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CEA-Saclay Bât. 141, salle André Berthelot

Latest results and future potential of Japanese long baseline neutrino oscillation experiments

TAKASHI KOBAYASHI

KEK, Tsukuba

The T2K experiment, long baseline neutrino oscillation experiment in Japan using high intensity proton accelerator J-PARC as a source of neutrino beam and Super-Kamiokande at 295 km from J-PARC as a far neutrino detector, recently released new results based on $15e20$ POT taken before Summer 2016. Combining all the results from oscillation measurements of (anti-) ν_μ disappearance and (anti-) ν_e appearance, we excluded the CP conservation in the neutrino more than 90% confidence level. J-PARC achieved the beam power of 425 kW and plans to upgrade to the design power of 750 kW in 2018. Further upgrade up to 1.3 MW is planned to follow. With the upgraded J-PARC, T2K experiment plans to increase the data to $20e21$ POT, 13 times more data within ~ 10 yrs. In addition improvements in neutrino focusing efficiency and analysis efficiencies will provide +50% increase in statistics. T2K can find the first evidence of CP violation in neutrino more than 3σ if CP is maximally violated (CP delta = -90 deg) with the full statistics.

HyperKamiokande is the next generation huge water cherenkov detector in Kamioka. We aim to start construction in 2018 and complete and start operation in 2026. The fiducial mass is 190 kt x 2 tanks (SK = 22.5 kt). With the HK detector and high intensity neutrino beam from 1.3 MW J-PARC, HK can find CP violation at $>3\sigma$ for 80% region of CP delta space. In the seminar, the latest results of T2K, J-PARC beam upgrade plan, and future potential of T2K, and HyperKamiokande project will be presented.

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Martine Oger, tél. 01 69 08 23 50, e-mail : martine.oger@cea.fr. (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).