



独立行政法人理化学研究所 仁科加速器研究センター
第27回RIBF核物理セミナー

RIKEN Nishina Center for Accelerator Based Science
The 27th RIBF Nuclear Physics Seminar

軽い中性子過剰核の構造と反応の統一的研究(^{10}Be への適用例)

Unified studies on structures and reactions in light neutron-rich systems
(Application to ^{10}Be)

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The $\alpha + ^6\text{He}$ low-energy reactions and the structural changes of ^{10}Be in the microscopic $\alpha + \alpha + \text{N} + \text{N}$ model are studied by the Generalized Two-center Cluster Model (GTCM). The GTCM can describe both the atomic and the molecular-orbital limit of the system with $\text{C}_1 + \text{C}_2 + \text{N} + \text{N} + \dots$ where C_i is the i -th cluster core and N is the nucleon.

It is found that, in the inelastic scattering to the $\alpha + ^6\text{He}(2^+)$ channel, characteristic enhancements are expected as the results of the parity-dependent non-adiabatic dynamics. In the positive parity state, the enhancement originates from the excited eigen state generated by the radial excitation of the relative motion between two α -cores. On the other hand, the enhancement in the negative parity state is induced by the Landau-Zener level-crossing. The non-adiabatic dynamics in the breakup reaction of ^{10}Be into $\alpha + ^6\text{He}$ will also be discussed.

The seminar will be given in English

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