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Alpha-cluster excited states in ^{32}S YUTA YOSHIDA, Kyoto University, Y. KANADA-EN'YO COLLABORATION, F. KOBAYASHI COLLABORATION — Excited states having core+alpha cluster structure called the alpha-cluster excited state are known to exist in such nuclei as ^{16}O and ^{20}Ne. Meanwhile, the existence of alpha-cluster excited states in the middle of sd-shell nuclei is an open problem. Recently, the alpha-cluster excited state in ^{32}S is suggested by experiments. In order to understand the dynamics of the core-alpha relative motion, we focus on the structure change of the core nuclei and the breaking of the alpha-cluster. In the present work, we construct ^{28}Si+alpha model which has the structure change of the ^{28}Si core and the alpha-cluster breaking. Using the present model, we calculate the energy expectation value of ^{28}Si+alpha system. We found that the structure change of the core nuclei is energetically rather important while the alpha-cluster breaking is not significant when the alpha-cluster exists at the surface of the ^{28}Si core. We calculate the ground and excited states with the generator coordinate method. As a result, we suggest the existence of alpha-cluster excited states in ^{32}S.

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