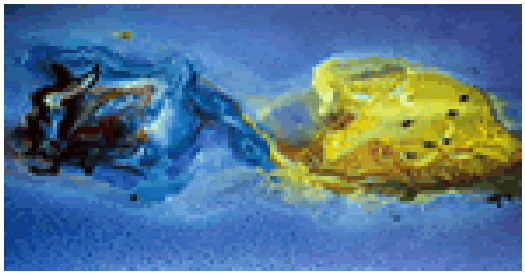

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Ω_c excited states with heavy-quark spin symmetry

Wednesday, 1 August 2018 16:00 (20 minutes)

We study the $C = 1$, $S = -2$, $I = 0$ sector, where five Ω_c states have been recently observed by the LHCb Collaboration [1]. In Ref. [2] a unitarized meson-baryon model was solved by adopting a one-subtraction renormalization scheme taking, as bare meson-baryon interaction, an extended Weinberg-Tomozawa interaction consistent with both chiral and heavy-quark spin symmetries. This $\mathrm{SU}(6)\times$HQSS scheme lead to a successful description of the observed lowest-lying odd parity charmed $\Lambda_c(2595)$ and $\Lambda_c(2625)$ states [2], and bottomed $\Lambda_b(5912)$ and $\Lambda_b(5920)$ resonances [3]. In the $C = 1$, $S = -2$, $I = 0$ sector, five odd-parity Ω_c states were dynamically generated, but with masses below 3 GeV, not allowing for an identification with the observed LHCb resonances [2]. Recently we have revised this model and explored two different scenarios for the renormalization scheme, that is, using a modified common energy scale to perform the subtractions or utilizing a common UV cutoff to render finite the UV divergent loop functions in all channels. In both cases, we show that some (at least three) of the dynamically generated states can be identified with the experimental Ω_c, while having odd parity and $J = 1/2$ or $J = 3/2$. Two of these states turn out to be part of the same $\mathrm{SU}(6)\times$HQSS multiplets as the charmed and bottomed Λ baryons [4].

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