

$f_0(980)$  production in  $D_s^+ \rightarrow \pi^+ \pi^+ \pi^-$  and  $D_s^+ \rightarrow \pi^+ K^+ K^-$  decays

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We study the  $D_s^+ \rightarrow \pi^+ \pi^+ \pi^-$  and  $D_s^+ \rightarrow \pi^+ K^+ K^-$  decays adopting a mechanism in which the  $D_s^+$  decays weakly into a  $\pi^+$  and a  $q\bar{q}$  component, which hadronizes into two pseudoscalar mesons. The final state interactions between these two pseudoscalar mesons is taken into account by using a chiral unitary approach in coupled channels, which gives rise to the  $f_0(980)$  resonance. Hence, we obtain the invariant mass distribution of the pairs  $\pi^+ \pi^-$  and  $K^+ K^-$  after the decay of that resonance and compare our theoretical amplitudes with those available from the experimental data. Our results are in a fair agreement with the shape of these data, within large uncertainty, and a  $f_0(980)$  signal is seen in both the  $\pi^+ \pi^-$  and  $K^+ K^-$  distributions. Predictions for the relative size of  $\pi^+ \pi^-$  and  $K^+ K^-$  distributions are made.

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