The Cover Page: Ford Circles near $\sqrt{2}$

Ford circles let us visually understand the world of rational numbers. A Ford circle is a circle centered at $(\frac{p}{q}, \frac{1}{2q^2})$ with radius $\frac{1}{2q^2}$, where $\frac{p}{q}$ is an irreducible fraction. Each Ford circle is tangent to the horizontal axis, and no two circles intersect with each other. In fact, one can fit all Ford circles beautifully in the upper half plane. The cover page shows the Ford circles corresponding to those rational numbers near $\sqrt{2}$.

In particular, the bolder colored circles represent the first few terms of the sequence $1, 1 + \frac{1}{2} = \frac{3}{2}, 1 + \frac{1}{2 + \frac{1}{2}} = \frac{7}{5}$, $1 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2}}} = \frac{17}{12}, \ldots$, which converges to $\sqrt{2}$, as the following continued fraction expansion of $\sqrt{2}$ shows:

$$\sqrt{2} = 1 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{2 + \cdots}}}$$

The figure suggests how quickly this sequence converges to $\sqrt{2}$. As this example shows, with the aid of Ford circles, theories involving rational numbers and continued fractions can be understood from a geometric aspect.
Study and research in mathematics are often compared to mountain climbing. This is because the experience of piling up logical steps to reach our goals or of obtaining surprising new prospects by finding unknown routes, viewpoints and concepts is similar to the experience of mountain climbing. The mathematics you have learned in high school and undergraduate programs is like climbing well-known mountains with a passage leading up to the start point of a mountain trail and a nicely paved path. But, in a graduate program, you often face punishing paths and untrampled routes. I do not necessarily mean forbidding lofty mountains such as the Himalayas. Even in familiar mountains nearby, there might be secret routes and hidden lookout points. It is also appealing to aim at mountains spreading over from mathematics to other academic fields. In recent years, many mountains crossing over the boundaries of mathematics have been discovered, ever expanding the research field of mathematics. If you are considering studying and researching mathematics in graduate school, please contemplate which mountain you would like to climb. I hope that the information on our faculty members and the mind map provided in this brochure will assist you in doing this.

In mountain climbing, the higher your goals are, the greater the need is to develop physical strength and to gather background information. Even if you are planning to climb a familiar mountain, to avoid accidents, it is always important to check the weather forecast and to make prudent judgments. Just as in mountain climbing, learning and researching mathematics require considerable preparation and determination. As this brochure carefully explains, it is our belief that our graduate program provides sufficient support systems for you to study and research mathematics. Our basic policy in educational programs stresses fundamental knowledge of mathematics and broad coverage of various fields of it. Based upon this policy, we offer systematically organized courses, a wide variety of intensive courses, and a tutorial program under the supervision of advisors. We are also proud of our excellent library, secure computer network system, and friendly supporting staff. Furthermore, in recent years, we have been strengthening our career planning support.

Perhaps some of you might think that you can do mathematics alone. But, to avoid becoming complacent, you should not neglect communicating with various people. I advise you to keep your intellectual curiosity, to ask questions when you are puzzled, and to try to explain to others when you discover something or solve interesting problems. These days, gathering information has become simple due to the development of the Internet. Yet, it cannot replace face-to-face communication with people from other academic disciplines or from different cultural backgrounds. We provide various opportunities for interaction such as Café David* and many events for international students. I encourage you to seize these opportunities.

One of the biggest goals for a graduate student in mathematics is to submit a masters’ thesis or a doctoral thesis and have it approved by the thesis committee. It can be compared to writing a useful guidebook on a mountain you have investigated and making people interested in that mountain. I would like to invite you to find your favorite mountain and tell others its charm. We, the members of the Graduate School of Mathematics, will gladly help you in that endeavor.

footnote
*) a common office hour in our graduate school (see page 9).
**Introduction of Teaching Faculty**

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Keyword</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AWATA, Hidetoshi</strong></td>
<td>Integrable models, Conformal field theory</td>
</tr>
<tr>
<td></td>
<td>My current subject is quantum field theory with infinite-dimensional symmetry such as Virasoro algebra, for example, the string theory, conformal field theory and two-dimensional integrable model.</td>
</tr>
<tr>
<td><strong>GARRIGUE, Jacques</strong></td>
<td>Programming languages, Type theory</td>
</tr>
<tr>
<td></td>
<td>I am studying the theory underlying functional programming languages. For more than 15 years, I have been working at fitting types onto the world, but the job is far from finished.</td>
</tr>
<tr>
<td><strong>FUJIE-O†OMOTO, Futaba</strong></td>
<td>Graph colorings and labelings, Traversability in graph, Connectivity in graph</td>
</tr>
<tr>
<td></td>
<td>In the area of graph theory, my research interests include studying graph structures through graph colorings/labelings and distances in graphs. One of my current topics is to study traversability in graphs using various covering walks.</td>
</tr>
<tr>
<td><strong>GYOJA, Akihiko</strong></td>
<td>Representation theory, Algebraic group</td>
</tr>
<tr>
<td></td>
<td>I am working to formulate &quot;(unknown) invariant theory&quot; which should associate to infinite dimensional representations, mainly using algebraic analysis, algebraic geometry, and representation theory.</td>
</tr>
<tr>
<td><strong>FUJIWARA, Kazuhiro</strong></td>
<td>Number theory, Arithmetic geometry, Non-commutative class field theory</td>
</tr>
<tr>
<td></td>
<td>I am trying to understand a very primitive but basic object, &quot;integers,&quot; via modern aspects such as automorphic forms and Shimura varieties (non-commutative class field theory). My approach mainly uses algebraic and geometric methods, including cohomology theory.</td>
</tr>
<tr>
<td><strong>HAMANAKA, Masashi</strong></td>
<td>Mathematical physics, Elementary particle physics, Noncommutative solitons</td>
</tr>
<tr>
<td></td>
<td>I am interested in the mathematical structure behind laws of nature, especially elementary particle physics and string theory. Presently, I study noncommutative solitons and integrable systems related to N=2 string theory and twistor theory.</td>
</tr>
<tr>
<td><strong>FURUSHO, Hidekazu</strong></td>
<td>Number theory, Arithmetic geometry, Motivic fundamental groups</td>
</tr>
<tr>
<td></td>
<td>I am working on (p-adic) periods and (p-adic) differential equations associated with motivic fundamental groups. I am also working on structures of special types of quantum groups associated with the KZ-equations.</td>
</tr>
<tr>
<td><strong>HAYASHI, Masahito</strong></td>
<td>Quantum information, Information theory</td>
</tr>
<tr>
<td></td>
<td>In order to unravel the mystery of quantum theory, I study quantum information theory based on the information theoretical aspect. My study treats this topic from the viewpoints of information theory and representation theory.</td>
</tr>
</tbody>
</table>
### Graduate School of Mathematics NAGOYA UNIVERSITY

#### Quantum group, Hopf algebra, Tensor category

The field I am working in is quantum groups and their representations. In particular, I am interested in generalized quantum groups and their relations to other areas of mathematics, such as classical representation theory and integrable systems.

