Contribution ID: **172** Type: **Contributed**

A new look at the P_{cs} states from a molecular perspective.

Monday, June 5, 2023 3:30 PM (20 minutes)

We have a look at the P_{cs} states generated from the interaction of $\bar{D}^{(*)}\Xi_c^{(\prime *)}$ coupled channels. We consider the blocks of pseudoscalar-baryon ($\frac{1}{2}^+$, $\frac{3}{2}^+$) and vector-baryon ($\frac{1}{2}^+$, $\frac{3}{2}^+$), and find 10 resonant states coupling mostly to $\bar{D}\Xi_c$, $\bar{D}^*\Xi_c$, $\bar{D}\Xi_c'$, $\bar{D}^*\Xi_c'$, $\bar{D}\Xi_c^*$ and $\bar{D}^*\Xi_c^*$. A novel aspect of the work is the realization that the $\bar{D}\Xi_c$, $\bar{D}_s\Lambda_c$ or $\bar{D}^*\Xi_c$, $\bar{D}_s^*\Lambda_c$ channels, with a strong transition potential, collaborate to produce a larger attraction than the corresponding states $\bar{D}\Sigma_c$, $\bar{D}\Lambda_c$ or $\bar{D}^*\Sigma_c$, $\bar{D}^*\Lambda_c$ appearing in the generation of the strangenessless P_c states, since in the latter case the transition potential between those channels is zero. The extra attraction obtained in the $\bar{D}\Xi_c$, $\bar{D}^*\Xi_c$ pairs preclude the association of these channels to the $P_{cs}(4338)$ and $P_{cs}(4459)$ states respectively. Then we find a natural association of the $P_{cs}(4338)$ state coupling mostly to $\bar{D}^*\Xi_c$ while the $P_{cs}(4459)$ is associated to the state found that couples mostly to $\bar{D}\Xi_c'$. Four more states appear, like in other molecular pictures, and some of the states are degenerate in spin. Counting different spin states we find 10 states, which we hope can be observed in the near future.

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Session Classification: Exotic hadrons and candidates

Track Classification: Exotic hadrons and candidates