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Study hadron property and structure in high energy multiproduction process

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In high energy scattering, multiproduction process is unique in its relevance to total cross section an in its global property such as rapidity distribution, etc. If there is hard interactions, the jet rate and structure is a good arena of perturbative chromodynamics. However, once any specific hadron is considered, The property and structure of the hadron must make sense while the global and/or perturbative chromodynamics mechanism still can put important constrains.

The relation of the property and structure of the hadron with its production cross section, distribution etc. is much more complex than its decay process. In one hand there are many difficulties and challenges in calculation; on the other hand, production process provide unique way to study the details of property and structure of the hadron, which is beyond the approach of its decay process.

In this talk I will review our works on such topic in recent years, mainly on the multiquark state (e.g., XYZ particles) production in multiproduction process and the Bethe-Salpeter wave function in exclusive process. For the multiquark state production in multiproduction process, I will emphasize on the unitarity of hadronization process (and relevant models) and discuss why until now, No multiquark states (except the the unclear X(3872)) is observed to produce in multiproduction process. I will also discuss how to calculate hadron molecule production in multiproduction process.

Some of the Refs.
1, Exclusive production ratio of neutral to charged kaon pair in eˆ+eˆ- annihilation continuum via a relativistic quark model
Phys.Rev.C 102 (2020) 1, 015201 • e-Print: 1906.11575 [hep-ph]
2, Exotic hadron bound state production at hadron colliders
Chin.Phys.C 41 (2017) 8, 083106 • e-Print: 1610.04411 [hep-ph]
3, New Bs0π± and Ds±π± states in high energy multiproduction process
Phys.Rev.D 94 (2016) 1, 014023 • e-Print: 1603.03250 [hep-ph]
4, Unitarity and Entropy Change in Exclusive Quark Combination Models
e-Print: 1005.4664 [hep-ph]
5, Exotic hadron production in quark combination model
Phys.Rev.C 80 (2009) 035202 • e-Print: 0906.2473 [hep-ph]
6, Generalized structure of hadron-quark vertex function in Bethe- Salpeter framework: Applications to leptonic decays of V-mesons
J.Phys. 32 (2006) 949-961 • e-Print: hep-ph/0512352 [hep-ph]

Preferred track

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