---

#### Homogeneous spaces, Unitary representations

I study geometry and analysis on a manifold whose symmetry is not so small but not so large. I am interested in how a 'strain' of the manifold is reflected on function spaces over the manifold.

---

#### Homotopy theory, Algebraic K-theory, p-adic arithmetic geometry

My research focuses on the study of automorphisms of high dimensional manifolds through homotopy theory, algebraic K-theory, and topological cyclic homology. In this investigation, invariants and constructions in p-adic arithmetic geometry naturally appear.

---

#### Hyperbolic geometry, Kleinian groups

My research interest is the theory of Kleinian groups. In this area, hyperbolic geometry, Riemann surfaces and low-dimensional topology are closely related to each other. I study the deformation spaces of Kleinian groups which have fractal boundaries.

---

#### Complex Geometry, Bergman kernel, Monge-Ampère equation

I'm currently interested in the geometry of the space of Kahler metrics and various algebraic stability conditions. Geometric quantization of this infinite dimensional space is supported by Bergman kernel asymptotics and geodesity of a curve is characterized by the complex Monge-Ampère equation.

---

#### Crepant resolution, Quotient singularity, McKay correspondence

I study quotient singularities of finite groups. I am interested in the geometric and algebraic structure of them and their correspondences. They are also related to super string theory in physics.

---

#### Partial differential equations, Navier-Stokes flow

My interests are focused on the existence, uniqueness, regularity, stability and asymptotic behavior of the Navier-Stokes flow in several unbounded domains. I often employ functional- and real-analytic methods.

---

#### Representation theory, Auslander-Reiten theory, Derived categories, Cluster theory

The theory of categorical structures of modules over associative algebras was initiated by Auslander, Gabriel, Ringel and others. This active research area has a strong impact on other fields of mathematics and physics, and requires fresh ideas from young students.
<table>
<thead>
<tr>
<th>Name</th>
<th>Keyword</th>
</tr>
</thead>
<tbody>
<tr>
<td>IWAKI, Kohei</td>
<td>Exact WKB analysis. Differential equations. Integrable systems.</td>
</tr>
<tr>
<td>KIMURA, Yoshifumi</td>
<td>Fluid mechanics, Vortex motion, Turbulence</td>
</tr>
<tr>
<td>KANNO, Hiroaki</td>
<td>Quantum field theory, Supersymmetric gauge, String theory, Integrable system</td>
</tr>
<tr>
<td>KOBAYASHI, Ryoichi</td>
<td>Diophantine geometry</td>
</tr>
<tr>
<td>KATO, Jun</td>
<td>Nonlinear partial differential equations, Fourier analysis</td>
</tr>
<tr>
<td>KONDO, Shigeyuki</td>
<td>Algebraic geometry, Moduli, Automorphic forms</td>
</tr>
<tr>
<td>KAWAMURA, Tomomi</td>
<td>Knot theory, Topology</td>
</tr>
<tr>
<td>KUBO, Masashi</td>
<td>Source coding, Channel coding</td>
</tr>
</tbody>
</table>

I'm studying global behaviors of solutions of differential equations defined on complex domains, particularly by the exact WKB method. I'm also interested in application of the exact WKB analysis to other research topics.

My research specialty is theoretical and computational fluid mechanics. I am interested in studying various mathematical aspects of flow problems. In particular, I am concerned with the nonlinear dynamics of vortices and waves in flows including turbulence.

I am working on the quantum geometry underlying the web of dualities among supersymmetric gauge/string theories. Representation theory and integrable systems are powerful tools for the investigation of quantum invariants in such a geometry.

Diophantine geometry of minimal surfaces is a new research area which combines two classical subjects. A mysterious geometry emerges from this coupling, in which I am recently most interested.

My research field is nonlinear partial differential equations relevant to wave propagation phenomena, and related topics. I have been studying the solvability of such equations by using functional analysis, Fourier analysis, etc.

I'm studying the geometry of the moduli spaces of some varieties by applying the theory of periods of K3 surfaces and Borcherds' theory on automorphic forms.

My main research interest is the relations between diagrams and invariants of knots and links. It is amazing that a lot of formulas are proved using advanced theories, though some of them seem to be very easy.

My research field is information theory. This includes many topics, and I especially study source coding and channel coding. These concern rate of data compression and channel capacity respectively. They are based on the theory of stochastic processes.
Graduate School of Mathematics NAGOYA UNIVERSITY

**MATSUO, Shinichiro**

**Keyword**

Zeta-functions, L-functions

I study the distribution of values and analytic properties of various zeta and L-functions, such as the Riemann zeta-function, automorphic L-functions, and multiple zeta-functions.

**Keyword**

MATSUO, Shinichiro

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**Keyword**

MATSUMOTO, Kohji

**Keyword**

Geometric analysis, differential geometry

My research interests include gauge theory, Nevanlinna theory, and positive scalar curvature. I have worked on topics such as the ASD equations, the Seiberg-Witten equations, Brody curves, mean dimension, and the Kazdan-Warner problem.

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**Keyword**

NAITO, Hisashi

**Keyword**

Differential geometry, Variational problems, Computer network systems

My research subjects are geometric variational problems and nonlinear partial differential equations. Recently, I also do research in authentication systems of computer networks.

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My research subjects are geometric variational problems and nonlinear partial differential equations. Recently, I also do research in authentication systems of computer networks.

**Keyword**

MINAMI, Kazuhiko

**Keyword**

Solvable lattice models, Statistical mechanics, Quantum structures

I mostly work in theories of quantum and statistical structures of lattice models. Within these areas, one can work on problems involving solvable lattice models, their algebraic structures, critical phenomena, and applications to magnetic materials.

**Keyword**

MINAMI, Kazuhiko

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**Keyword**

NAKANISHI, Tomoki

**Keyword**

Quantum integrable systems, Quantum groups

I study (i) integrable systems in quantum dynamics and field theories, (ii) algebraic structures and the representation theories behind them, such as quantum groups and Lie algebras, and (iii) the interplay of (i) and (ii).

