

Formation of deeply bound pionic atoms and pion properties in nuclei

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We study theoretically the formation of deeply bound pionic atoms to deduce precisely the pion properties in nuclei from the observables. It is important to know the pion properties in nuclei since they are believed to provide valuable information on the aspects of the symmetry of strong interaction at finite density. In this presentation, we show the theoretical formation spectra of deeply bound pionic atoms in the various cases. We consider the pionic atom formation on the even-even and neutron-odd nucleus targets. We also show the angular dependence of the formation spectra in the (d,3He) reactions. Based on these theoretical results, we have found that we can perform the systematic observation of several deeply bound states for various nuclei. Actually, these observations have been performed in the experiments at RIBF/RIKEN.

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