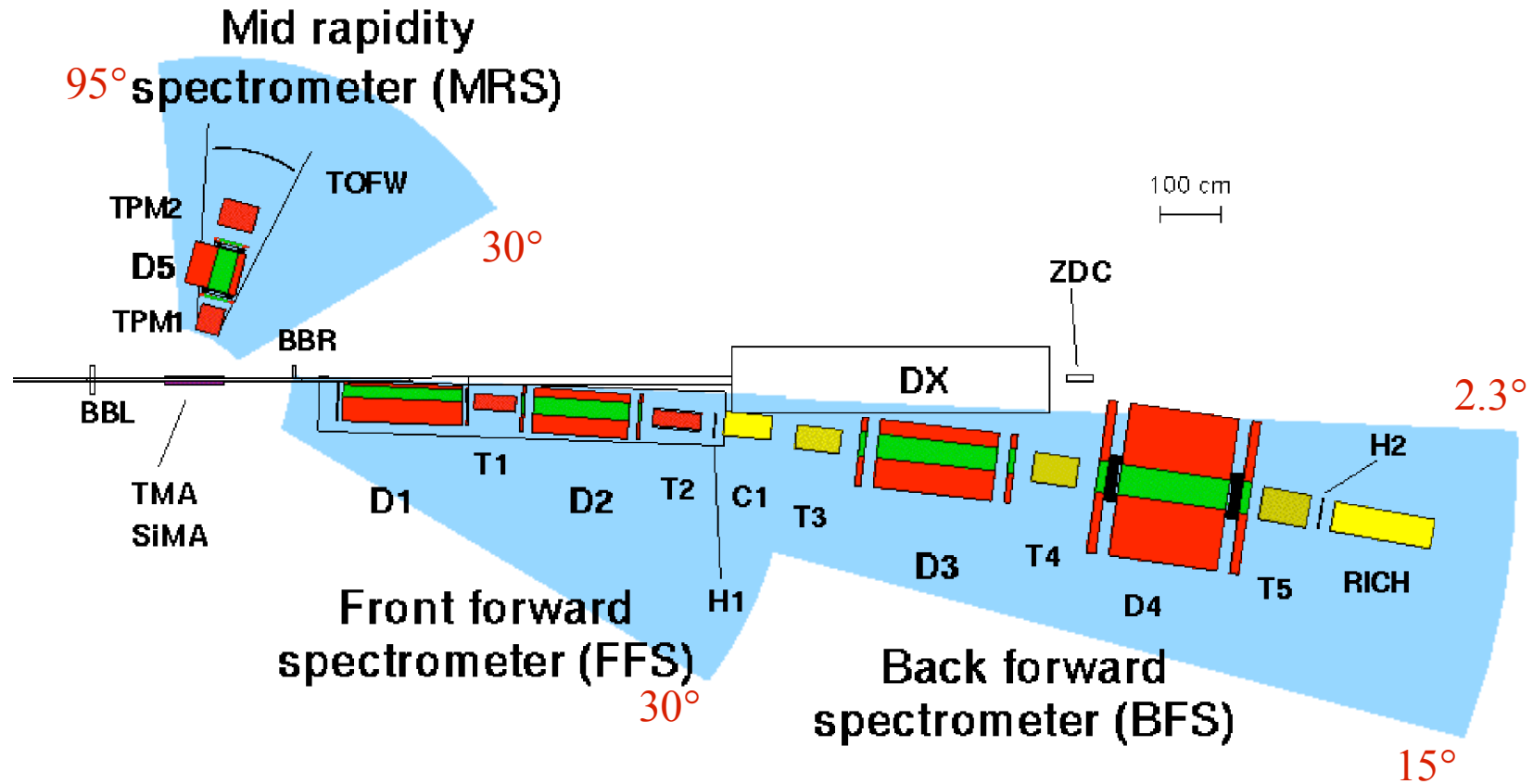


# Is there one thermal source or many @ RHIC

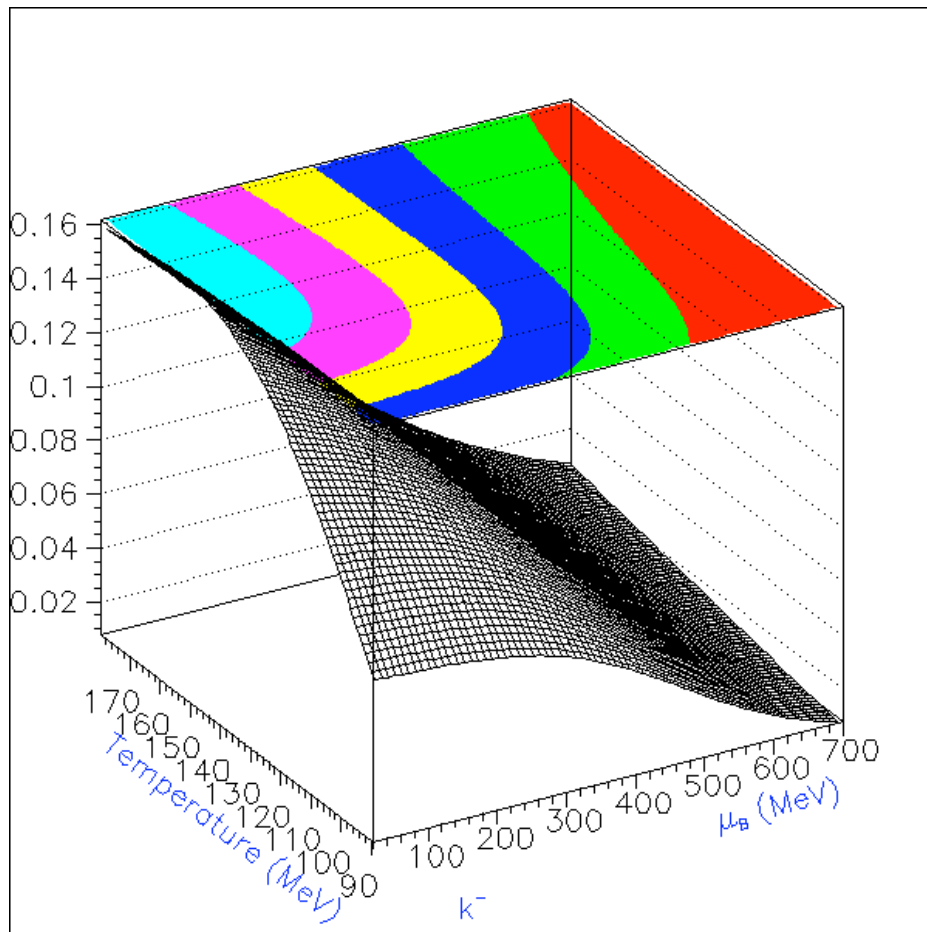
I.G. Bearden<sup>7</sup>, D. Beavis<sup>1</sup>, C. Besliu<sup>10</sup>, Y. Blyakhman<sup>6</sup>, J.Brzychczyk<sup>4</sup>, B. Budick<sup>6</sup>,  
H. Bøggild<sup>7</sup>, C. Chasman<sup>1</sup>, C. H. Christensen<sup>7</sup>, P. Christiansen<sup>7</sup>, J.Cibor<sup>4</sup>, R.Debbe<sup>1</sup>,  
