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Exotic multi quark states and measurement of the forward-backward asymmetry of baryon production in $p\bar{p}$ collisions at D0

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We use the full Run II dataset consisting of 10.4 fb^{-1} of $p\bar{p}$ collisions recorded by the D0 detector at the Fermilab Tevatron collider at $\sqrt{s} = 1.96$ TeV to search for new exotic multiquark states. We report the evidence of a new state X(5568) decaying to $B_s^0\pi$ seen in the $B_s^0 \to J/\psi\phi$ decay channel and its independent confirmation in the semi-leptonic channel $B_s^0 \to \mu^{\pm} D_s^{\mp} X$. We also report on the search
for other exotic states.
We also study the forward-backward production asymmetries of baryons (Λ,Λb,Λc,Ξ,Ω) produced in proton antiproton collisions at s√=1.96 TeV recorded by the D0 detector at the Fermilab Tevatron collider. The forward-backward asymmetries are measured as a function of rapidity. We confirm that the production ratio of backward to forward events, measured by several experiments with various targets and a wide range of energies, is a universal function of "rapidity loss", i.e., the rapidity difference between the beam proton and the baryon, when the baryon shares a diquark with the proton

Experimental Collaboration

D0

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