IPC

Department of Physics,
Graduate School of Science, Osaka University

International Physics Course

OSAKA UNIVERSITY

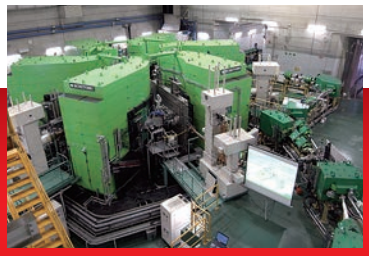
Enter into the frontiers of physics at the IPC (International Physics Course), where research is possible free from the barrier of language.

Broad-ranging research subjects that span the entire field of physics

Osaka University is on the frontiers of physics. With facilities including the largest cyclotron accelerator in Japan and large-scale laser systems, we are carrying out physics research that seamlessly integrates theory and experimentation. Osaka University is the only education and research institution of its kind in the world, and is home to the work of researchers active in many different areas of physics. Studying at Osaka University will provide you with a variety of opportunities to interact with researchers at the forefront of the field, letting you feel and understand the dynamism of physics from an early stage. There are nearly 50 physics laboratories at Osaka University, spanning the full range of physics from particle and atomic experiments and theory to high-temperature superconductivity, magnetism, and material properties. You are certain to discover the best area for you own research.

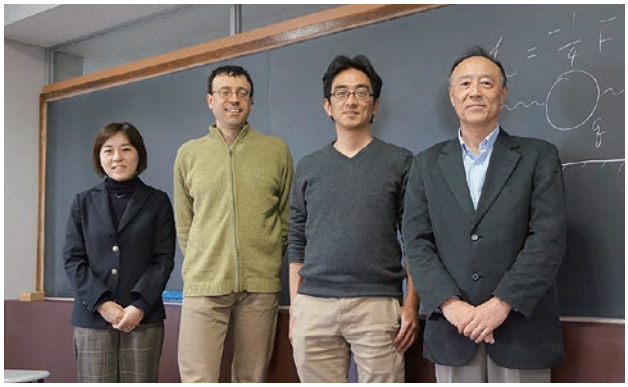
There is no need to worry about learning Japanese. At the Department of Physics in the Osaka University Graduate School of Science, we have established the IPC (International Physics Course), which is integrated with the rest of our operations in Japan. The most important feature of this IPC is that all lectures and research are conducted in English. Overseas students are able to begin research activities right away even if they do not understand Japanese. Students who perform well academically can obtain Master's and PhD degrees.

All lectures and research guidance are provided in English.



International Physics Course

Welcome to the IPC, the International Physics Course!



IPC Staff from left to right:
Mizuho Suzuki (Secretary), Luca Baiotti (Associate Professor),
Mikito Koshino (Vice-Director and Professor),
and Atsushi Hosaka (Director and Professor)

Physics is a common language that describes the laws of nature.

English is a common language used for international communication.

As a graduate program in physics, the IPC provides research and education in English. Osaka University has many research institutes that have large facilities that contribute to state-of-the-art research in physics. For instance, in particle nuclear physics, which I am working on, RCNP (Research Center for Nuclear Physics) has a cyclotron accelerator facility, which is the biggest among university-based facilities. Research groups are working in collaboration with world-leading institutes like CERN LHC, J-PARC, BNL, FNAL, TRIUMF, and so on. Theoretical research using the world top-class supercomputers is also actively performed. The physics department and its linked research institutions are committed to educating the skilled researchers, determined leaders, and innovative problem-solvers necessary for progress in world-class research.

The IPC covers almost all fields of physics. You can choose what you want to study in the IPC and many professors will help you achieve your goal.

IPC students are acquiring the abilities and attitudes required to carry out research in the international physics community and their success is our top priority.

Atsushi Hosaka
Director of the IPC

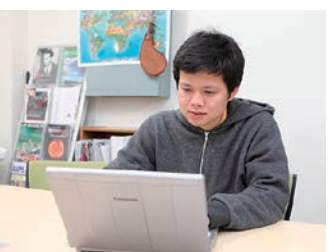
Aleksander Rebane
from Estonia
studied at the Eidgenössische Technische Hochschule Zürich

I am working to expand the methods for research in biology, and I believe that the study of physics – in particular nonequilibrium physics – may be a means of achieving this. When I had this idea, I searched the world for places to study overseas. Although I had never been to Japan, when I learned that Osaka University has prepared an environment for research at the top global level, and that new students become members of a research group right away, I decided to study at the IPC. In addition, the fact that I can receive academic scholarships also pushed me towards studying in Japan, a country which I knew little about. I have no problems with the research and lectures, as they are all conducted in English. The instructors are kind, and will carefully answer any questions that I have. This is one of the advantages of studying at an IPC with a small student-group system. Although I am sometimes bewildered by differences in culture and language in everyday life and communication, that is only natural. At the IPC, students can attend Japanese language classes suitable for their level of ability free of charge. I am enjoying learning Japanese. I believe that everything I am experiencing at the IPC will be of great benefit in my later life.

Learn Japanese while studying and researching in English.

I participated in a short-term training course, where I chose my research area and decided to study abroad.

