

Probing $Y(4260)$ as the $D_1\bar{D} + c.c.$ hadronic molecule state in e^+e^- annihilations

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During the past decade, a large number of the so-called X , Y , Z states have been observed in the heavy flavor sector, as have become candidates for exotic hadrons which may contain more complicated quark-gluon structures than the conventional quark model picture. Among all those exotic candidates, the $Y(4260)$ is undoubtedly one of the most mysterious states and has initiated a lot of experimental and theoretical studies since its observation by BaBar Collaboration in the $J/\psi\pi\pi$ channel in 2005. I will discuss our recent works in probing $Y(4260)$ as the $D_1\bar{D} + c.c.$ hadronic molecule state using the non-relativistic effective field theory. This study shows that the $Y(4260)$ contains predominantly a $\bar{D}D_1 + c.c.$ molecular component and its decays into the $\bar{D}D^*\pi + c.c.$ channel should have a nontrivial lineshape. It also provides a natural explanation for the production of $Y(4260)$ in e^+e^- annihilations in the same framework and allows us to predict the $Y(4260)$ leptonic decay width of which the upper limit is about 500 eV.

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