

The 23rd International Conference on Few-Body Problems in Physics (FB23)



Contribution ID: 158

Type: 2.Parallel session talk

Searching for Hoyle-Analog States in Light Nuclei

Nuclear clustering is a fascinating phenomenon in nuclear physics, characterized by the Hoyle state in ^{12}C , which is crucial for carbon production in the universe via the triple-alpha process. This state features a three-body structure of alpha clusters that form a quasi-Bose-Einstein condensate through weak correlations. Clustering is widely present in light nuclei, particularly in excited and resonant states near the clustering threshold. Studying these clustering structures and searching for Hoyle-analog states are important for understanding nuclear structure and nuclear astrophysics.

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Session Classification: Parallel 6: Few-body aspects of nuclear physics and nuclear astrophysics

Track Classification: Few-body aspects of nuclear physics and nuclear astrophysics