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“Recent results from “OKA” setup at U-70 synchrotron.”

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During last years quite significant statistics of kaon decays has been accumulated by “OKA” setup which is working in the 20 GeV/c RF-separated secondary K^+ beam of the U-70 synchrotron. About 7 billions of kaon decays have been detected. Results on several radiative decays have been obtained.

On the selected $\sim 100K$ of $K_{\mu 2\gamma}$ decays with $25 < E_{\gamma}^* < 150$ MeV, an analysis of the Dalitz plot density has been performed and a destructive interference between the inner Bremsstrahlung (IB) and the structure dependent (SD-) term has been observed. From that, the difference of the vector and axial constants $F_V - F_A$ has been measured $F_V - F_A = 0.134 \pm 0.021(stat) \pm 0.027(syst)$. It differs by 2.3σ from the Chiral Perturbation Theory prediction $F_V - F_A = 0.054$.

On the same statistics, a clean sample of about 450 events of $K^+ \rightarrow \pi^+ \pi^- \pi^+ \gamma$ decay with the energy of the photon in the kaon rest frame greater than 30 MeV has been selected. The branching fraction for this decay has been measured to be $(0.71 \pm 0.05) \times 10^{-5}$. The measured energy spectrum of the decay photon has been compared to the prediction of the chiral perturbation theory to $O(p^4)$. A search for an up-down asymmetry of the photon with respect to the hadronic system decay plane is also performed.

More than 19000 events of the decay $K_{e3\gamma}$ have been selected with the background of ~ 2600 events. The branching ratio for the decay with the cuts $E_{\gamma}^* > 30\text{MeV}$; and $\theta^* > 20^\circ$, normalised to the $Ke3$ decay is $R = (0.6 \pm 0.010(stat) \pm 0.016(syst)) \times 10^{-2}$ is in an excellent agreement with the CHPT $O(p^4)$ predictions $R = (0.59 \pm 0.005) \times 10^{-2}$.

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Session Classification: Rare and forbidden Kaon decays - 2