Filling up the Two-Body Partial Decay Width of P-Wave Charmonia with the Color Octet Contribution

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Abstract

Comparing particle data group and the more recent Beijing Spectrometer Collaboration (BES) measurements of the partial two-body decay widths of P-wave charmonia into pseudoscalars and proton-antiproton with up-to-date theoretical calculations shows that the color singlet valence Fock state give results that are too small and therefore unable to account for the experimental partial widths. Another explanation is therefore required. We argue and show explicitly that the somewhat foreign inclusion of, foreign because of the exclusive nature of the above processes, the color octet charmonium higher state is the answer.