

Studies of mesic atoms and nuclei

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Mesic nuclei in which a meson is bound by the strong interactions to atomic nuclei have been predicted for antikaons, eta and eta', omega and phi mesons, and for other mesons of mass above 1 GeV. While experimental searches are ongoing in several accelerator facilities for antikaons, eta and eta' mesons, no unambiguous identification of mesic nuclei has ever been achieved, partly owing to potentially large conversion and absorption widths. In this talk, using pionic atoms as a testground [1], I will review the theoretical methodology in this field, focusing on: (i) the information one gets from antikaonic atoms [2] on the complex in-medium antikaon-nucleon interaction that enters the antikaon-nucleus binding energy evaluation [3], and (ii) recent theoretical studies of eta mesic nuclei, particularly regarding the onset of eta-nuclear binding [4,5,6].

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[2] E. Friedman, A. Gal, NPA 959 (2017) 66.

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