**Keyword**

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**Keyword**

NAKASHIMA, Makoto

**Keyword**

Noncommutative geometry, The Atiyah-Singer index theorem

Noncommutative Geometry is a new framework in Mathematics proposed by A. Connes. The Atiyah-Singer Index Theorem is a central theme in Noncommutative Geometry, which is my current research subject.

**Keyword**

NAKASHIMA, Makoto

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Noncommutative Geometry is a new framework in Mathematics proposed by A. Connes. The Atiyah-Singer Index Theorem is a central theme in Noncommutative Geometry, which is my current research subject.

**Keyword**

NAKASHIMA, Makoto

**Keyword**

Probability theory, Branching process, Statistical mechanics

Probability theory is used in several areas and has a lot of applications. I am studying branching processes and polymer models which are related to biology and physics.

**Keyword**

NAKASHIMA, Makoto

**Keyword**

Probability theory, Branching process, Statistical mechanics

Probability theory is used in several areas and has a lot of applications. I am studying branching processes and polymer models which are related to biology and physics.
Recently, I mainly study two subjects; One is Floer cohomology theory in symplectic geometry based on certain homotopical algebras (so called A*-algebras), and the other is relationships between singularity theory and symplectic/contact geometry.
I study three and four dimensional topology using gauge theory. This theory has been developed relations with various fields, such as algebraic geometry, knot theory, and physics. The geometry of three and four dimensions is very different from higher dimensions and is interesting.

I study the boundary between commutative algebras and representation theory of algebras, that is, representation theory of commutative rings. The main purpose is to understand the structure of finitely generated modules over a commutative noetherian ring.

I study special functions (hypergeometric functions, modular functions, etc.), especially period relations and iterative and series approximations to $\pi$.

My research interests are black hole spacetimes and cosmology based on general relativity (GR). Motivated by string theory, I am currently studying higher dimensional GR and anti-de Sitter spacetime.

I am studying various properties of solutions to partial differential equations by means of "estimates". Fourier analysis is the main tool, but it is also an important object of study in itself.

I study incompressible Navier-Stokes equations and their generalizations, which describe various fluid phenomena. To study these, Fourier, functional and stochastic analysis are important, and I am interested in their study, too.

I have research interests in partial differential equations. My current focus is on the study of the Cauchy problem of nonlinear dispersive equations using harmonic analysis.
Group theory, Representation theory, Geometry

Representation theory deals with symmetries in vector spaces. It is an extremely active field, with connections to various fields, both pure and applied.

Geometric representation theory, quantum algebras, stability conditions

My research interests are in the structure and representations of quantum algebras using geometric methods. I also study Bridgeland’s stability conditions and the derived categories of coherent sheaves on varieties.

Operator algebras, Tensor categories

My main interests are mathematical structures that have origins in quantum physics, such as representations of quantum algebras, quantum symmetries in operator algebras, and quantum analysis in tensor categories. Related fields in functional analysis are also in my research range.

Probability theory, Statistical mechanics

There are strict laws which govern “randomness”. Attracted by this paradox, I have decided to specialize in probability theory. I am mainly interested in research subjects related to statistical physics.
When I got off a connecting flight to Trondheim from Copenhagen, I found my breath turning into a white smoke in the cold air. It reminded me that Norway had low temperatures even in August. I often travel to Trondheim, Norway’s third largest city, for academic purposes, and this was my fifth visit. Having just attended a summer conference in Poland, I thought I already knew what the weather would be like in Norway. I should have brought along my warmer outfits! Thinking of what it would cost to buy an appropriate jacket here, I sighed deeply, again turning the air into a smoky vapor.

After leaving the airport, I enjoyed the beauty of the Nidelva River on the way to the Norwegian University of Science and Technology (NTNU). I was looking forward to seeing a familiar face in a certain office on the eighth floor at the university. When I got to the office, my face was wreathed in smiles. Dr. Reiten and I were delighted with this reunion. She was waiting there with a spare sweater and scarf ready for me. What a wonderful person she is! It was a series of papers that Professor Idun Reiten wrote during the 1970s that inspired my own choice of research.

I am always relaxed when I chat with her in English, because she has never pounced on my grammar mistakes. I couldn’t wait to tell her the latest results of my research. The details of the discoveries I had omitted in e-mails from Japan I found easy to articulate here, face-to-face. I am particularly grateful to her for showing genuine pleasure in my findings. Students come to NTNU from all over the world. I believe her presence helps to explain why.

The main purpose of this particular visit was to complete the final draft of a paper we had collaborated on. It required examining the contents minutely as the editing process neared its end. Even a slight change can make the entire article sound more sophisticated. We were also surprised to find a few conflicting statements. In the process of choosing which academic journals to submit the paper to, we spent days discussing its contents. This also entailed exchanging e-mails with a mathematician in the U.K., also a co-author. It took two busy weeks for us to complete the final draft.

I dined out with Professor Reiten the last day before my departure for Japan. We ate our usual fare, a famous fish soup. In the restaurant, I talked about topics my students in Japan are working on. She was cheerful, joking “Osamu, you were born in the very same year in which the Almost Split Exact Sequence was discovered.” A memorial was held celebrating the sixty-fifth birthday of this surprisingly energetic woman in May 2007. On the flight back to Japan, I found myself wondering how much further mathematics will advance while she is still a working scholar. I returned to Nagoya the following day to continue with my research, revitalized by the days in Norway.
In this way students can pursue a purpose-centered education suited to their area of inquiry and unfettered by their official school year.

**Level System and Educational Program**

In this way students can pursue a purpose-centered education suited to their area of inquiry and unfettered by their official school year.

**Level System**

The Level System is our central structure for classifying programs of study for educational purposes, organizing both undergraduate and graduate degree curricula as a coherent whole. Thus, all lectures and small group classes are assigned a certain level.

**Level 0**

All science majors work together in the initial introductory phase of the arts and science level 0 classes and learn essential subjects such as calculus and linear algebra.

**Level 1**

Level 1 classes deal with basic concepts that all science majors need to comprehend. This level corresponds to curricula for undergraduates in the second and third years. These classes encourage students to apply and connect mathematical concepts with other fields of science, such as physics, and to develop intuitive, logical, and abstract thinking.

**Level 2**

The scope of level 2 classes embraces various advanced concepts. These classes provide scholarly training in logical, abstract, and systematic approaches commonly used in mathematics through a wide variety of subjects. This level is intended for fourth year undergraduates and graduate students. It is advisable to complete the set of classes within two years.

