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Linear-chain structure of alpha clusters in Carbon isotopes TOMOYUKI BABA, YOHEI CHIBA, MASAAKI KIMURA, Departmenti of Physics, Hokkaido University — The linear-chain structure of ^{12}C in which three alpha particles are linearly aligned has long been interested and investigated since its proposal by Morinaga, but nowadays, its existence is doubt, because its instability was shown by fill-microscopic nuclear models. However, the possible existence of linear-chains in neutron-rich carbon isotopes assisted by the valence neutrons was recently suggested based on the cluster model. Therefore, it is of importance and interest to examine their stability and investigate the stabilization mechanism based on full-microscopic model. In this presentation, we will discuss the alpha cluster states of carbon isotopes including the linear-chains based on the antisymmetrized molecular dynamics (AMD) model. For, example, we will demonstrate two different types of the alpha cluster states, that are, triangular and linear-chain configurations. Four valence neutrons occupy the molecular-orbit surrounding the cluster cores, in particular, their orbits of the linear-chain structure are π-orbit and σ-orbit as suggested by the cluster calculation. In addition, we predict the excitation energies of two structures. We will show that the linear-chain states have very large moment of inertia and they appear near the ^{6}He+^{10}Be threshold energy.

Tomoyuki Baba
Departmenti of Physics, Hokkaido University

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