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Recent KLOE-2 results on kaon physics and discrete symmetries tests

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The KLOE-2 experiment at the Frascati Laboratories of INFN collected at the DAΦNE collider an integrated luminosity of 5.5 fb^{-1} that together with the 2.5 fb^{-1} collected by its predecessor KLOE corresponds to $\sim 8 \times 10^9$ $K_S K_L$ entangled pairs produced.

This is the world largest available data sample of this typology and represents a unique tool to improve the precision in the study of the kaon properties and the fundamental discrete symmetries of nature.

The latest results on K_S semileptonic decays, the measurement of their charge asymmetry - recently improved by about a factor of two with respect to the previous result - and related CP and CPT tests will be presented, together with the results of the latest ongoing analyses on tests of Time reversal and CPT in kaon transitions, and the search for the CP violating $K_S \rightarrow 3\pi^0$ decay.

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