**Level 3**

Level 3 classes are advanced courses, and are designed based upon the fundamental portions of the curriculum up to level 2, the core program. These are intended for all 2nd year or above graduate students and should be completed over three or four years.
Basic Principles

Emphasis on Basic Skills and Broad Minds

The Department of Mathematics and the Graduate School of Mathematics aim to cultivate self-motivated individuals, who can successfully navigate inquiry, reflection, and discovery based upon scholarly training in mathematics. Our commitment is to maintaining an enlightening environment for problem-conscious students where, together with scholars and fellow students, they can refine their ideas and apply logical reasoning in seeking solutions to problems. Prospective students should know that, in the mathematics department:

- Research planning, pursuit of research, and regular reporting of results are expected.
- The education in the department is designed to support students’ self-motivation.
- Research is pursued in dialogue with active researchers and fellow students.

Emphasis on Independent Will

The aim of the doctoral program is to foster researchers with multiple talents in mathematical sciences who are also capable of working in various fields. In the Graduate School of Mathematics, we offer doctoral students an active and global work place in order that students enrich their knowledge by working together with younger researchers. Mathematical scientists include not only those who work in a university or a laboratory but also those competent to solve problems in any field of the mathematical sciences. Therefore, we encourage you to take a broad perspective in considering your career options after graduation.

Learning Mathematics at "Cafe David"

The idea of studying mathematics brings images to mind of large lecture halls and rigorous self-study. These traditional methods of study are indeed important, but there are also dynamic alternatives. One of those is to gather various thinkers together to debate and discuss mathematics. The photo is of our own weekly event, “Cafe David”. Here, undergraduate students, graduate students, and teaching faculty gather in a casual cafe meeting style, to chat over both academic and less formal questions. We named “Cafe David” after David Hilbert, the well-known mathematician often said to represent 20th century mathematics. As the name suggests, delicious coffee is on offer for department members in attendance. Discussions here allow many to overcome the common barriers that exist between undergraduate and graduate students, or between students and faculty, or among academic areas or schools, strengthening relationships and intellectual understanding at the same time. In addition, graduate students join “Cafe David” as teaching assistants, offering a comfortable environment to answer tough questions from lectures. Faculty provide assistance here in the form of office hours and students can learn from interaction in this active public learning space. Wouldn’t you like to come and take a look at our diverse learning styles of mathematics?
You will learn differential calculus and linear algebra through examples and by working on exercises. These are the "raw material" of modern mathematics. You will be asked to carry out explicit computations, which will give you access to computational skill, and will foster proper intuition for mathematical concepts. It is of utmost importance that you work through as many problems as possible, gaining exposure to mathematics.

First differential calculus and linear algebra will be reworked rigorously in the language of modern mathematics –sets and maps. Totally new concepts, such as complex function theory and topological spaces will enter the scene. The learning curve is steep, and you will be required to put in a lot of effort and your patience will be taxed, but the reward will be high: an entrance ticket to modern mathematics.

The following is a brief description of what is offered at Nagoya University for mathematics majors.

**Learning and Lecture Content**

The following is a brief description of what is offered at Nagoya University for mathematics majors.

**Level 0 (Freshman)**

You will learn differential calculus and linear algebra through examples and by working on exercises. These are the "raw material" of modern mathematics. You will be asked to carry out explicit computations, which will give you access to computational skill, and will foster proper intuition for mathematical concepts. It is of utmost importance that you work through as many problems as possible, gaining exposure to mathematics.

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<thead>
<tr>
<th>Semester</th>
<th>Lecture</th>
<th>Small Group Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>Calculus of one variable/ Linear algebra/ Overview of mathematics</td>
<td>Seminar on mathematics</td>
</tr>
<tr>
<td>Winter</td>
<td>Calculus of several variables/ Linear algebra/ Overview of mathematics</td>
<td>Seminar on mathematics</td>
</tr>
</tbody>
</table>

**Level 1 (Sophomore)**

First differential calculus and linear algebra will be reworked rigorously in the language of modern mathematics –sets and maps. Totally new concepts, such as complex function theory and topological spaces will enter the scene. The learning curve is steep, and you will be required to put in a lot of effort and your patience will be taxed, but the reward will be high: an entrance ticket to modern mathematics.

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<th>Semester</th>
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<tbody>
<tr>
<td>Summer</td>
<td>Sets and mappings/ Linear space and linear mappings/ Calculus of one variable</td>
<td>Seminar on mathematics</td>
</tr>
<tr>
<td>Winter</td>
<td>Calculus of several variables/ Topological spaces/ Complex function theory Normal forms of matrices/ Introduction to information sciences</td>
<td>Seminar on mathematics</td>
</tr>
</tbody>
</table>
Message from a Foreign Student

Junghun Lee

Self-introduction
My name is Junghun Lee. I come from South Korea. I have been living in Japan since 2008 when I was an undergraduate student. Now I am a graduate student of mathematics of Nagoya University.

Daily Life
Here let me share a bit about my daily activities. I shall divide it into two parts, study and part-time work activities.

Study
My major is (discrete) dynamical system. I have a seminar twice a week with only my research adviser. Since it is a one-to-one seminar, each time we can have a lot of talk regarding the topics.

Part-time Work
I am working as a research assistant at Nagoya University. The contents of the part-time work consist of taking some lectures, and writing feedback about each of them to improve those lectures. For example, sometimes we take IELTS preparation class, participate in some kind of discussion, and take a lecture to be a global leader.

Nagoya
The location of Nagoya is in the middle of Japan. It is very convenient to go to other places in Japan. Indeed, many graduate students need to either attend or to participate in many conferences, and they are held in many different places, such as Tokyo, Kyoto, or Osaka. I think it is one of the merits that Nagoya is located in the middle of Japan. Moreover, there are many dormitories available for international students in Nagoya. I have been living in Nagoya International Student Center for 4 years. The staff are very kind and helpful to me. It is quite far from Nagoya University, but I enjoy riding a bicycle to commute. Don’t worry, if you want to live around Nagoya University, you can also choose dormitories nearer to the university than mine.

Nagoya University
Nagoya University has a very good environment for studying mathematics. First of all, there are a lot of teachers in various fields such as Mathematical Physics, Algebra, Geometry, Analysis, etc. Every year, they open some classes related to their fields called ‘Sotsugyou Kenkyuu’ and ‘Syouninzuu Class’. Each of these is a kind of seminar where the students give presentations one by one and the teacher listens and also gives advice during the seminar. If you want to join this class, you may ask for permission to join to the teacher in charge. Secondly, there are many books and articles in the library of Nagoya University. It is very helpful because we need many references to study mathematics. The library has many references, so we don’t need to buy all of what we need. Finally, I would like to talk about the staff. The staff here are so kind and they help you as long as they can. Everyone can be a friend to the staff. They have many events for international students so that we can enjoy our campus life. Besides, they are really professional in dealing with your problems such as finding financial support, working as a teaching assistant or research assistant, looking for a dormitory, etc.

