

Hidden charm meson production in antiproton-induced reactions on nuclei

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Collaboration

Abstract content

The production of charmonia $J/\psi(1S)$ and $\psi'(2S)$ in the antiproton-nucleus reactions at $p_{lab} = 3 - 10$ GeV/c is studied on the basis of the Glauber model taking into account nuclear Fermi motion effects [1,2]. The main reaction channel is charmonium formation in an antiproton-proton collision. We show that the target mass dependence of the charmonium transparency ratio allows to determine the genuine charmonium-nucleon dissociation cross section. This is contrasted to the J/ψ photoproduction at high energies ($E_\gamma = 20$ and 120 GeV), where charmonium formation length is large which blurs the sensitivity of the transparency ratio to the charmonium-nucleon dissociation cross section. Furthermore, the polarization effects in the production of $\chi_{c2}(1P)$ states are evaluated within the generalized eikonal approximation [3]. Finally, the new opportunities for the studies of the X, Y, Z noncharmonium candidates at PANDA experiment are discussed.

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