

Prof. Gen Kimura

Laboratory name

Quantum Information Laboratory

Keyword

Foundations of Quantum Mechanics,
Quantum Information Theory, General Probabilistic Theories

Tasks in the laboratory

In this laboratory, the foundations of quantum mechanics are studied theoretically from the viewpoints of quantum information theory. Topics include Bell theorem, quantum entanglement, quantum entropy, and general probability theories. Students are required to read the latest papers of interest together and try to generalize the results. It is assumed that students have a basic background in probability theory, linear algebra, and (finite level) quantum mechanics, and most importantly, the interest in the foundations of quantum mechanics.

Program period

More than 4 months (preferably more than 6 months)

Eligibility-school year

- Third year undergraduate
- Fourth year or higher undergraduate
- First year master degree
- Second year or higher master degree
- First year doctoral degree
- Second year doctoral degree
- Third year or higher doctoral degree

Eligibility-student's major/fields

- Mechanical
- Chemistry
- Material
- Electrical
- Electronic
- Computer Science
- Lifescience
- Mathematical
- Civil Engineering
- Architecture
- Engineering and design

Required skills

From the math side, basics of linear algebra and probability theory
From the physics side, foundation of quantum physics

Desired skills (Preferred skills)

Interest in the foundation of quantum theory, such as Bell theorem

URL: https://www.shibaura-it.ac.jp/en/research/lab/systems/gsys/gen_kimura.html

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