

A new K_L^0 decay channel

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The rate for the decay $K_L^0 \Rightarrow K^\pm e^\mp (\bar{\nu}/\nu)$ of $(0.0979 \pm 0.0037) s^{-1}$ has been calculated in the hypothesis of the conserved vector current and, assuming the CP violation very small, the two rates for the decay $\bar{K}_L^0 \Rightarrow K^- e^+ \nu$ and $K_L^0 \Rightarrow K^+ e^- \bar{\nu}$ are foreseen very similar. Such a decay was never taken into account in the past, due to the very low phase space factor yielding a branching ratio for K_L decay BR= $(0.5071 \pm 0.0199) \times 10^{-8}$. Now, with the very intense K beams foreseen at KEK, J-PARC, BNL, CERN and LNF the observation of this decay seems feasible. With samples of very large statistical significance a new measurement of the indirect CP violation parameter ϵ could be done.

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