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Predictions for $\eta_c \to \eta\pi^+\pi^-$ producing $f_0(500)$, $f_0(980)$ and $a_0(980)$

Wednesday 10 May 2017 10:00 (30 minutes)

We perform calculations for the $\eta_c \to \eta\pi^+\pi^-$ decay using elements of SU(3) symmetry to see the weight of different trios of pseudoscalars produced in this decay, prior to the final state interaction of the mesons. After that, the interaction of pairs of mesons, leading finally to $\eta\pi^+\pi^-$, is done using the chiral unitary approach. We evaluate the $\pi^+\pi^-$ and $\pi\eta$ mass distributions and find large and clear signals for $f_0(500)$, $f_0(980)$ and $a_0(980)$ excitation. The reaction is similar to the $\chi_{c1} \to \eta\pi^+\pi^-$, which has been recently measured at BESIII and its implementation and comparison with these predictions will be very valuable to shed light on the nature of the low mass scalar mesons.

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