

A study of $d^*(2380)$

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$d^*(2380)$ as a new dibaryon resonance was observed by WASW@COSY experiments\cite{Clement} recently. This discovery has triggered a great interest to understand its intrinsic structure. In this talk, a theoretical study of this new dibaryon with the help of the constituent chiral quark model is briefly summarized. It is found that our approach could reasonable reproduce the mass of d^* in the coupled channel with $\Delta\Delta + CC$ (C-hidden color component)\cite{Yuan,Huang}. The obtained wave function for $d^*(2380)$ shows that the system is a compact one and the probabilities are about 2/3 for the CC component and 1/3 for the $\Delta\Delta$ component, respectively. This wave function is applied for the calculation of its partial decays, like double pion decay modes of $d^*(2380) \rightarrow d\pi^0\pi^0, d\pi^+\pi^-\$ \cite{Dong1}, $pn\pi^0\pi^0$, $pn\pi^+\pi^-\$ \cite{Dong2}, and single pion decay mode of $pn\pi^-\$ \cite{Dong3}. Our calculated double pion decay widths are in excellent agreement with the experiments\cite{Clement1}. The single pion decay width is also compatable with the experimental measurement. It is again supported our compact hexaquark dominated picture. In addition, the charge distribution of $d^*(2380)$, as another physical quantity to distinguish its structure, is also proposed and discussed\cite{Dong4}.

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