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Semirelativistic calculations of exotic systems HIDEKATSU NEMURA, Advanced Meson Science Laboratory, DRI, RIKEN, CHOKI NAKAMOTO, Suzuka National College of Technology — Recent experimental report on a new observation of strange tribaryon $S^0(3115)$ has had a significant impact on nuclear physics. The existence of deeply bound \bar{K} -nuclear systems has been predicted by Akaishi and Yamazaki, based on an assumption of $\Lambda(1405)$ being a bound state of $\bar{K} + N$. However, the $S^0(3115)$ is different from that was originally predicted since the isospin ($I = 1$) of $S^0(3115)$ determined by the isospin conservation does not match the isospin ($I = 0$) predicted by the theory. Moreover, the mass of $S^0(3115)$ is about 100 MeV lighter than the value by the theoretical prediction. Towards a description of the strange tribaryon, we calculate the exotic systems (e.g., $\Lambda(1405)$) using a semi-relativistic hamiltonian, that includes a semi-relativistic form of the kinetic energy ($\sqrt{p^2 + m^2}$).

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