

Search for eta-nucleus bound states

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We will report on the status of the search for the eta-mesic nuclei and the studies of the interaction of the eta and eta-prime meson with nucleons. The existence of the eta-mesic nucleus was postulated over twenty nine years ago, however, till now it was not confirmed experimentally. Such system in the form of the eta mesic-helium may be created for example in the deuteron-deuteron or proton-deuteron fusions. The talk will be focused on the status and perspectives of the search for the eta-mesic helium, and in addition we will report on new results on the analyzing power for the $pp \rightarrow pp\eta$ reaction with more than an order of magnitude improved precision which shed new light on the proton-eta interaction as well as on the production mechanism of the eta meson in nucleon-nucleon collisions.

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