Theoretical study of $\Omega(2012)$ and $Z_{cs}(3985)$ with the coupled channels approach

Tuesday, 9 March 2021 21:00 (20 minutes)

I report the results for $\Omega(2012)$ and $Z_{cs}(3985)$ of Refs.[1,2]. We have studied the $\Omega(2012)$ which was measured in the Belle experiment. We conduct a study of the interaction of the $\bar{K}\Xi^*$, $\eta\Omega(s$-wave$)$ and $\bar{K}\Xi(d$-wave$)$ channels within a coupled channel unitary approach. We find that all data including the Belle experiment on $\Gamma_{\Omega^* \to \pi\bar{K}\Xi}/\Gamma_{\Omega^* \to \bar{K}\Xi}$, are compatible with the molecular picture stemming from meson baryon interaction of these channels. We also have studied the $e^+e^- \to K^+(D_s^{*-}D^0 + D_s^- D^{*0})$ reaction recently measured at BESIII, from where a new exotic Z_{cs} state has been reported. We study the interaction of $\bar{D}_s D^*$ with the coupled channels $J/\psi K^-$, $K^{*-}\eta_c$, $D_s^- D^{*0}$, $D_s^{*-} D^0$. The coupled channels help to build up strength in the $D_s^- D^{*0} + D_s^{*-} D^0$ diagonal scattering matrix close to threshold and, although the interaction is not strong enough to produce a bound state or resonance, it is sufficient to produce a large accumulation of strength at the $\bar{D}_s D^*$ threshold in the $e^+e^- \to K^+(D_s^{*-}D^0 + D_s^- D^{*0})$ reaction in agreement with experiment. [1] N. Ikeno, G. Toledo and E. Oset, Phys. Rev. D \textbf{101}, 094016 (2020). [2] N. Ikeno, R. Molina and E. Oset, arXiv:2011.13425 [hep-ph].

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