J. J. Gaardhøje<sup>7</sup>, M. Germinario<sup>7</sup>, K. Grotowski<sup>4</sup>, K. Hagel<sup>8</sup>, O. Hansen<sup>7</sup>,  
**B. Harris<sup>11</sup>**, A.K. Holme<sup>12</sup>, H. Ito<sup>11</sup>, E. Jacobsen<sup>7</sup>, A. Jipa<sup>10</sup>, J. I. Jordre<sup>10</sup>, F. Jundt<sup>2</sup>,  
C.E.Jørgensen<sup>7</sup>, T. Keutgen<sup>9</sup>, E. J. Kim<sup>5</sup>, T. Kozik<sup>3</sup>, T.M.Larsen<sup>12</sup>, J. H. Lee<sup>1</sup>,  
Y. K.Lee<sup>5</sup>, G. Løvholden<sup>2</sup>, Z. Majka<sup>3</sup>, A. Makeev<sup>8</sup>, B. McBreen<sup>1</sup>, **M. Murray<sup>11</sup>**,  
J. Natowitz<sup>8</sup>, B.S.Nielsen<sup>7</sup>, K. Olchanski<sup>1</sup>, D. Ouerdane<sup>7</sup>, R.Planeta<sup>4</sup>, F. Rami<sup>2</sup>,  
