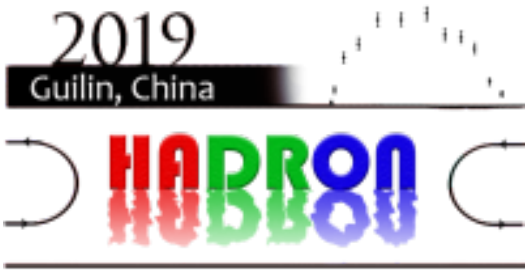
XVIII International Conference on Hadron Spectroscopy and Structure
(HADRON2019)



Contribution ID: **174** Type: **Parallel**

Predictions for Ω_b weak decay and Ξ_{cc} molecular states from meson-baryon interaction

Tuesday, 20 August 2019 11:30 (20 minutes)

We intend to divide this talk into two parts: in the first one, stimulated by the new experimental LHCb findings associated with the Ω_c states, some of which we have described in previous work as being dynamically generated through meson-baryon interaction, we have extended this approach to make predictions for new Ξ_{cc} molecular states (in the $C = 2$, $S = 0$ and $I = 1/2$ sector). These states manifest themselves as poles in the solution of the Bethe-Salpeter equation in coupled channels. In particular, the kernels of this equation were obtained using the Lagrangians coming from the hidden local gauge symmetry, where the interactions are dominated by the exchange of light vector mesons. The extension of this approach to the heavy sector stems from the realization that the dominant interaction corresponds to having the heavy quarks as spectators, which implies the preservation of the heavy quark symmetry. As a result, we have found several states: two associated with the pseudoscalar meson-baryon interaction with $J^P = 1/2^-$, with masses around 4080 and 4090 MeV. Furthermore, from the vector meson-baryon interaction we get three states degenerate with $J^P = 1/2^-$ and $3/2^-$ from 4220 MeV to 4330 MeV, and two more states around 4280 MeV and 4410 MeV, degenerate with $J^P = 1/2^-$, $3/2^-$ and $5/2^-$. On the other hand, in the second part of the talk, we present predictions for the weak decay $\Omega_b \to (\Xi_c^+ K^-)\pi^-$, in view of the $\Omega_c(3050)$ and $\Omega_c(3090)$ states, which are generated through the meson-baryon interaction in the ΞD, $\Xi_c K^-$ and $\Xi_c' K^-$ coupled channels. Specifically, we investigate the invariant mass distributions of those channels making predictions that could be confronted with future experiments, providing useful information that could help determine the quantum numbers and nature of these states.

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Session Classification: Session 4: Hadron decays, production and interactions

Track Classification: Session 4: Hadron decays, production and interactions