Level 1 (Junior)
You will be introduced to mathematics that was developed in the early 20th century. Level 1 ends with the introduction of Lesbesgue integrals and their application to Fourier analysis, curves and surfaces which generalize circles and spheres, groups and rings that are algebraic abstractions of numbers, polynomials and maps. There will be "Omnibus lectures" on how mathematics relates to the real world and what lies ahead of all this, and "group study" where you pick the text of your choice, discuss the content with your fellow students, give talks, and give a poster presentation.

<table>
<thead>
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<th>Semester</th>
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<tbody>
<tr>
<td>Summer</td>
<td>Introduction to group theory/ Introduction to curves and surfaces</td>
<td>Seminar on mathematics</td>
</tr>
<tr>
<td></td>
<td>Introduction to differential equations/ Lesbesgue integrals and measure theory</td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Rings and polynomials/ Introduction to differential forms</td>
<td>Group study</td>
</tr>
<tr>
<td></td>
<td>Introduction to functional analysis/ Omnibus lectures/ Group study</td>
<td></td>
</tr>
</tbody>
</table>

Level 2 (Senior)
Lectures for seniors at Level 2 are open to seniors and graduate students. The subject matter of these lectures differ by year. A partial list of courses offered in the past is given below. There are also numerous "intensive courses", which typically last for a week, designed to give an overview of research at the forefront. Courses at this level emphasize the diversity and universality of mathematics that can only be appreciated by taking a higher viewpoint. You are not only expected to learn from these courses, but also to develop your own viewpoint/taste for mathematics. Reading courses under faculty supervision are offered, where you will learn how to read a book or a research article, how to formulate your thoughts in a mathematical way, and how to discuss mathematics.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Lecture</th>
<th>Small Group Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>Fields and Galois theory/ Manifolds/ Functional analysis/</td>
<td>Senior reading course</td>
</tr>
<tr>
<td></td>
<td>Introduction to probability theory/ Introduction to mechanics/</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction to numerical analysis/ Omnibus lectures</td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Elliptic curves/ The heat kernel and the index theorem/</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction to partial differential equations/ Electromagnetic theory/</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Methods in applied mathematics (offered in English)/</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Functional programming languages</td>
<td></td>
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</tbody>
</table>
Fostering Scholars who Investigate, Think, and Discover on their Own

The Graduate School of Mathematics aims to cultivate self-motivated individuals, who can successfully navigate inquiry, reflection, and discovery based upon scholarly training in mathematics. Our commitment is to maintaining an enlightening environment for problem-conscious students where, together with scholars and fellow students, they can refine their ideas and apply logical reasoning in seeking solutions to problems.

Intensive Courses

Intensive courses are those conducted by lecturers from other universities or institutions, intensively, over short periods of time. Content ranges widely, from those of an introductory nature that require no prior technical knowledge at all, to those that focus more narrowly on the most cutting edge findings in a specific field. Not only are the mathematical fields of Algebra, Geometry, Analysis, Applied Mathematics, and Mathematical Physics covered, but lecturers are brought in to offer various perspectives, including that of the corporate world and practical applications. To find out more information about intensive lectures conducted in 2008 and the small group classes explained below, please see our graduate school’s web page, under “Education & Job Search”.

Small Group Class

Small Group Class is a two-semester seminar intended to develop reading, critical thinking, and discussion skills. In the seminar class, students expand upon their learning from faculty lectures and identify their specific focus of interest/research from within areas presented in lectures. Within the chosen subject area, classes offer multifaceted lectures guided by student interest. The pace of the lectures is tailored to participating students’ needs. As seen from the chart above, students can both improve their skills and explore their chosen field in the small group class. Master's students will belong to a credit-earning seminar each year. At the same time, they are strongly advised to attend another seminar. Students who attend regularly and submit successful assignments will be awarded at most 1 credit over 2 years in addition to the credits from other classes for which they are registered.
Teaching Assistants (TA)

Teaching assistant positions are filled primarily by first year master's students. They are hired to aid professors with lectures and seminars for undergraduate students in the first, second, and third year in the science department, as well as others, and to assist with Cafe David. Duties of a TA include designing and correcting class exercises, writing interpretations, and attending all Q & A in and out of class. These duties offer graduate students an opportunity to join the backstage of university lectures. Experiencing lectures from the standpoint of a teacher allows TAs an invaluable opportunity for their future, to learn what it is to teach. In addition, as a TA, they can understand many of the typical problems that students repeat, as well as those of beginning instructors and how to avoid them. Wages are paid to TAs, but many past TAs say that the real value in this assistant position is the opportunity to enhance one’s own learning and future research.

Message from a Foreign Student

My name is Ade Irma Suriajaya, but people usually call me Chacha in Japan. I come from Indonesia and now I am in my second year of a master's program in mathematics in Nagoya University. My field of study is analytic number theory, and I am doing research on the zeros of the derivatives of the Riemann zeta function and the Dirichlet L function [under the supervision of Prof. Kohji Matsumoto].

I graduated from a university in China, and, in my third year of undergraduate study, I got an opportunity for a student exchange program at Nagoya University. That was my first time coming to Japan and also the first time I learned Japanese.

At that time, my major was Aeronautical Engineering, but since I was really interested in mathematics, I took mathematics classes besides Japanese during that period. In the first semester, since I could not understand Japanese, I took a mathematics class which was given in English. In the second semester, I took some classes in mathematics which were given in Japanese. I was really impressed that the teachers I knew during that period taught me who understood nothing about pure mathematics, very kindly and sincerely. Even when I could not understand Japanese, they all explained well in English, and sometimes even let me ask in English when I could not express my question in Japanese. There is also a space in the building where you can ask any questions related to mathematics. There are some teachers and students there to help you, and it is open everyday during the lunch break. I went there very often, and I found it really helpful for my study. To be honest, the atmosphere around helped and encouraged me so much to master Japanese that I became more and more impressed.

