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広島大学極限宇宙研究拠点セミナー
Hiroshima University CORE-U Seminar

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題目: **Lattice QCD study on Lambda(1405) in the flavor SU(3) limit**

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Room E208,Faculty of Science, Hiroshima University

Abstract: **See the back side of this poster**

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(Oral in Japanese, Slides in English)

ZOOM Link (limited within 100)
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[Abstract]

- The $\Lambda(1405)$ is an excited Λ baryon of which nature is still controversial, although its existence has been known since the 1950s. One of the most promising interpretations of $\Lambda(1405)$ is the so-called two-pole structure: the spectrum corresponding to $\Lambda(1405)$ observed in experiments may be explained by two poles. To elucidate such property from lattice QCD, the HAL QCD method is employed, in which hadron interactions are extracted as potentials. In this study, we calculate meson-baryon potentials in the flavor SU(3) limit and find the bound states corresponding to $\Lambda(1405)$. The results of the local potentials show singular behaviors at the vanishing point of NBS wave functions, which prevent us from reliably extracting binding energies. In this seminar, I present two analyses that avoid such singular behaviors: one is the analysis by taking a linear combination of the NBS wave functions in the octet channel under certain assumptions, and the other is by introducing separable potentials in the HAL QCD method instead of the standard local approximation usually employed. I also discuss the physical interpretations of our results, including the singular behaviors of the local potentials.