

Kaonic atoms –status, results and plans

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Kaonic atoms are atomic systems where an electron is replaced by a negatively charged kaon, containing a strange quark, which interacts with the nucleus also by the strong interaction. As a result, the study of kaonic atoms offers the unique opportunity to perform experiments equivalent to scattering experiments, but at vanishing relative energy. These experiments will allow to study the strong interaction between the antikaon and the nucleon or the nucleus “at threshold”, providing crucial information on the interplay between spontaneous and explicit chiral symmetry breaking in low-energy QCD.

An overview of the progress achieved in performing precision light kaonic atom experiments at DAFNE (LNF-INFN, Italy) and at J-PARC (Japan) in the last twenty years, which also solved long-pending inconsistencies with theoretical calculations generated by old measurements, will be presented. Specifically, kaonic hydrogen and kaonic helium results will be discussed. Finally, an outlook of the kaonic deuterium measurement started at DAFNE and the plans for the kaonic deuterium measurement at J-PARC will be given.

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