I really felt in love with the study and research environment in the Graduate School of Mathematics of Nagoya University and, of course, with the environment of Nagoya itself. Thanks to the exchange program, not only for giving me the chance to study Japanese, but also for giving me a chance to know this place, which attracted me so much that I finally decided to change my major to mathematics and also to return to the Graduate School of Mathematics of Nagoya University after my graduation in China. That is the reason why I am here right now. Here they have good facilities, such as the study space given to each graduate student, the seminar rooms, and especially the library. They also have good services and they provide various kinds of financial support. Besides scholarships for international students, they also employ students as teaching assistants and research assistants. Here, every student is also provided with some research allowance which we can use to attend a symposium, conference, seminar, etc. either inside or outside Japan. There is still some other financial support, too. Nagoya University itself provides Japanese courses and also some other foreign language courses open to not only exchange students or any particular students, but, as I know, all students. These are some reasons why I do not regret my decision to return here.

People say it is not easy to adapt to a new environment, and the same is true about a new major. I faced difficulties the first time I came to Japan, and I found it really hard to be able to keep up with my peers since I lacked understanding in basic (pure) mathematics. Especially, students of mathematics in Japan are required to do seminars starting when they are in their undergraduate studies. I did not do well in the beginning, and there were so many things which were hard to understand. But many students, including seniors, and teachers understood and helped me along the way. I believe that this also happened to other students as well.
Fostering the Next Generation of Young Scholars

The primary goal of our doctoral program is to foster the next generation of young mathematicians. They must understand the necessary broad range of skills involved in mathematical sciences and be prepared to apply them appropriately to various problems. The doctoral program, in particular, requires self-driven learning, including discovering problems on one’s own and building the skills necessary to solve them. Sending our PhD holders equipped with these skills as competitive professionals out into society is the ultimate goal.

Active Student Body

Our current doctoral students are involved in student organized seminars on campus, as well as the planning and organizing of national academic conferences for young scholars. This is in addition to active independent research of their own. We believe this combination of activities results in the high quality research output our department’s doctoral students produce. Among other activities, Student Projects have received strong support from our department, as well as from the Program for Enhancing Systematic Education in Graduate Schools since 2007.

Student Project Titles of 2015

<table>
<thead>
<tr>
<th>Project Title</th>
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<tbody>
<tr>
<td>1 The World of Zeta Functions</td>
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<tr>
<td>2 Geometric Methods of Representation Theory</td>
<td></td>
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<tr>
<td>3 Embedding Problems in Symplectic Geometry</td>
<td></td>
</tr>
<tr>
<td>4 Homotopy Theory and Non-commutative Geometry</td>
<td></td>
</tr>
<tr>
<td>5 Algebraic geometry and topology 3</td>
<td></td>
</tr>
<tr>
<td>6 Non-Archimedean Geometry and dynamical systems</td>
<td></td>
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<tr>
<td>7 Operator Algebras in Geometry and Number Theory</td>
<td></td>
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<tr>
<td>8 An Information Theoretic Approach to New Frontier of Mesoscopic Quantum Statistical Thermodynamics</td>
<td></td>
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<tr>
<td>9 Cyclic homology for applied topology and semirings</td>
<td></td>
</tr>
<tr>
<td>10 Deformation theory of Complex Dynamical Systems</td>
<td></td>
</tr>
<tr>
<td>11 Well-posedness and asymptotic behavior of nonlinear dispersive equations</td>
<td></td>
</tr>
</tbody>
</table>
From China, I grew up in Harbin and studied in Shanghai since high school. Before my current study I joined an academic exchange program called NUPACE, allowing me to spend one semester at Nagoya University. After experiencing the excellent research environment at Graduate School of Mathematics, I decided to do my PhD here under the G30 International Program. My interest is on Several Complex Variable and Complex Geometry and I belong to an active group working in this area led by Prof. Ohsawa. I am now focusing on topics around the Bergman kernel, setting up appropriate research goals and trying to accomplish them. Much joy would arise after the achieving of new results, since it represents that the perspective on a certain mathematical objects has deepened. During the attendance of domestic and international conferences, I had the opportunity to meet many mathematicians full of original ideas who greatly inspired me. I am a TA for mathematics courses taught in English for international students. For teaching, here I also see professors explaining good mathematics to non-experts in simple words, so that more people can enjoy the beauty of mathematics and share the joy.

At the second year, I spent much time and efforts applying for a fellowship sponsored by JSPS which is competitive. Fortunately heading to the interview process, I still have no idea what to prepare before consulting Prof. Nayatani, who later arranged for me two mock interviews. And I clearly remembered one morning seven professors from the department showed up out of their busy schedules, evaluating my speech and offering valuable comments. Looking backward, I feel it not only a self-improvement but also a warm encouragement.

Life in Nagoya is comfortable. The University has various Japanese language classes, as well as various sports clubs, Aikido, Karate, etc. The science library has a large collection where you can read original Japanese references written by professors Kodaira, Oka, which is so cool. The city has a perfect size and the downtown is just ten minutes away by metro. Mountains are always available for hiking and people are kind-hearted. After Japan, I plan to go to America, but wherever I go the experience here has always been great.
Tuition and Other Fees (as of April, 2013)

<table>
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<tr>
<th>Student Status</th>
<th>Application (¥)</th>
<th>Registration (¥)</th>
<th>Tuition (¥)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree-Seeking Student (undergraduate)</td>
<td>17,000</td>
<td>282,000</td>
<td>535,800 per year</td>
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<tr>
<td>Degree-Seeking Student (graduate)</td>
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</tr>
<tr>
<td>Research Student, Graduate School Research Student</td>
<td>9,800</td>
<td>84,600</td>
<td>29,700 per month</td>
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<tr>
<td>Special Audit Student, Graduate School Special Audit Student</td>
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<td>–</td>
<td>14,800 per credit</td>
</tr>
<tr>
<td>Special Research Student</td>
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<td>29,700 per month</td>
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<td>Training Course in Japanese</td>
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</tr>
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<td>Training Course in Japanese Lang. &amp; Culture</td>
<td>9,800</td>
<td>84,600</td>
<td>29,700 per month</td>
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</tbody>
</table>

Fee Exemptions

Independently-financed degree-seeking students, who demonstrate excellent academic records and are in need of financial assistance, are eligible to be considered for exemptions from half or the entire tuition. However, as the possibility of obtaining an exemption is small, it is advisable to prepare to pay the necessary fees. The application process for fee exemptions takes place each semester. Applications for the spring semester are generally accepted from the end of February to March, and for the fall semester, from the end of August to the middle of September. Please pay close attention to these deadlines. Students should contact the office of their school for further information.

