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Λ PRODUCTION IN AU-AU COLLISIONS AT THE AGS

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The results of a measurement of Λ production in $Au-Au$ collisions at 11.6 A GeV/c by Experiment 891 at the Brookhaven AGS are presented. The measurements cover the rapidity region of 2.0 to 3.2 and transverse momenta of 0.0 to 1.4 GeV/c. The results are compared with similar measurements of $Si-Si$ interactions and the predictions of ARC and RQMD models.

1 Experimental method and results

The apparatus for this experiment is similar to that used in an earlier experiment [1]. It is based on charged track reconstruction in TPC. We used the charged track multiplicity for centrality selection. The trigger cross section for this data sample was 270 mb. In fig. 1a we present the Λ transverse mass distributions and in fig. 1b we present the Λ rapidity distributions with the predictions of the ARC [4] and RQMD [5] models for impact parameters 0-4 fermi. We used a global fit to the data points in fig. 1a of the form $A{\cdot}exp((a+b\cdot cosh(y-y_0)){\cdot}m_t+c\cdot(y-y_0)^2)$ where A is an arbitrary constant and a, b, c are independent of rapidity. We scaled the Λ production [2] from $Si+Si$ using the Λ/K^0_s ratio and the $K^+ + K^-$ data [3] from $Au+Au$.

2 Conclusions

In summary, our measured Λ rapidity distribution for $Au+Au$ central interactions agrees with the scaling of $Si+Si$ measurements [2] and with the predictions of the ARC model. The transverse mass distributions become less steep at mid-rapidity compared to the $Si+Si$ measurements or the predictions of ARC and RQMD models.

DISCLAIMER

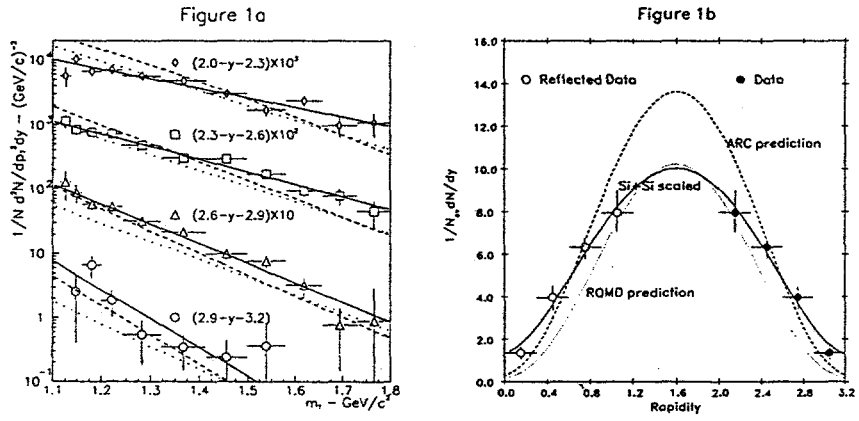

Figure 1: a) Transverse mass (m_t) distributions for Λ's. Each rapidity range has been scaled up by a factor of 10 as shown in the legend on the plot. The solid lines for $2.0 < y(\Lambda) < 2.9$ are fits to the points and for $2.9 < y(\Lambda) < 3.2$ the solid line is the result of the global fit described in the text. Errors shown are statistical only. b)Rapidity distribution for Λ's. The solid curve is the result of scaling $Si + Si$ data as explained in the text. The dashed lines are the ARC predictions and the dotted lines are the RQMD predictions in both figures.

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