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X (3872) line shapes

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We introduce a near-threshold parameterization that is more general than the effective-range expansion up to and including the effective-range because it can also handle with a near-threhold zero in the $D^0\bar{D}^{*0}$ S-wave. In terms of it we analyze the CDF data on inclusive $p\bar{p}$ scattering to $J/\psi\pi^+\pi^-$, and the Belle and BaBar data on charged B decays to $K\,J/\psi\pi^+\pi^-$ and $KD\bar{D}^0\pi^0$ around the $D^0\bar{D}^{*0}$ threshold. It is shown that data can be reproduced with a similar quality for the X(3872) being a bound {\it and/or} virtual state. We also find that the X(3872) might be two virtual-state poles, that give rise to a second-order S-matrix pole in the limit in which the small D^{*0} width vanishes. The $D^0\bar{D}^{*0}$ compositeness coefficient ranges from nearly 0 up to 1 in different scenarios.

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