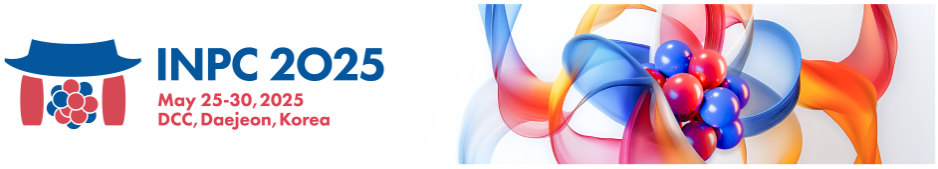

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Two-neutron halo structure of ^{14}Be studied by its Coulomb breakup

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We report on the kinematically complete measurement of the Coulomb breakup of the two-neutron halo nucleus ^{14}Be on Pb at 220 MeV/nucleon at SAMURAI,RIBF,RIKEN. The previous study [1] showed significantly large E1 excitation of ^{14}Be at low excitation energies, which was indicative of the revelation of the soft E1 excitation for halo nuclei, while the statistics was very low and the quantitative comparison with theories was not sufficient. The current measurement has significantly higher statistics, and the gamma rays were measured in coincidence to evaluate the core-excited contribution which was missing in the previous work. We will present the energy spectrum of Coulomb breakup cross sections and E1 strength distribution dB(E1)/dEx. The integrated B(E1) strength is applied to assess the spatial dineutron correlation using the non-energy weighted E1 sum rule. The energy spectrum will be compared with the three-body model to discuss the ^{12}Be-n-n structure, where the valence two-neutron configuration is considered to be a mixture of $(1d_{5/2})^2$, $(2s_{1/2})^2$ and $(1p_{1/2})^2$ due to the N=8 shell gap melting. We discuss the characteristic of dineutron configuration due to such shell structure, which can be different from those in ^{6}He [2], ^{11}Li [3,4] and ^{19}B [5].

References
[1] M. Labiche, et al., Phys. Rev. Lett. 86, 600 (2001).
[2] Y.L. Sun, et al., Phys. Lett. B 814, 136072 (2021).
[3] T. Nakamura, et al., Phys. Rev. Lett. 96, 252502 (2006).
[4] Y. Kubota, et al., Phys. Rev. Lett. 125, 252501 (2020).
[5] K. J. Cook, et al., Phys. Rev. Lett. 124, 212503 (2020).

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