

# Effect of eigenstates on spectra in coupled-channel scattering with the chiral unitary method

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“In recent years, as experimental data on the excited states of  $\Xi$ ,  $\Xi(1620)$  and  $\Xi(1690)$ , have been collected, theoretical analyses have also been actively conducted.

In our previous study, we have constructed theoretical models with the chiral unitary method based on the Belle and ALICE results [1-3].

In this work, we classify the eigenstates in order to investigate the physical origin of poles in each model. We also perform the model extrapolation to reveal the relationship between the poles in different theoretical models. By calculating the invariant mass spectra of  $\pi^+\Xi^-$  in  $\Xi_c \rightarrow \pi\pi\Xi$  decay with poles of different models to examine how the classified eigenstates affect the actual spectra.

[1]T. Nishibuchi and T. Hyodo, Phys. Rev. C 109, 015203 (2024).

[2]M. Sumihama et al. (Belle), Phys. Rev. Lett. 122, 072501 (2019) .

[3]S. Acharya et al. (ALICE), Phys. Rev. C 103, 055201 (2021).”

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