I decided to study at the IPC when I participated in a short-term training course in 2009 and I chose to study under the supervision of Professor Kuno. Because I was able to actually see the experiment facilities with my own eyes and have meetings with Professor Kuno, I was confident that I would be able to conduct the research I wanted at Osaka University. I think it was very lucky for me that I could visit a variety of laboratories in my selection process. It was even better after I learned that I could conduct research in English at the IPC. For the last six months, I have been involved in the MuSIC (Muon Science Innovative Channel) project, which aims to be one of the highest-intensity muon sources in the world. In order to verify that the system is functioning as it was designed, we are conducting experiments at each stage of the construction process, and, with the support of my colleagues in the laboratory, this research has been proceeding smoothly. I am very fortunate and excited to have the opportunity to participate in the construction phase of a system that we will be able to present proudly to the world.



Tran Hoai Nam
from Vietnam
studied at the Hanoi University of Science and Technology

The Department of Physics at Osaka University offers world-class education to its undergraduate and graduate students. We have about 50 faculty members who teach physics to 76 undergraduate students per year in the Physics Department, and over 1000 students in other schools of the university. Our award-winning faculty members perform cutting edge research. As one of the leading universities in Japan, our mission is to serve the people of Japan and the world through education, research, and outreach.

The Department of Physics was established in 1931 when Osaka University was founded. The tradition of originality in research was established by the first president of Osaka University, Hantaro Nagaoka, a prominent physicist who proposed a planetary model for atoms before Rutherford's splitting of the atom. Our former faculty include Hidetsugu Yagi, who invented the Yagi antenna, and Seishi Kikuchi, who demonstrated electron diffraction and also constructed the first cyclotron in Japan. Hideki Yukawa created his meson theory for nuclear forces when he was a lecturer at Osaka University, and later became the first Japanese Nobel laureate. Other prominent professors in recent years include Takeo Nagamiya and Junjiro Kanamori who established the theory of magnetism, and Ryoyu Uchiyama who developed gauge theory.

Since then, our department has expanded to cover a wide range of physics, including experimental and theoretical elementary particle and nuclear physics, condensed matter physics, theoretical quantum physics, and interdisciplinary physics. In 2010, the "International Physics Course (IPC)" was created to offer classes in English to students from abroad.

The department also has cooperating groups in five laboratories in the university. Many faculty and students in the department collaborate with other laboratories in Japan and abroad, such as KEK, J-PARC, RIKEN, SPring8, CERN, FNAL, TRIUMF, RAL, and PSI.

Graduate Program

The Department of Physics at Osaka University offers a two-year graduate program in physics leading to a Master of Science in Physics, and a three-year program in Physics leading to a Ph.D. degree.

M.S. Program

The M.S. program provides advanced study and training in research in physics. A total of 68 students are enrolled each year. The course includes lectures and relevant practical work. Each student joins a research group to pursue a course of supervised research on an approved subject in physics. A Master of Science in Physics is awarded if a submitted thesis and its oral presentation pass the department's criteria.

Ph.D. Program

For the Ph.D. program each student joins a research group, and is assigned a research supervisor. Independent original research is central to the Ph.D. and successful graduates require a high degree of self-motivation. The final examination involves the submission of a Ph.D. thesis followed by an oral examination assessed by both internal and external examiners.

Graduates from the M.S. program either advance to the Ph.D. program or go to industry. Many graduates from the Ph.D. course become postdocs or assistant professors and continue their research. Graduates going to industry are highly valued for their understanding of physics and their problem solving abilities.

Research Groups

Department of Physics, Osaka University

Department Chairs

Particle and Nuclear Physics

Experimental Nuclear Physics, Kawabata Group
High Energy Physics, Yamanaka Group
Experimental Particle Physics, Kuno Group

Condensed Matter Physics and Interdisciplinary Physics

Novel Quantum Phenomena, Tajima Group
Physics of Strongly Correlated Electron Systems, Hanasaki Group
Dynamics and Control of Quantum Many-body Systems, Kobayashi Group
Interface Physics, Matsuno Group
Mass Spectrometry Group, Toyoda Group

Fundamental Physics

Particle Physics Theory, Kanemura Group
Particle Physics Theory, Onogi Group
Particle Physics Theory, Hashimoto Group
Nuclear Theory, Asakawa Group

Quantum Physics

Theory of Electrons in Solids, Kuroki Group
Condensed Matter Theory, Koshino Group

Cooperative Chairs

Project Research Center for Fundamental Sciences

Mass Spectrometry Group, Toyoda Group

Center for Advanced High Magnetic Field Science

Hagiwara Group

Research Center for Nuclear Physics (Toyonaka Laboratory)

Fundamental Nuclear Physics Group

Cybermedia Center

Interdisciplinary Computational Physics Group

Graduate School of Frontier Biosciences

Solid-State Spectroscopy, Kimura Group

Center for Education in Liberal Arts and Sciences

Asano Group

Research Center for Nuclear Physics

Quark Nuclear Physics Theory Group
Particle and Nuclear Reactions 1A Group
Particle and Nuclear Reactions 1B Group
Accelerator Physics Group

Institute of Laser Engineering

Intense Laser Science Experiment Group
Theory of High Energy Density Science Group

Institute of Scientific and Industrial Research

Isoyama Group
Oguchi Group
Quantum System Electronics Group

International Physics Course

General-relativistic astrophysics

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