

The D_s^+ decay into $\pi^+ K_S^0 K_S^0$ reaction and the $I=1$ partner of the $f_0(1710)$ state

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We have identified the decay modes of the $D_s^+ \rightarrow \pi^+ K^{*+} K^{*-}$, $\pi^+ K^{*0} \bar{K}^{*0}$ reactions producing a pion and two vector mesons. The posterior vector-vector interaction generates two resonances that we associate to the $f_0(1710)$ and the $a_0(1710)$ recently claimed, and they decay to the observed $K^+ K^-$ or $K_S^0 K_S^0$ pair, leading to the reactions $D_s^+ \rightarrow \pi^+ K^+ K^-$, $\pi^+ K_S^0 K_S^0$. The results depend on two parameters related to external and internal emission. We determine a narrow region of the parameters consistent with the large N_c limit within uncertainties which gives rise to decay widths in agreement with experiment. With this scenario we make predictions for the branching ratio of the $a_0(1710)$ contribution to the $D_s^+ \rightarrow \pi^0 K^+ K_S^0$ reaction, finding values within the range of $(1.3 \pm 0.4) \times 10^{-3}$. Comparison of these predictions with coming experimental results on that latter reaction will be most useful to deepen our understanding on the nature of these two resonances.

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