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Properties of the hidden strangeness $P_s(2080)$

We present a detailed study of the partial decay widths of a spin-parity resonance $J^P = 3/2^-$ N^* with a mass of $\simeq 2070$ MeV obtained from the coupled channel s wave vector-baryon ρN, ωN, ϕN, $K^*\Lambda$ and $K^*\Sigma$ dynamics. This state, which couples strongly to the $K^*\Sigma$ channel, corresponds to a nucleon with a hidden strange quark content, in analogy to the P_c states discovered by the LHCb collaboration, and we denote it as $P_s(2080)$. A state with such a nature can decay to vector-baryon, pseudoscalar-baryon, and pseudoscalar-baryon resonance channels, involving triangular loops in the latter two cases. As we will show, the partial decay widths to pseudoscalar-baryon resonance channels, like $\pi N^*(1535)$, $\pi N^*(1650)$, $K\Lambda(1405)$, are comparable to those related to ground state baryons in the final state, like πN, ηN, $K\Lambda$. In this way, reactions involving such lighter baryon resonances in the final state can be used as an alternative source of information on the properties of a N^* with hidden strangeness.

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