D. Roehrich<sup>9</sup>, B. H. Samset<sup>12</sup>, S. J. Sanders<sup>11</sup>, I. S. Sgura<sup>10</sup>, R.A.Sheetz<sup>1</sup>, Z.Sosin<sup>3</sup>,  
P. Staszal<sup>7</sup>, T.S. Tveter<sup>12</sup>, F.Videbæk<sup>1</sup>, R. Wada<sup>8</sup> and A.Wieloch<sup>3</sup>

<sup>1</sup>BNL, <sup>2</sup>Strasbourg, <sup>3</sup>Jagiellonian University,, <sup>4</sup>INP, Krakov, <sup>5</sup>Johns Hopkins, <sup>6</sup>CUNY  
<sup>7</sup>Niels Bohr, <sup>8</sup>Texas A&M, <sup>9</sup>Bergen, <sup>10</sup>Bucharest, **<sup>11</sup>Kansas,** <sup>12</sup>Oslo

# The BRAHMS Experiment

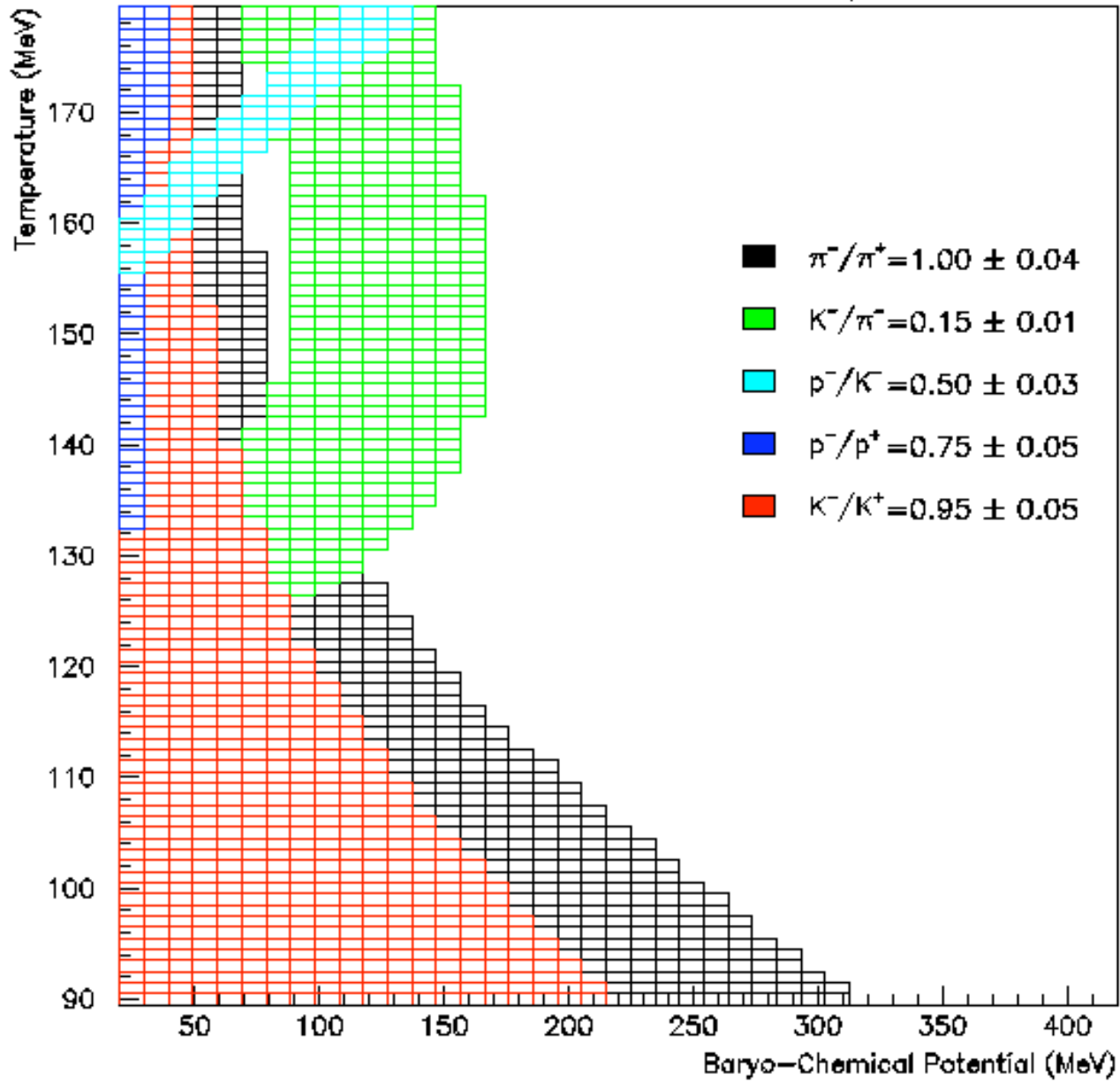


# Thermal Model (Becattini)

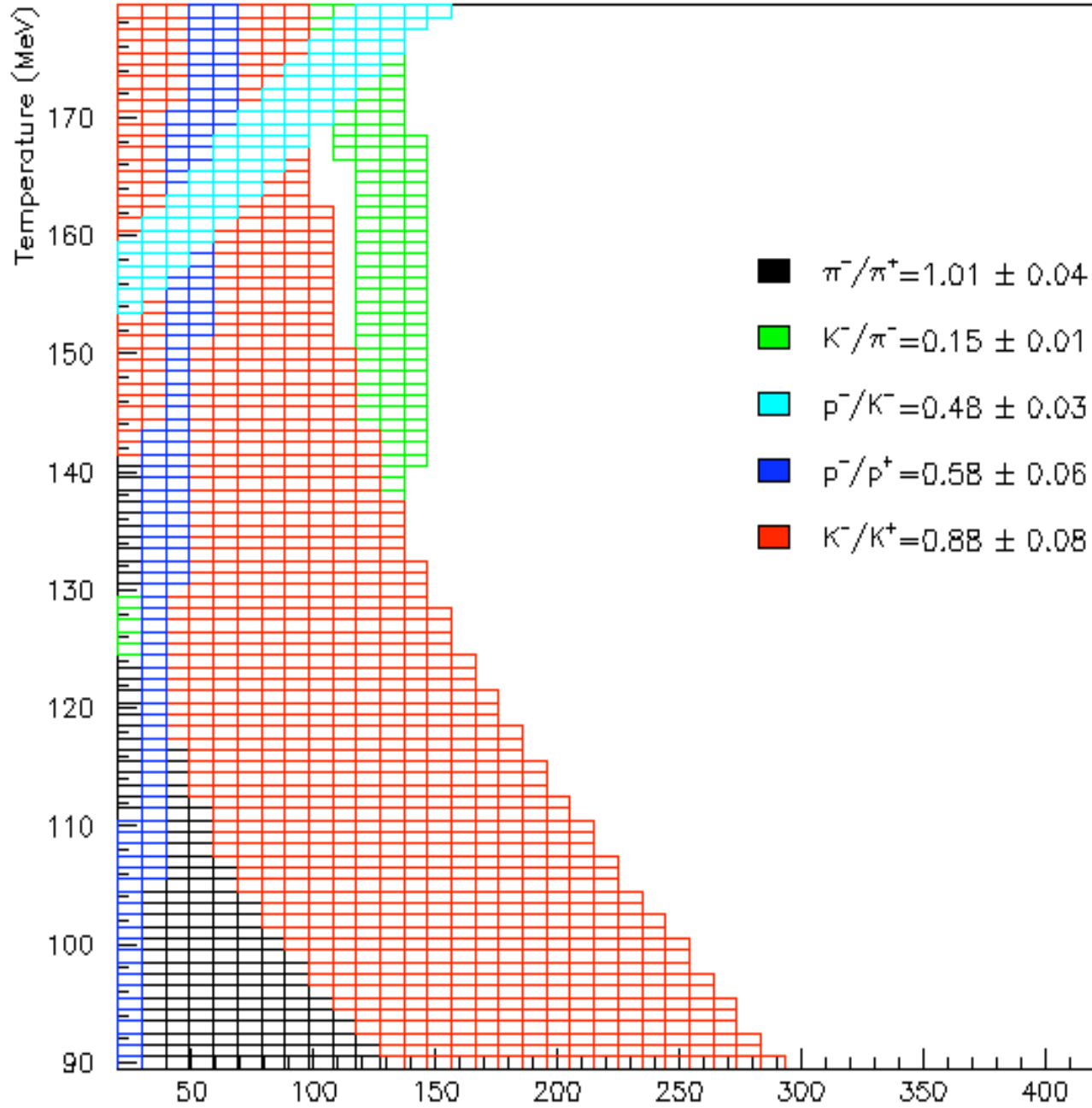


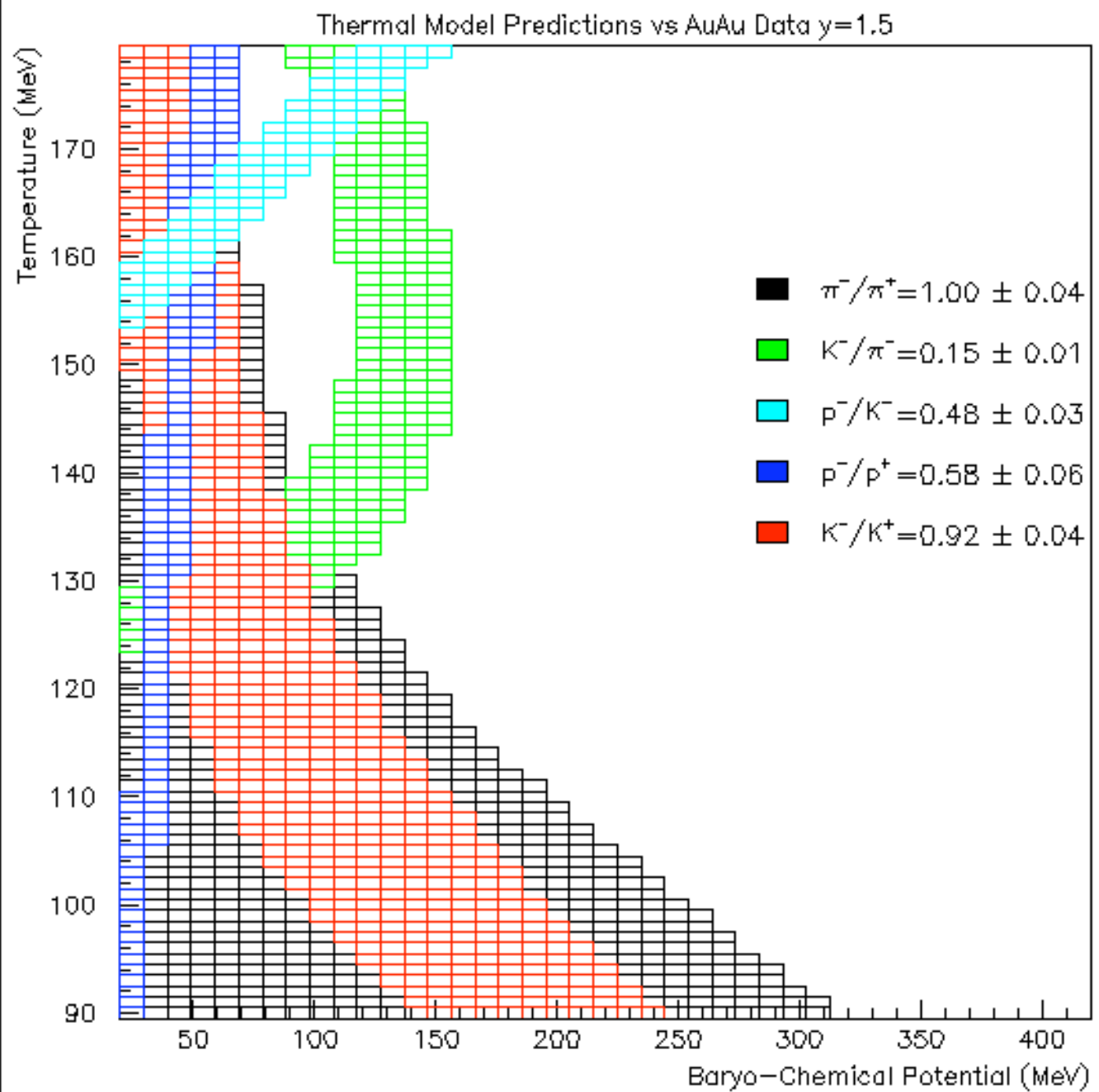
- Use a grand-canonical ensemble to describe the mixture of u,d and s quarks.
