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Experimental evidences of the BEC-like states in light nuclei

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After the determination of the Bose-condensed structure for the Hoyle state in C-12, continuous experimental works have been devoted to the observation of the BEC-like states in other nuclear systems. We present here a series of reaction-decay experimental works, which provide strong evidences of the 4-alpha condensation-like states in O-16 [1], the alpha + 2n + 2n condensation-like states in neutron-rich nucleus He-8 [2] and the latest preliminary results for the alpha + alpha + 6He condensation-like states in C-14 [to be submitted]. Some background information will also be introduced as recently given in [3, 4].

- [1] J. Chen, Y. Ye et al, "New evidence of the Hoyle-like structure in ^{16}O ", Sci. Bull. 68, 1119(2023).
- [2] Z. Yang, Y. Ye et al, "Observation of the Exotic 0^+_{-2} Cluster State in ^8He ", Phys. Rev. Lett. 131, 242501(2023) (Editors' Suggestions).
- [3] Y. Ye, X. Yang, H. Sakurai and B. Hu, "Physics of exotic nuclei", nature reviews physics, Published online 25 November 2024 <https://doi.org/10.1038/s42254-024-00782-5>.
- [4] K. Wei, Y. Ye and Z. Yang, "Clustering in nuclei: progress and perspectives", Nucl. Sci. Tech. 35, 216(2024), <https://doi.org/10.1007/s41365-024-01588-x>

Primary authors: YE, Yanlin (Peking University); Prof. YANG, Zaihong (Peking University); Mr WEI, Kang (Peking University); Mr CHEN, Jiahao (Peking University)

Presenter: YE, Yanlin (Peking University)

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