

Hadronic molecule $\eta_1(1855)$ and its $SU(3)$ partners

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The newly reported $\eta_1(1855)$ with $J^{PC} = 1^{-+}$ is interpreted to be a dynamically generated pole in $f_1(1285)\eta - K_1(1400)\bar{K}$ scattering with Weinberg-Tomozawa term serves as interaction.

When $a_1 - \pi$ mixing in axial meson dominance model is included, the ratio in $\eta_1(1855)$ decaying into

final states $\eta\eta'$ and $K^*\bar{K}\pi$ is around

$(0.54_{+0.35}^{-0.20})^A$ or $(0.37_{+0.33}^{-0.14})^B$ in

choices on the mixing angles in 1^+ mesons.

Furthermore, its $SU(3)$ partners are studied as well,

where $\pi_1(1600)$ may correspond to a pole in $f_1(1420)\pi - K_1(1270)\bar{K} - K_1(1400)\bar{K}$ scattering and the pole generated in $f_1(1285)K - K_1(1270)\eta$ scattering relates to a sharp jump in ϕK^+ invariant mass distributions in $B^+ \rightarrow J/\psi\phi K^+$, latter of which can decay into ηK and be a good way to test the explanation of hadronic molecule in 1^{-+} meson spectrum below 2000 MeV.

Primary author: Dr YAN, Mao-Jun (ITP,CAS)

Presenter: Dr YAN, Mao-Jun (ITP,CAS)

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