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Search for exotic processes in kaon decays in the E949 experiment

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Evidence of the $K^+ \to \mu^+\nu\bar{\nu}\nu$ decay was searched for using E949 (Brookhaven National Laboratory, USA) experimental data with an exposure of 1.70×10^{12} stopped kaons. The data sample is dominated by the background process $K^+ \to \mu^+\nu_\mu\gamma$. An upper limit on the decay rate $\Gamma(K^+ \to \mu^+\nu\bar{\nu}\nu) < 2.4 \times 10^{-6}\Gamma(K^+ \to$ all) at 90% confidence level was set assuming the standard model muon spectrum. The data are presented in such a way as to allow calculation of rates for any assumed μ^+ spectrum.

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