcole des Mines d'Albi-CarmauxInstitut d'Études Politiques de LyonÉcole Normale Supérieure de LyonÉcole PolytechniqueUniversité Lumière Lyon 2Université de Technologie CompiègneÉcole Nationale Supérieure des Mines de Saint-EtienneBordeaux Institute of TechnologyUniversité de Lyon
Singapore	<ul style="list-style-type: none">National University of Singapore	<ul style="list-style-type: none">Beihang University	<ul style="list-style-type: none">Colorado School of Mines	
Indonesia	<ul style="list-style-type: none">Universitas IndonesiaGadjah Mada UniversityInstitut Teknologi BandungBogor Agricultural UniversityUniversity of BrawijayaPadjadjaran University	<ul style="list-style-type: none">Lanzhou UniversityTianjin UniversityDalian University of TechnologyYangzhou UniversityChinese Academy of Social SciencesSoutheast UniversityShanghai Jiao Tong UniversityBeijing University of TechnologyBeijing University of Posts and TelecommunicationsThe Hong Kong University of Science and TechnologyShanghai Ocean UniversityChina University of Geosciences (Wuhan)City University of Hong KongDongbei University of Finance and EconomicsShanghai University	<ul style="list-style-type: none">Syracuse UniversityInstitute of International EducationTemple UniversityHarvard UniversityTexas A&M UniversityUniversity of Hawaii at ManoaNational Institutes of Health of the Department of Health and Human ServicesUniversity at Albany, State University of New YorkUniversity of North Carolina, CharlotteCase Western Reserve UniversityMichigan State UniversityUniversidad Simón Bolívar	
South Korea	<ul style="list-style-type: none">Chonbuk National UniversitySeoul National UniversityGwangju Institute of Science and TechnologyPukyong National UniversityPohang University of Science and Technology(POSTECH)Korea Advanced Institute of Science and Technology(KAIST)Chungnam National UniversityKyungpook National UniversityYeungnam UniversityDong-eui UniversityChosun UniversityKorea UniversityChangwon National UniversitySogang UniversityYonsei UniversityPusan National UniversityKongju National UniversityChung-Ang UniversityKyung Hee UniversitySungkyunkwan UniversityKookmin University	Taiwan <ul style="list-style-type: none">National Taiwan UniversityNational Taiwan Ocean UniversityNational Chung Cheng UniversityNational Cheng Kung UniversityNational Chiao Tung UniversityNational Chung Hsing UniversityNational Tsing Hua University, HsinchuNational Chengchi UniversitySoochow UniversityNational Central UniversityUniversity of Tehran	Venezuela <ul style="list-style-type: none">Aalto University	
			Finland <ul style="list-style-type: none">University of Oulu	
			Sweden <ul style="list-style-type: none">Tampere University of TechnologyUmeå UniversityKTH Royal Institute of TechnologyUppsala UniversityStockholm UniversityChalmers University of Technology	Spain <ul style="list-style-type: none">University of GranadaUniversidad de Valladolid
			United Kingdom <ul style="list-style-type: none">Imperial College LondonThe School of Oriental and African Studies, University of LondonThe University of NottinghamThe University of YorkThe University of SheffieldUniversity College LondonBelgian Nuclear Research Centre	Italy <ul style="list-style-type: none">Università degli Studi di Roma "La Sapienza"Università degli Studi di FirenzePolitecnico di TorinoUniversity of Naples Federico IIUniversità degli Studi di VeronaPolitecnico di MilanoGlobal Education for European Engineers and Entrepreneurs(GE4)Universität Wien
			Belgium <ul style="list-style-type: none">University of Groningen	Austria <ul style="list-style-type: none">Ecole Polytechnique Fédérale de Lausanne
Malaysia	<ul style="list-style-type: none">University of Malaya	Iran <ul style="list-style-type: none">Istanbul Technical University	Netherlands <ul style="list-style-type: none">University of TwenteDelft University of Technology	Switzerland <ul style="list-style-type: none">Eidgenössische Technische Hochschule Zürich
Mongolia	<ul style="list-style-type: none">The Mongolian Academy of SciencesMongolian University of Science and Technology	Morocco <ul style="list-style-type: none">Université Mohammed V-Agdal Rabat	Germany <ul style="list-style-type: none">University of CologneUniversity of TwenteDelft University of TechnologyRheinisch-Westfälische Technische Hochschule Aachen(RWTH Aachen)Technische Universität DortmundUniversität des SaarlandesTechnische Universität DarmstadtGeorg-August-Universität GöttingenTechnische Universität DresdenTechnische Universität BerlinTechnische Universität MünchenKarlsruher Institut für TechnologieTechnische Universität Kaiserslautern	Poland <ul style="list-style-type: none">Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences
Vietnam	<ul style="list-style-type: none">Vietnam National University, HanoiForeign Trade UniversityHo Chi Minh City University of Technology	South Africa <ul style="list-style-type: none">The University of KwaZulu-Natal		Russia <ul style="list-style-type: none">Siberian Branch of the Russian Academy of SciencesLomonosov Moscow State UniversityNovosibirsk State UniversityFar Eastern Branch, Russian Academy of Science(FEB-RAS)Lobachevsky State University of Nizhni NovgorodFar Eastern Federal UniversityNational Research University Higher School of EconomicsSaint Petersburg State UniversityNational Technical University of Ukraine "Kyiv Polytechnic Institute"ITER International Fusion Energy Organization
China	<ul style="list-style-type: none">Northeastern UniversityUniversity of Science and Technology of China•Tsinghua University, BeijingNanjing UniversityPeking UniversityJilin UniversityZhejiang University	Australia <ul style="list-style-type: none">The University of SydneyThe University of New South WalesThe Australian National UniversityThe University of Melbourne		
		New Zealand <ul style="list-style-type: none">The University of Auckland		
		Canada <ul style="list-style-type: none">University of WaterlooUniversity of OttawaPennsylvania State UniversityUniversity of CaliforniaUniversity of California, BerkeleyUniversity of California, Davis		
		USA		