Scholarships

For information on the scholarships provided by The Japan Student Service Organization (JASSO), please visit the website: http://nupace.ecis.nagoya-u.ac.jp/en/life/jasso.html

There were, as of November 2012, 1,799 international students at Nagoya University, 76% of them are independently-financed. Financial support available to these students is outlined below. Information about scholarships is posted on the bulletin board of each school. Students are advised to check the boards daily.

Japanese Language Programs

The Education Center for International Students, Nagoya University offers the following Japanese language courses.

1. University-Wide Japanese Language Programs
   (1) Standard Courses in Japanese/ Intensive Courses in Japanese
   (2) Online Japanese Courses
   (3) Kanji Course
   (4) Introductory Lectures in Japanese Studies
   (5) Business Japanese Course

2. Special Japanese Programs
   ECIS offers four types of Special Japanese Programs. Enrollment in these courses is limited.
   (1) Intensive Program in Elementary Japanese
   (2) Intensive Program in Advanced Japanese
   (3) Japanese Language Classes for International Undergraduate Students
   (4) Introductory Program for Korean Engineering Students
Advising & Counseling Services (ACS)

http://www.isa.provost.nagoya-u.ac.jp/en/

ECIS (ACS Office) is a university-wide office to assist international students with issues or problems they may have. We provide information and advice to international students about academic and personal matters, as well as cross-cultural adjustment and psychological issues. If you have any difficulties or concerns while you are in Japan, please feel free to contact us. We will keep our discussions confidential.

Office Hours and Staff (from Advising & Counseling Services, Nagoya University)

**Advisor**  Ms. Kyoko TANAKA / International Student Advisor/ Director (Professor)
**Office**  Room742 West Wing, IB Building
**Office Hours**

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
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<tr>
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<td>13:00-16:00</td>
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</tbody>
</table>

**Advisor**  Ms. Hitomi TAKAKI / International Student Advisor (Associate Professor)
**Office**  Room204 International Center (IEEC Building)
**Office Hours**

<table>
<thead>
<tr>
<th></th>
<th>Mon</th>
<th>Tue</th>
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<th>Fri</th>
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<td>10:00-12:00</td>
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<tr>
<td>13:00-16:00</td>
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</tbody>
</table>

**Advisor**  Ms. Makiko TADOKORO / International Student Counselor (Associate Professor)
**Office**  Room740 West Wing, IB Building
**Office Hours**

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<thead>
<tr>
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<th>Tue</th>
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<th>Thu</th>
<th>Fri</th>
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<tbody>
<tr>
<td>10:00-12:00</td>
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<td>O</td>
</tr>
<tr>
<td>13:00-16:00</td>
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<td>O</td>
<td>-</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

**Advisor**  Ms. Naomi BANNO / International Student Counselor (Professor)
**Office**  Room738 West Wing, IB Building
**Office Hours**

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<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00-12:00</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>autumn only</td>
<td>O</td>
</tr>
<tr>
<td>13:00-16:00</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>autumn only</td>
<td>O</td>
</tr>
</tbody>
</table>

ACS Office

From Monday to Friday: 10:00-12:00, 13:00-16:00
TEL : 052-788-6117   E-mail : isa@ecis.nagoya-u.ac.jp
Room739 West Wing, IB Building

After graduating from our school students pursue the following

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Master's Course</th>
<th>Doctor's Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Company</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Researcher/ Faculty</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Teacher</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Civil Servant</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Graduate School</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td>Research Student</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
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<td>1</td>
</tr>
<tr>
<td>45</td>
<td>55</td>
<td>57</td>
</tr>
</tbody>
</table>
The Nagoya International Mathematical Conference is a meeting held by the Graduate School of Mathematics of Nagoya University every year since 2001. The title of the 2012 meeting was "Conference on Resolution of Singularities and the McKay Correspondence." While there were two small meetings on the McKay correspondence held here before, this conference in 2012 was much larger, and there were a number of participants from different countries. The topics of the talks were related to several fields, such as algebraic geometry, ring theory, and representation theory. The participants enjoyed the fruitful talks and discussions as well as Japanese food and culture. Many of them were the JSPS researchers before, and they were also happy revisiting Japan.

During November 11-15, 2013, our 13th annual International Nagoya Mathematical Conference titled "Perspectives of representation theory of algebras" was held on the occasion of the 65th birthday of Professor Kunio Yamagata. We invited 10 main speakers who are distinguished founders of this area, and 10 plenary speakers who are working on related areas such as cluster algebras, quantum groups, commutative algebras, algebraic geometry, and mathematical physics. There were also short presentations by young researchers. There were 88 conference participants from Germany, the United States, England, Poland, Norway, China, Korea, Belgium, and UAE, and, this time, many young researchers including graduate students participated, too. At the conference, representation theories such as quivers, Frobenius algebras, cluster algebras, derived categories, Cohen-Macaulay modules, and weighted projective lines were the central themes. Starting with the lecture by Professor I. Reiten entitled, "Lattice structure of torsion classes" and ending with Professor C. M. Ringel's lecture "The root posets", a lively discussion drew in broad participation and debate among the many in attendance.
The Global 30 Project - Bringing Nagoya University to the World

In July 2009, the selection results of the 2009 Project for Establishing Core Universities for Internationalization (Global 30) were announced, with Nagoya University standing out as one of the Global 30 leaders.

The objectives of Global 30 are to strengthen the international competitiveness of Japanese higher education and to offer an education with standards that appeal to foreign students while, through creating an environment where Japanese students work together with international students, fostering highly educated individuals who can be active internationally. The project comprehensively supports a plan to create universities that act as bases for internationalization by providing both the high level of education expected from universities and environments that make studying in Japan more accessible for overseas students.

To lead Japan's universities toward internationalization, Nagoya University must transform itself into a "university of the world". This means building a new environment in which Japanese and international students work side by side. In this way, the high standards of undergraduate and graduate education Nagoya University has achieved will be more widely accessible to students from overseas, and the University will be able to educate individuals with the ability to interact on the world stage.

Here are some of the strategic measures being taken to realize this goal.

from http://www.nagoya-u.ac.jp/en/international/edu-act/g30/

Mathematics without Borders

Mathematics has no borders. No matter what nationality they are, mathematicians around the world strive each day through their research to advance the development of mathematics. Among them, there are always researchers out there somewhere pursuing answers to the same problems. Therefore, it can be said that the exchange of information regarding research is extremely important. In order to exchange this up to date information our school works hard to promote and offer various conferences, intensive courses, seminars, and workshops. In this vein, we have established formal academic alliances with the Korean Institute for Advanced Study (KIAS), Paris 7 Denis Diderot University, etc. With them, we have conducted cooperative research workshops and the exchange of graduate students as research assistants.

