

ICEHAP Seminar

June 9, Tuesday, 2pm, 2015

place: Fac. of Sci. Bldg 2, 3F, room No.308

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"Tests of Lorentz and CPT violation with neutrinos"

Abstract

Lorentz violation has been shown to occur in Planck scale physics.

Since neutrino oscillation experiments are natural interferometers, they may be sensitive to small space-time effect, such as Lorentz violation.

The sensitivity is comparable to precision optical measurements (10E-19 GeV).

Thus, neutrino oscillations may be the first place where we see Lorentz and CPT violation.

Recently the MiniBooNE neutrino oscillation experiment published electron and anti-electron neutrino appearance oscillation results that cannot be understood within the accepted three-massive-neutrinos oscillation model.

In this talk, I will introduce Lorentz violation and Lorentz violating neutrino oscillations.

And I examine whether the MiniBooNE data may be explained through a Lorentz violation model.

Then, I will discuss the recent Lorentz violation analysis results on Double Chooz reactor oscillation experiment.

Finally, I will show a future prospective of the best Lorentz violation test on the neutrino sector through the astrophysical ultra high-energy neutrinos at IceCube.