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Data-driven dispersive analysis of the $\gamma\gamma \to D\bar{D}$ data

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We present a data-driven analysis of the γγ⟶D+D− and γγ⟶D0D¯0 reactions from threshold up to 4.0 GeV in the DD¯ invariant mass. For the S-wave contribution, we adopt a partial-wave dispersive representation, which is solved using the N/D ansatz. The left-hand cuts are accounted for using the model-independent conformal expansion. The D-wave χc2(3930) state is described as a Breit-Wigner resonance. The resulting fits are consistent with the data on the invariant mass distribution of the e+e−⟶J/ψDD¯ process. Performing an analytic continuation to the complex s-plane, we find no evidence of a pole corresponding to the broad resonance X(3860) reported by the Belle Collaboration. Instead, we find a clear bound state below the DD¯ threshold at sB−−√=3695(4) MeV, confirming the previous phenomenological and lattice predictions. The existence of such state X(3695) may be tested in direct production at PANDA@FAIR.

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