

**Title: CP Violation: Asymmetry between particle and antiparticle**

**Lecturer:** Professor NAKADA, T

**Date and Times:** 6<sup>th</sup> August at 09:15  
9<sup>th</sup> August at 09:15  
10<sup>th</sup> August at 09:15  
11<sup>th</sup> August at 09:15

### **Summary of the proposed talk**

Symmetry and its violation play an important role in physics. Violation of the symmetry between the particle and antiparticle (*CP* violation) is one of the most fundamental questions in particle physics and an essential ingredient to explain why our universe consists of matter alone. In this course, we discuss various aspects of *CP* violation in particle physics and the relation to the dominance of matter observed in the universe.

### **Prerequisite knowledge and references**

Quantum Mechanics

Some knowledge on quarks and leptons

### **Professor NAKADA, Tatsuya**

- **1984:** After working on the particle production in proton-proton interactions at high energies and measuring the pion mass using atoms, have started involvement in *CP* violation by joining the *CLEAR* experiment.

In this experiment could directly compare the particle (neutral K meson) with its antiparticle (anti neutral K meson). From there, interest in *CP* violation evolved to the B meson.

- **2000:** main activity is to prepare for an experiment at LHC (the *LHCb* experiment), which will make detailed studies of *CP* violation in the B meson system.

- **Sep 2003:** Professor of Elementary Particle Physics at Swiss Federal Institute of Technology Lausanne (EPFL)