Exchange beyond Fields

Mathematics has historically influenced other fields, and at the same time evolved itself, from the influence of other research fields. Nowadays, working towards a goal of broad global exchange is not enough. Conducting research with a vision beyond our own narrow fields is also required. Our department makes a unique effort to strive towards working with scholars of interdisciplinary research, and also with the Graduate School of Information Science, in order to further this goal.

Message from a Master Student

I'm Hei Ze, a master student from China, this is not the first time I come to Japan, I have studied in Kumamoto University for one year as an exchange student, therefore when I come to Nagoya University, I’m not surprised by the convenience of the transportation, the cleanness of the campus, and the kindness of all the staffs and teachers in Nagoya University, however I’m still impressed by the great academic atmosphere here, such as the huge display board hanging on the wall of the corridor at the Mathematics Bldg. introducing the Riemann hypothesis and the history of group theory.

I major in physics when undergraduate, so at the beginning of the first semester I really afraid that I will be failed in taking the specialized courses in mathematics, and soon I found I have worried too much, the courses are proceed step by step, so if you have attended all the courses, there will be no difficulty in getting the credits.

In Nagoya University, there will be a seminar every week hold by the students whose research is same or similar, it’s a good opportunity for you to communicate with other students about what you have learned this week, and it will push you to learn because you have to make presentation at the seminar, and it needs careful preparation, I think this is a really efficient way of learning mathematics.

At last I want to introduce my supervisor Prof. Kanno, he is a kindness teacher and a rigorous scholar. At the first time of the seminar, I haven’t prepared well for the presentation, I felt shameful and guilty, however finally I finished it under the rigorous and detailed guidance of Prof. Kanno, and I really appreciate the patience he showed to me at that time.

Above all I think Nagoya University is a place full of humane care and academic atmosphere, and I really enjoy the life here.
Mathematicians Shouldering Tradition

Kosaku Yoshida, Nagoya U. (1942-53), Osaka U., Tokyo U.
He created the theory of operator semigroups. His celebrated textbook "Functional Analysis" is read all over the world.

Tadashi Nakayama, Nagoya U. (1942-64), Osaka U.
He is one of the members at the foundation of our department. He is famous for his studies on the modular representation theory of symmetric groups and noncommutative rings.

Kiyoshi Ito, Nagoya U. (1942-52), Kyoto U.
He is famous for his formula on stochastic differential equations, which is applied to mathematical finance. He received the first Gauss Prize in 2006.

Masatake Kuranishi, Nagoya U. (1949-63), Columbia U., graduate of Nagoya U.
He did decisive work on the deformation theory of complex structures.

Masayoshi Nagata, Nagoya U. (1950-53), Kyoto U.
He did famous work on the theory of commutative rings and the foundation of algebraic geometry.

Tomio Kubota, Nagoya U. (1952-93), graduate of Nagoya U.
He created the theory of p-adic zeta-functions with Leopoldt.

Masaki Kashiwara, Nagoya U. (1974-77), Kyoto U.
He did decisive work on the theory of D-modules and its application to representation theory.

He created the theory of multi-variable hypergeometric functions, independently of Gelfand.

Shigefumi Mori, Nagoya U. (1980-90), Kyoto U.
He completed the classification theory of three-dimensional algebraic varieties. He received the Fields Medal in 1990.
The “International Lounge” is now open. This is a room specially arranged to activate international exchanges and partnership in various occasions. For example, we have been holding activities for international students that provide opportunities to socialize with fellow students. We also organize events where participants are encouraged to present their views in languages other than their native language. We are committed to continue offering various activities that foster chances to talk to new people, promote deeper understanding of Japanese culture, and allow students to experience different cultures. Through these events, we hope to help the members of our community to appreciate each other’s languages, cultures, and values, and to respect each other’s viewpoints.
A fully developed library is a quintessential element in providing a quality mathematics education, and thus our Science Library has served us well as the “face” of our department. The library houses over 100,000 volumes related to mathematical science and more than 1,600 periodicals, 90% of which are published overseas. One of our highlights is the Hilbert Collection, with copies of nearly 10,000 academic papers that the greatest mathematician, David Hilbert (1862-1943), owned. It has become a valuable resource for research. Books of reference, including textbooks, are found in the student reference section in order to promote easy access for students. Online search catalogs are fully equipped for easy access to books and electronic journals, and librarians offer support to users seeking further information.

Electronic journals and e-mail are some of the modern indispensable tools for computer networking for researchers in mathematical science. Computer laboratories are located in the Graduate School of Mathematics Building (2 rooms) and in Science Building A (1 room). All PCs are connected to the intra-campus network (NICE), which offers reliable high-speed access to the Internet. This computer network environment corresponds to the needs of both graduate students and faculty for exchanging scholastic information. Our department is committed to enhancing our information technology environment as a research tool, not only as a scaffold of numerical analysis and information science, but also for theoretical development by installing various mathematical software programs.

The Office of Academic Affairs was established in 2003 in order to provide specific services needed by students and faculty. In 2008, it was reorganized to deal with all educational affairs. For students and faculty, the office processes research grants (Grants-in-Aid for Scientific Research) and student aid to attend workshops, and manages study rooms and locker keys. To assist department activities, the office edits mathematical journals, publishes information in the form of brochures, updates web sites, prepares to hold international conferences, such as Nagoya International Conference, and hosts foreign visitors. The office aims at creating better academic surroundings with prompt service responding to department needs, with a friendly atmosphere as their motto.
The Administration Office of our department supports faculty and students by maintaining campus facilities, purchasing office supplies, and arranging research and business trips. The office, for example, takes care of air-conditioning for computer laboratories and classrooms. Its constant effort provides faculty and students with a comfortable environment for research and study and the smooth arrangement of facility use and meetings. Accordingly, the office plays an important role for both faculty and students, helping them to focus on their business within a comfortable campus, doing its best to offer speedy and accurate service.

Known as a comprehensive academic journal for mathematics, Nagoya Mathematical Journal (NMJ) has long been highly evaluated internationally since its first edition published by our department in June of 1950. All back numbers are available as electronic archives, and can be accessed through a database called Project Euclid by the library of Cornell University. While reviewing many creative mathematical papers submitted to the journal from around the world, editing committees make a substantial effort to maintain its scholastic quality. We firmly believe that the academic value of NMJ depends on the advanced level of mathematics with which our department deals. We are proud of NMJ as proof of the depth of our history and the excellence shown by mathematicians in Nagoya.

http://projecteuclid.org/Dienst/Ul/1.0/Journal?authority=euclid.nmj