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Properties of light pseudoscalar mesons

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In my talk I would like to focus on light unflavoured pseudoscalar mesons.

Mainly I want to discuss the properties of π_0 and its decay modes.

In fact the decay modes of π_0 were subjects of many experiments in the past (including e.g. SINDRUM col. at PSI), present (e.g. KTeV, or PrimEx at JLab) or future (NA62 at CERN).

Experiments have reached (or plan to reach) a level of precision which makes it mandatory to reopen previous theoretical calculations to achieve appropriate order (NLO or NNLO). This can, on one hand, help us to verify and fix underlying structure of the low energy effective theory of QCD - ChPT (e.g. pion decay constant, low energy constants, power-counting, etc.). On the other hand it can set a framework for study a new physics beyond SM (e.g. KTeV's discrepancy with a theory for $\pi_0 \rightarrow e^+e^-$).

The eta meson can be treated technically very similarly. However, due to its mass one can also study its hadronic decays. This can provide us with important information on isospin breaking effects and again test internal consistency of ChPT.

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