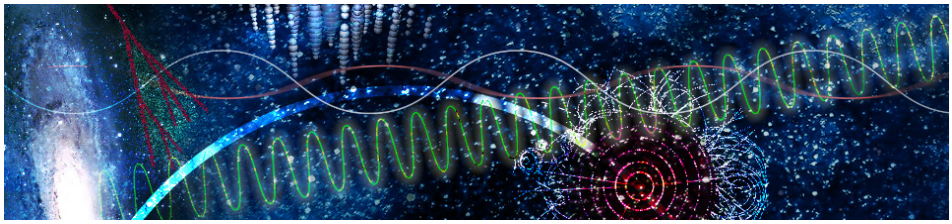

Contribution ID: **42** Type: **Poster**

CP violation in tau decays

The τ lepton is the only lepton heavy enough to decay to hadrons. Though the CP violation is well established in neutral kaons, the CP violation of the charged leptons is not expected within the Standard Model. We are searching for direct CP violation in the decay $\tau^- \to \pi^- K^0_S(\geq 0\pi^0)\nu_\tau$ using a data sample corresponding to an integrated luminosity of 362 fb^{-1}. The data is collected with the Belle II detector at the SuperKEKB e^+e^- collider at a center-of-mass energy of 10.58 GeV. In this decays, the Standard Model predicts CP violation coming from the kaon mixing, and a value for the charge asymmetry of $(0.33 \pm 0.01)\%$. Any deviation from the Standard Model value would be an evidence for physics beyond the Standar Model. This asymmetry was first measured by the BABAR Collaboration and was found to be $(-0.36 \pm 0.23_{\text{stat.}} \pm 0.11_{\text{syst.}})\%$, approximately three standard deviations from the Standard Model prediction. I will present the strategy of the analysis at Belle II, and the results achieved so far.

Author: Mr LEO, Paolo (Belle II Experiment)

Presenter: Mr LEO, Paolo (Belle II Experiment)

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