Contribution ID: **46** Type: **not specified**

Neutrino physics and CP violation in three generation seesaw model with four-zero textures

Monday 2 July 2018 18:00 (30 minutes)

Neutrino is recognized to have a tiny but non-zero mass by some physical phenomena, such as the neutrino oscillation. However, the Standard Model cannot fully describe how the neutrinos get their masses. The beyond Standard Model which adds the necessary modification for this problem has been required. As a possibility to solve the neutrino mass problem, the seesaw mechanism has been suggested. We studied the tiny masses of neutrinos by using the type-I seesaw mechanism. This mechanism extends the Standard Model by introducing heavy right-handed neutrinos. As for this attractive mechanism, we discussed the CP violation in neutrino oscillation with the three generations model. We also referred to the relationship between this model and those symmetries breaking. We calculated the general form of Jarlskog invariant, which is a characteristic invariant of CP violation, in terms of three generation Dirac mass matrices and three right-handed neutrino masses. The model with three generations completely includes the minimal-seesaw model with only two right-handed neutrinos and could produces more visions.

We consider the four zero texture model, which include minimum necessary parameters and classify them according to their configuration of zero or non-zero elements. By means of this classification, we can distinguish the types which deduce automatically CP violation and three massless neutrinos. We performed numerical analysis for some models, by allocating parameters on the Dirac mass matrix and the lightest neutrino mass, and accept the data within the range of values of flavor mixing angles obtained by experiments, then refer to the correlations among parameters and physical quantities. These results can be prediction for physics related to , for example, neutrinoless double beta decay and leptogenesis.

Author: YUU, Akihiro (University of Hiroshima)

Presenter: YUU, Akihiro (University of Hiroshima)

Session Classification: Afternoon session II