

$d^*(2380)$ in a chiral constituent quark model

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Collaboration

Abstract content

In this talk, I briefly summarize our progress made in the study of the structure and decay properties of the $d^*(2380)$, a dibaryon state recently reported by the WASA@COSY Collaboration. We studied the $d^*(2380)$ in a chiral quark model by performing a RGM dynamical investigation of the coupled-channel $\Delta\Delta + CC$ interaction. The mass of $d^*(2380)$ is properly reproduced and the results show that the $d^*(2380)$ is a compact six-quark cluster dominated by about 2/3 CC component. The obtained wave function is applied to study the single-pion and double-pion decays, and the calculated partial decay widths are in agreement with the experimental data. The charge distribution of $d^*(2380)$ is also calculated and discussed, which is expected to be able to distinguish various pictures of the structure of $d^*(2380)$.

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