

# The 17th Core-U Seminar

## (2016年度第2回)

**Date :** 21/June /2016 (Tue.)  
16:30 ~18:00

**Place :** C212 (Physics Meeting Room)

**speaker :** Dr. Yusuke Shimizu

(JSPS Post Doctoral Fellow, Hiroshima University)

**Title**

## “What is the generation of elementary particles ?”

### **Abstract:**

In the standard model (SM) which is one of the successful models for the particle physics, we need at least three generations. In prior to the discovery of the third generation, its existence has been predicted to explain the CP violation phenomena (Kobayashi-Maskawa theory). However there are some problems in the SM. For example, we do not know the origin of the mass differences each generation of quarks and leptons. The reason why the mixing angles for leptons are different from the quark mixing angles remains unanswered in the SM. Thus we need to study the new physics beyond the SM. The flavor model by using the non-Aeolian discrete symmetry is one of the candidates for the beyond the SM. Many authors study flavor models with non-Aeolian discrete flavor symmetry in the lepton sector as well as in the quark sector. In this seminar, I introduce some non-Aeolian discrete groups as flavor symmetry and I show the successful flavor model, especially lepton sector. Finally, we discuss the mass limit for the scalar field which breaks flavor symmetry.

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