Educational Programs

Degree Programs

[Undergraduate]

- AMC (Advanced Molecular Chemistry Course)
A four-year undergraduate chemistry course in English, and Japanese language is not required to obtain a Bachelor of Science degree. There is no application fee.
- General Undergraduate Program (Taught in Japanese)

[Graduate]

- IGPAS (International Graduate Program for Advanced Science)
Master's and doctoral program with 16 and 4 MEXT scholarship positions, respectively, open to those who enter in Fall 2017. Master's students are eligible to continue their scholarships for another three years in the doctoral course.
- General Graduate Program
- Double Degree Program with Ecoles Centrales and INSA-Lyon, France
- Joint Education Program with Tsinghua University, China

Non-degree Programs

[Exchange Programs with Partner Institutions]

- JYPE:Junior Year Program in English (Undergraduate)
- DEEP:Direct Enrollment Education Program (Undergraduate , Graduate)
- COLABS:Cooperative Laboratory Study Program (Graduate)

[Others]

- Auditing Student Program (Undergraduate)
- Research Student Program (Graduate)
- Special Visiting Trainee (Undergraduate , Graduate)

Financial Aids

- Financial Aids
- International students may have opportunities to apply for fellowships/scholarships before or after admission. In addition, degree students are eligible to apply for admission and/or tuition fee waivers.
- Tohoku University President Fellowship
 - MEXT (Japanese Government) scholarship
 - JASSO (Japan Student Services Organization) scholarship
 - JSPS (Japan Society of Promotion of Science) research fellowship
 - Private foundation scholarships

Number of Students

Faculties / Schools

(as of May 1, 2015)

Faculties / Schools	Student Quota	Number of Students		
Science	1,296	1,434	(231)	[31]
Total	9,994	11,060	(2,800)	[174]

1. () indicates the number of female students included in counts.
2. [] indicates the number of international students included in counts.

Graduate Schools

(as of May 1, 2015)

Graduate Schools	Master's Program / Profession Degree Program			
	Student Quota	Number of Students		
Science	524	586	(55)	[55]
Total	3,896	4,106	(900)	[477]

Graduate Schools	Doctoral Program			
	Student Quota	Number of Students		
Science	390	297	(43)	[60]
Total	2,656	2,651	(677)	[534]

1. () indicates the number of female students included in counts.
2. [] indicates the number of international students included in counts.

Affiliated Research Institutes

The Graduate School of Science has formal collaborative agreements with several affiliated research institutes. More than 100 students participate in research activities in the following affiliated institutes.

Inside Tohoku University

- Research Center for Neutrino Science (RCNS)
- Research Center for Electron Photon Science (ELPH)
- Institute for Materials Research (IMR)
- Institute of Multidisciplinary Research for Advanced Materials (IMRAM)
- Cyclotron and Radioisotope Center (CYRIC)
- International Research Institute of Disaster Science (IRiDeS)
- WPI Advanced Institute for Materials Research (AIMR)
- Research Center for Marine Biology, Graduate School of Life Sciences
- Tohoku University Museum (Museum of Natural History)

Outside Tohoku University

- High Energy Accelerator Research Organization (KEK)
- Japan Atomic Energy Agency (JAEA)
- RIKEN
- National Institute for Materials Science (NIMS)
- NTT Basic Research Laboratories (BRL)
- National Research Institute for Earth Science and Disaster Prevention (NIED)
- Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
- National Institute of Advanced Industrial Science and Technology (AIST)
- National Institute for Environmental Studies (NIES)

Sendai City

Sendai with a population of more than one million is a political and economic center of the Tohoku (northeast) Region in Japan. It is a large city, and it is known throughout Japan as a modern city in harmony with nature.

The city possesses beautiful scenery, such as the Hirose River, which runs the center of the city, and lush Zelkova trees throughout the city. Greenery is especially abundant in the center of the city, which has tree-lined streets and parks. As a result, Sendai is called the "City of Trees."

In summer, Sendai's Tanabata Festival*, which is the largest Tanabata festival in Japan, is held. In December, the trees are decorated with thousands of lights for the Pageant of Starlight.

*Tanabata is a Japanese star festival, celebrating the meeting of the deities Orihime and Hikoboshi (represented by the stars Vega and Altair, respectively). According to the legend, the separated lovers are allowed to meet only once a year on the seventh day of the seventh lunar month. However Sendai Tanabata takes place from August 6 to 8, and the entire city is filled with colorful Tanabata decorations.

Location:North-East of Japan
Distances from Tokyo: 350 km
Tohoku Shinkansen Line: 1 hr 31 min



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