

Construction and application of the \bar{K} N local potential based on chiral unitary approach

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Aiming at quantitative studies of \bar{K} N nuclei, we construct the reliable \bar{K} N local potential. Based on the chiral coupled-channel approach, the chiral unitary approach, we establish a new construction method which respects the behavior of the scattering amplitude in the complex energy plane. This method is employed to the recent experimental data of the energy shift of the kaonic hydrogen by SIDDHARTA. The high precision measurement reduces the uncertainty of the \bar{K} N scattering amplitude below the \bar{K} N threshold, and enables the quantitative discussion about the systems with \bar{K} and nucleons. As the first application of the new local potential, we calculate the spacial structure of the $\Lambda(1405)$, and the $K^{\pi}\pi$ correlation function in the relativistic heavy ion collisions.

Presenter: MIYAHARA, Kenta (Kyoto university)

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