Division of Mathematical and Physical Sciences	Research field	Mathematical Modeling and Analysis	Lab. ID MP17
Laboratory web site	http://polaris.s.kanazawa-u.ac.jp/csc/en/appmath_teachers.html		

Research subjects

Our group conducts mathematical modeling of various phenomena and their mathematical and numerical analyses. We deal with a wide range of phenomena, including elasticity and fractures, fluids and interfacial motion, homogenization methods, particle dynamics, pattern formation, and machine learning models. These phenomena are mathematically formulated by mathematical models based on partial differential equations and ordinary differential equations, and the properties of the mathematical models are mathematically clarified using functional analysis, measure theory, Fourier analysis, calculus of variations, etc. In addition, numerical simulations using the finite element method and the finite difference method, and analysis of the stability and convergence of the numerical solutions are also studied.

Master/Doctor course: Education policy, curriculum, typical activity in the laboratory

Master course: Students take various classes/seminars that help them deepen the knowledge of various aspects of mathematical modeling and analysis. During the second year they find a suitable research topic for their Master's thesis with the help of their supervisor. Doctoral course: Besides attending seminars, the students work on their own selected research topic. They publish their findings in a recognized journal. Most of the curriculum is available in English to be accessible for foreign students.

Daily life in the laboratory, etc.

Every student has access to a personal working desk and a computer. The students are encouraged to participate in informal discussions with other students and faculty. We strive to create a friendly atmosphere. Many students come from other universities and foreign countries, giving students different perspectives on various topics.

Message or comments by the laboratory faculty staffs

Computational mathematics has proved its potential in many industries. It is quite certain that it will increase in importance in coming years. The graduates from the Master program can therefore find employment as teachers, researchers and experts in technological companies, and research laboratories. Students who choose to pursue the Doctoral degree will receive an advanced knowledge that will give a strong foundation to become university lecturers or specialized researchers in this field.

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