

KLOE measurements of KL lifetime and absolute branching ratio of $K^+ \rightarrow \pi^+\pi^-\pi^+$

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We are presently finalizing a new determination of the KL lifetime using the whole KLOE data set, consisting of more than 10^9 $\phi \rightarrow K_S K_L$ decays (the previous KLOE measurement is reported in PLB 626, 2005). The KL lifetime will be extracted from the proper time distribution of $KL \rightarrow 3\pi^0$ decays, tagged by $KS \rightarrow \pi^+\pi^-$ decays on the opposite hemisphere of the apparatus.

The measurement of the BR for the decay $K^+ \rightarrow 3$ charged pions completes the KLOE program of precise and fully inclusive measurements of the kaon dominant BR's. We are currently finalizing this measurement, which is based on the analysis of $\phi \rightarrow K^+K^-$ events in which one of the two kaons undergoes a two-body decay, either $\mu^+\mu^-$ or $\pi^+\pi^0$ (tagging kaon). Given a tag, the opposite charged kaon decaying to 3 charged pions is easily and unambiguously identified.

Primary author: DE SIMONE, Patrizia (LNF - INFN)

Presenter: DE SIMONE, Patrizia (LNF - INFN)

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