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**Formation of Mesonic Atoms and Mesonic Nuclei** SATORU

HIRENZAKI, Nara Women's University — Meson properties at finite nuclear densities are believed to have close connection to the fundamental theory, QCD, and have been studied for a long time both theoretically and experimentally. In this context, Mesonic atoms and Mesonic nuclei are interesting systems. In this talk, we study the recent research activities in this field and consider mainly formation reactions of Mesonic atoms and Mesonic nuclei theoretically. We report the new possibilities of the spectroscopic study of the pionic atoms using the  $(d, {}^3\text{He})$  reactions. We consider the  $(d, {}^3\text{He})$  reaction at finite angles to produce the atomic states with different angular momenta and on the odd-neutron nuclear target to produce the pionic states in the even-even nucleus which has a well-known neutron distribution. As for the  $\eta(958)$  mesonic nuclei, we summarize the recent research activities on the  $\eta(958)$  meson property in nucleus and report the possible formation of the  $\eta(958)$  mesonic nuclei by the  $(p,d)$  reactions in detail.

Satoru Hirenzaki  
Nara Women's University

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