Z-scaling, High-p_T and Cumulative Particle Production in $p-A$ Collisions at High Energies

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New analysis of experimental data on hadron ($\pi^{\pm}, K^{\pm}, \bar{p}$) production at high-$p_T$ in pp and pD collisions in z-presentation [1,3] is performed. Collision energy and transverse momentum are changed over a wide kinematic region $\sqrt{s} = 11 - 38.8\ GeV$ and $p_T = 1 - 10\ GeV/c$. Data on inclusive cross sections of cumulative particles produced in backward hemisphere in pA collisions at $p_{lab} = 400\ GeV/c$ are analyzed as well. The scaling function for nuclear targets (Li, Be, C, Al, Cu and Ta) are constructed and compared with high-p_T data z-presentation. The hypothesis on z-scaling violation as a signature of new physics phenomena is discussed.

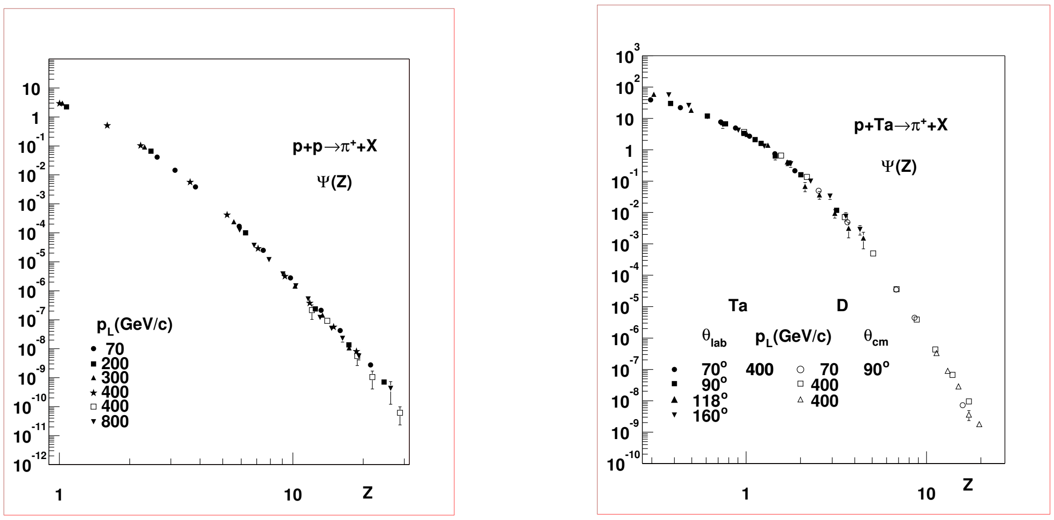

Figure 1: Data z-presentation of π^{+}-meson production in pp and pTa collisions. Experimental data Refs. [4-8] on the inclusive cross section $Ed^3\sigma/dp^3$ were used in the analysis.

References

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