

Study of the pentaquark states

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Inspired by the observations of the pentaquark-like states found by LHCb, we investigated these heavy pentaquark states with the coupled channel unitary approach, taking into account the heavy quark spin symmetry and local hidden gauge symmetry. We dynamically reproduced three P_c states and $P_{cs}(4459)$ in the interactions of the channels $\bar{D}^{(*)}\Sigma_c^{(*)}$ and $\bar{D}^{(*)}\Xi_c^{(*,')}$ with their coupled channels, respectively. Furthermore, we also show the results on the two-poles structure of the $\Lambda(1405)$ state in the interactions of $\bar{K}N$ and $\pi\Sigma$ with their coupled channels. Thus, one concluded that these resonances were molecular states.

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