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## Status of T2K and future (I)

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Neutrino oscillation measurement entered a precision era. In summer 2017, T2K disfavoured CP conserving phase of  $\delta_{cp}=0,\pi$  at  $2\sigma$  level. CP asymmetry in neutrino and anti-neutrino  $\nu_{\mu}\rightarrow\nu_e$  appearances can be as large as 20% depending on the CP phase  $\delta_{cp}$ , which is within the reach of new projects, HyperK and DUNE. HyperK aims at statistical error of  $\sim 3\%$  for the asymmetry. It is essential to control the systematic uncertainties well below the statistical errors for the discovery. The mixing angle  $\theta_{23}$ , which was discovered in the atmospheric neutrino mixing, is consistent with maximal mixing ( $\sin^2 2\theta_{23}\sim 1$ ), possibly indicating  $\mu$ - $\tau$  symmetry in the lepton mixing. This result is already started to be limited by the systematic uncertainty. I will describe essential challenges and opportunities in handling systematic uncertainties in precision neutrino oscillation measurements, and describe emerging efforts to handle them which are lead by the Canadian long baseline neutrino group.

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