

Isoscalar monopole and dipole transitions as a probe for cluster states in ^{24}Mg

In this contribution, we will show that isoscalar monopole and dipole transitions are a good probe for cluster states in ^{24}Mg . The cluster states having significant influence on He- and Carbon-burning processes such as $^{12}\text{C}+^{12}\text{C}$ and $4\text{He}+^{20}\text{Ne}$ are expected in ^{24}Mg according to Ikeda diagram. However, their existences are still ambiguous due to experimental and theoretical difficulties. In this decade, it was suggested that cluster states can be strongly populated by isoscalar monopole and dipole transitions. This means that unknown cluster states can be accessible by isoscalar monopole and dipole transitions. Therefore, we will present antisymmetrized molecular dynamics calculation results for ^{24}Mg and reveal that relation between isoscalar monopole and dipole transition strengths and cluster states of ^{24}Mg . Furthermore, we discuss the p-, 4He - and ^{12}C -decay widths of the excited states.

Summary

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