

Vus and lepton universality from kaon decays with the KLOE detector

KLOE has measured most decay branching ratios of K_S , K_L and K^{*+} mesons.

It has also measured the K_L and the K^{*+} lifetime and determined the shape of the form factors involved in kaon semileptonic decays.

We present a description of the above measurements and a well organized compendium of all of our data, with particular attention to correlations.

These data provide the basis for the determination of the CKM parameter V_{us} and a test of the unitarity of the quark flavor mixing matrix.

We also test the lepton universality in $Kl3$ decays and place bounds on new physics using measurements of V_{us} from $Kl2$ and $Kl3$ decays.

The most recent measurements published on this subject are:

JHEP 12(2007)105 (K_{L3} scalar form factor);

JHEP 01(2008) 073 (K^{*+} lifetime);

JHEP 02(2008) 098 (absolute semileptonic K^{*+} BRs);

PLB 666 (2008) 305 (BR of $K^+ \rightarrow \pi^+\pi^0$).

All of the above measurements, together with the results on K_S , K_L and K^{*+} decays published during 2006 and 2007 have recently combined in

JHEP 04 (2008) 059, to obtain the KLOE determination of V_{us} .

Furthermore, we expect to obtain soon new results on the K_S lifetime,

K_L lifetime and the BR for the K^{*+} to 3 charged pion.

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