

Production of sexaquark (uuddss) in high-energy collisions

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Content

The sexaquark is a stable state with quark content (u u d d s s) hypothesized by [1] which might be a candidate for dark matter in the Universe. We present results on coalescence [2] production of the sexaquark using the parton and hadron cascade model PACIAE in p+p collisions at $\sqrt{s} = 7$ TeV. The yields, yield ratios, and dependences of the spatial parameters (the size of the diquark D_0 and the radius of the sexaquark R_0) of a (anti)sexaquark are predicted. The yields of the hadronic H-dibaryon molecule $H(\Lambda\Lambda)$ generated in the final hadronic state are also compared. These estimates provide references for future sexaquark searches and other exotic state studies, such as dibaryons.

[1] Stable Sexaquark, Glennys R. Farrar(New York U., CCPP), e-Print: 1708.08951 [2] Coalescence production of sexaquark with three diquarks in high-energy nuclear collisions, Zhi-Lei She(Wuhan Textile U.) et al., Phys.Rev.D 112 (2025) 3, 034002 • e-Print: 2502.17381 [hep-ph]

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