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Search for KL -> pi0 pi0 μ+μ− with KTeV data

Thursday 30 July 2009 16:30 (20 minutes)

This presentation will report on the first experimental search for KL -> pi0 pi0 μ+μ− based on data collected by the KTeV Experiment at the Fermi National Accelerator Laboratory in Batavia, Illinois. Although this decay mode is possible within the Standard Model the rate is suppressed by the very limited phase space. The HyperCP Experiment has recently observed three Sigma+ -> p+μ+μ− events within a narrow di-muon mass range of 213.8 MeV/c2 to 214.8 MeV/c2. This suggests that the process may occur via a neutral intermediary particle Beyond the Standard Model (BSM), Sigma+ -> p+ X0,(X0->μ+μ−) with a X0 mass of 214.3 MeV/c2±0.5 MeV/c2. Many BSM models such as Next-to-Minimal Supersymmetric (NMSSM) predict that the decay mode KL->pi0pi0μ+μ− can also occur via the aforementioned neutral boson: KL->pi0pi0X0,(X0->μ+μ−) thereby enhancing the rate well above the suppressed Standard Model prediction. The result of the KL -> pi0 pi0 μ+μ− search will be presented and the impact on the HyperCP evidence of BSM physics will be discussed.

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