A-dependence of Z-scaling for Hadron Production in $\pi^- - A$ and $p - A$ Collisions at High-p_T

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Scaling features of charged ($\pi^{\pm}, K^{\pm}, \bar{p}$) and neutral ($\pi^0$) particles produced in $\pi^- - A$ and $p - A$ collisions over a high-p_T range at high energies are studied. The general concept of z-scaling is applied for the analysis of $\pi^- - A$ and $p - A$ experimental data on inclusive cross section [1,2]. The scaling function $\psi(z)$ depends on the single variable z which possesses character of a fractal measure. The energy and angular dependence of the scaling function is studied and the anomalous fractal dimension δ_π is found. The scale transformations $z \to \alpha(A) \cdot z$ and $\psi \to \alpha^{-1}(A) \cdot \psi$ are used for the analysis of $\psi(z)$ for different nucleus targets. Exploiting the properties of z-scaling, we predict the differential cross sections for particles produced in the central rapidity region in high energy $\pi^- - A$ and $p - A$ collisions in dependence on their transverse momentum.

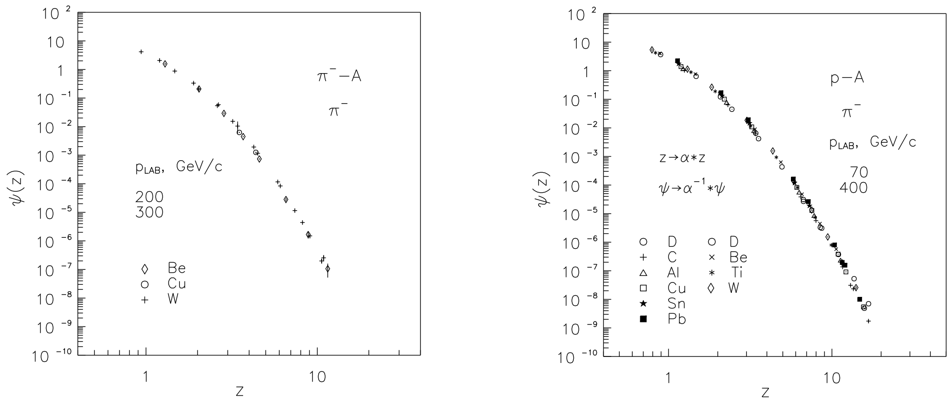

Figure 1: Data z-presentation of hadron production in $\pi^- - A$ and $p - A$ collisions. Experimental data Refs. [3-7] on the inclusive cross section $Ed^3\sigma/dp^3$ were used in the analysis.

References

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