

$K^{\{+\}} \rightarrow \pi^{\{0\}}\mu^{\{+\}}\nu\gamma$ and $K^{\{+\}} \rightarrow \pi^{\{0\}}e^{\{+\}}\nu\gamma$ decays: recent results from the «OKA» experiment

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The $K^{\{+\}} \rightarrow \pi^{\{0\}}\mu^{\{+\}}\nu\gamma$ ($K_{\{\mu 3\gamma\}}$) and $K^{\{+\}} \rightarrow \pi^{\{0\}}e^{\{+\}}\nu\gamma$ ($K_{\{e 3\gamma\}}$) decays are measured with OKA detector at the RF-separated 17.7 GeV/c momentum kaon beam from the U-70 synchrotron. The data obtained corresponds to the value of $2.62 \times 10^{\{10\}}$ «live» kaons passing to the decay volume. About $10^{\{3\}}$ $K_{\{\mu 3\gamma\}}$ and $10^{\{5\}}$ $K_{\{e 3\gamma\}}$ events are extracted. The ratios of $R_{\{\mu\}} = \text{Br}(K_{\{\mu 3\gamma\}})/\text{Br}(K_{\{\mu 3\}})$ and $R_{\{e\}} = \text{Br}(K_{\{e 3\gamma\}})/\text{Br}(K_{\{e 3\}})$ are found to be $(4.45 \pm 0.25(\text{stat})) \times 10^{\{-4\}}$ and $(58.7 \pm 1.0(\text{stat}) \pm 1.5(\text{syst})) \times 10^{\{-4\}}$ respectively. The T-odd correlation $\xi_{\{\pi\mu\gamma\}}$ ($\xi_{\{\pi e\gamma\}}$), which is the mixed product of the momenta of $\mu^{\{+\}}(e^{\{+\}})$, $\pi^{\{0\}}$, and γ in the kaon rest frame, is measured. The asymmetry of the distribution in ξ is characterized by the ratio $A_{\{\xi\}} = (N_{\{+\}} + N_{\{-\}})/(N_{\{+\}} - N_{\{-\}})$, where $N_{\{+\}}(N_{\{-\}})$ is the number of events with positive (negative) ξ . The value $A_{\{\xi\}} = -0.006 \pm 0.069(\text{stat})$ for $\mu^{\{+\}}$ and $(0.1 \pm 3.9(\text{stat}) \pm 1.7(\text{syst})) \times 10^{\{-3\}}$ for $e^{\{+\}}$ is obtained.

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