Contribution ID : **33** Type : **not specified**

Recent results on kaon physics from the OKA experimen

среда, 29 ноября 2023 г. 15:35 (45)

The talk is devoted to three latest results.

First is a search for the axion like particles in the decay
$K^+ \to \pi^+\pi^0 a$:

A high statistics data sample of the K+ decays is recorded by the OKA collaboration. A missing mass analysis

is performed to search for a light invisible pseudoscalar axion-like particle (ALP) in the decay $K^+ \to \pi^+\pi^0 a$. No signal is observed, the upper limits for the branching ratio of the decay are calculated. The 90% confidence level upper limit is changing from 2.5×10^{-6} to 2×10^{-7} for the ALP mass from 0 to 200 MeV.

Second is $K^+ \to \mu^+\nu g$ decay study and measurement of FV - FA :

A new precise measurement of the vector and axial-vector form factor diff erence FV – FA in the $K^+ \to \mu^+\nu_\mu\gamma$ decay is presented. About 144 K events of $K^+ \to \mu^+\nu_\mu\gamma$ are selected in the OKA experiment.

The result is FV – FA = 0.135 ± 0.017(stat) ± 0.024(syst). The result is considered as preliminary.

The third is $K^+ \to \mu^+\nu\pi^0 g$ decay study.

The $K^+ \to \pi^0\mu^+\nu\gamma(K_{\mu 3\gamma})$ is measured with OKA setup at the RF-separated 17.7 GeV/c momentum kaon beam of the U-70 accelerator. The data corresponds to the flux of 2.62×10^10 «live» kaons entering the decay volume. More than 900 signal events are found with 30-60 MeV energy of the emitted photon in the rest frame of the decaying kaon. Using 4.48×10^6 events of the decay $K^+ \to \pi^0\mu^+\nu(K_{\mu 3})$ the branching ratio Br(Kμ3γ)/Br(Kμ3) is found to be (4.45 ± 0.25(stat)) × 10^{-4}. From this value, using Br($K_{\mu 3}$) = 3.352% we get Br($K_{\mu 3\gamma}$) = (1.492 ± 0.085(stat)) × 10^{-5}. Our result is preliminary, with systematic errors being estimated.

Presenter(s) : OBRAZTSOV, Vladimir (NRC KI - Logunov IHEP, Protvino)

Session Classification : Afternoon session 29/11/2023

Track Classification : Particle Physics: Experiment and Phenomenology