



Contribution ID: 10

Type: Oral

exotic structure studies of light neutron-rich nuclei via direct nuclear reaction

In order to study exotic structures of light unstable nuclei, we have developed a Large Acceptance Charged particle detector array at Peking University, LACPU, which is suitable for simultaneous measurement of various different direct nuclear reactions induced by radioactive beams on protons and deuterons in inverse kinematics [1-3]. In this talk, we will show the preliminary results of the first experiment using LACPU at RIBLL1, Institute of Modern Physics, China, including properties of LACPU, differential cross sections of elastic scattering [3] and single-nucleon transfer reactions [4] with radioactive beams ^{15}C , ^{16}C , ^{16}N impinging on protons and deuterons. We will also discuss the update plans of LACPU, as well as some experimental proposals in the future.

[1]G.Li, J. L. Lou, Y. L. Ye, et al. Nucl Inst & Meth A, 2021, 1013, 165637.

[2]H.Y. Zhu, J. L. Lou, Y. L. Ye, et al. Nucl. Sci & Tech, 2023, 34,159.

[3]H.Y.Ge, J.L.Lou, Y.L.Ye et al., Nucl Inst & Meth A, in review.

[4]H.Y.Zhu, J.L.Lou, Y.L.Ye et al., spectroscopic factor quenching of the halo nucleus using single-nucleon transfer reactions, in preparation.

Notes

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