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New physics at T2HKK with new asymmetries

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The proposed T2HKK experiment involves placing a neutrino detector in Korea in the path of the T2HK beam, to collect data at an additional baseline of 1100 km. This setup will allow the measurement of neutrino oscillation probabilities at two different baselines with the same beam. In addition the detectors are also well suited to observe atmospheric neutrinos. In this work, we explore the role of asymmetries in determining the unknown neutrino parameters at T2HKK. In particular we consider the measurement of the neutrino mass hierarchy, CP-violating phase delta_CP and non-standard interactions (NSIs) in neutrino propagation. We also discuss the possibility of distinguishing between classes of NSIs with different interaction ranges at T2HKK.

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