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Status of KL→π0νν analysis at J-PARC KOTO

dimanche 11 mars 2018 20:00 (15 minutes)

The purpose of the J-PARC KOTO experiment is to study the $K_L \to \pi^0\nu\bar{\nu}$ decay.
This rare decay is known as a "golden mode"to search for new physics beyond the Standard Model (SM) because it violates the CP symmetry directly, it is strongly suppressed in the SM (BR ~ 3×10^{-11})[1], and its theoretical uncertainty is small (~2%).

The upper limit of the branching fraction of this decay was given as 2.6×10^{-8} (90% C.L.) by the KEK E391a experiment[2].
In 2013, we had our first physics run for 4 days and achieved a comparable sensitivity as the E391a result.[3]

In 2015, we performed a physics run and collected 20 times the amount of data as that of the 2013 run.
The analysis status of the 2015 run data will be presented in this talk.

Reference :
[1] A. J. Buras, D. Buttazzo, J. Girrbach-Noe and R. Knegjens, J. High Energy Phys. 1511, 033 (2015).
[2] J. K. Ahn et al., Phys. Rev. D 81, 072004 (2010).
[3] J. K. Ahn et al., Prog. Theor. Phys. 021C01 (2017).

Summary

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