



Contribution ID: 55

Type: **Contributed talk**

Dynamical generation of the scalar $f_0(500)$, $f_0(980)$ and $K_0^*(700)$ resonances in the $D_s^+ \rightarrow K^+ \pi^+ \pi^-$ reaction

Tuesday, 9 July 2024 17:15 (20 minutes)

In this talk, based on the work [PRD109,054008], we develop a model aimed at understanding the three mass distributions of pairs of mesons in the Cabibbo-suppressed $D_s^+ \rightarrow K^+ \pi^+ \pi^-$ decay recently measured with high statistics by the BESIII collaboration. The largest contributions come from the ρ^0 and K^{*0} related decay modes, but the $K_0^*(1430)$ and $f_0(1370)$ modes also play a moderate role and all of them are introduced empirically. Instead, the contribution of the $f_0(500)$, $f_0(980)$ and $K_0^*(700)$ resonances is introduced dynamically generated in the chiral unitary approach. We pay special attention to the specific effects created by the light scalar resonances, which are visible in the low mass region of the $\pi^+ \pi^-$ ($f_0(500)$) and $K^+ \pi^-$ ($K_0^*(700)$) mass distributions and a narrow peak for $\pi^+ \pi^-$ distribution corresponding to $f_0(980)$ excitation. The contribution of these three resonances is generated by only one parameter. We see the agreement found in these regions as further support for the nature of the light scalar states as dynamically generated from the interaction of pseudoscalar mesons.

session

D. Hadron Decays

Primary author: DAI, Lianrong (Huzhou University)

Co-author: Prof. OSET, Eulogio (University of Valencia)

Presenter: DAI, Lianrong (Huzhou University)

Session Classification: D. Hadron Decays