- Conserve strangeness & electric charge
- Hadronization based on quark ratios
- Include weak decays of all resonances.

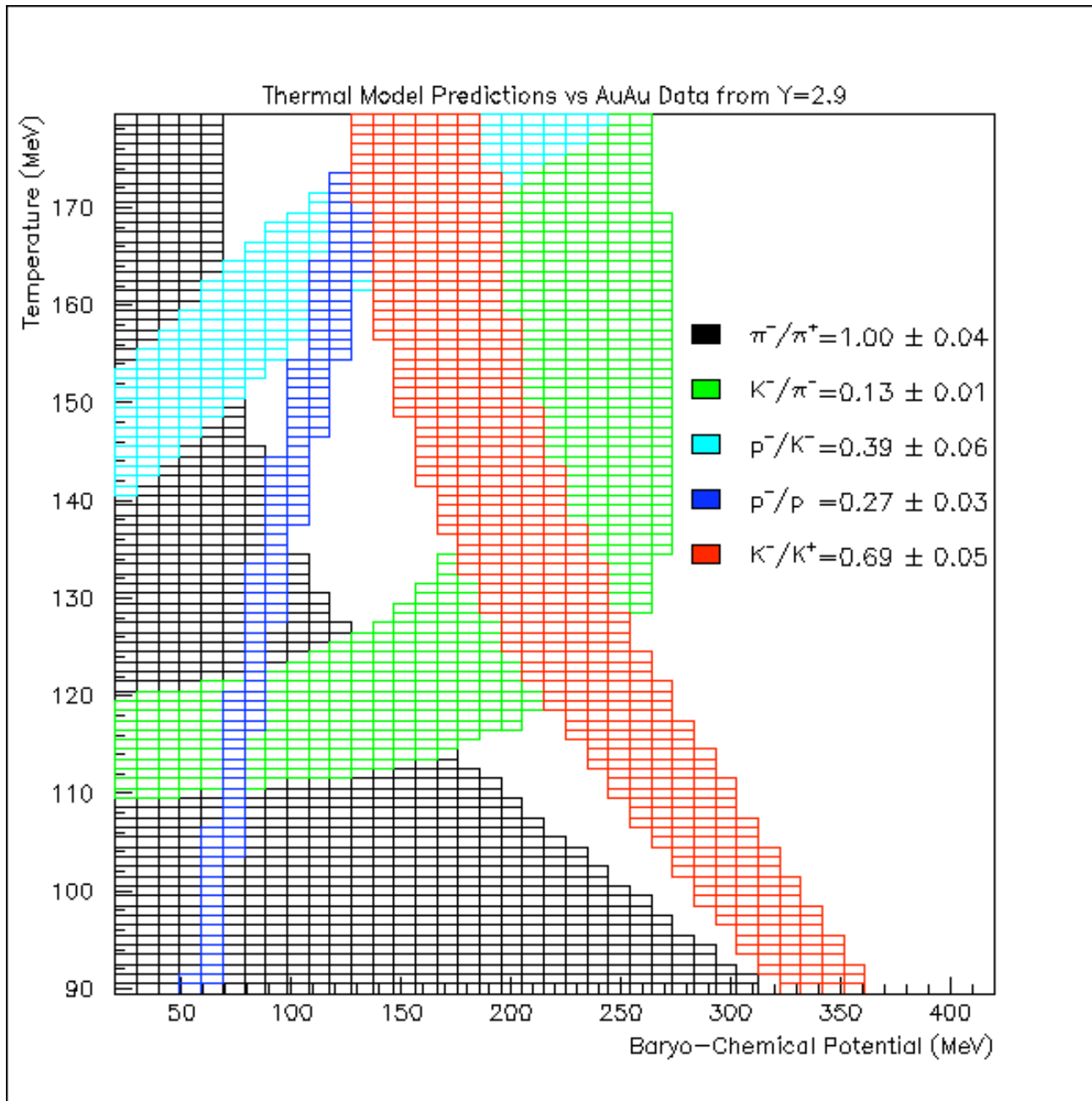
Thermal Model Predictions vs AuAu Data  $y=0$



Thermal Model Predictions vs AuAu Data  $y=0$

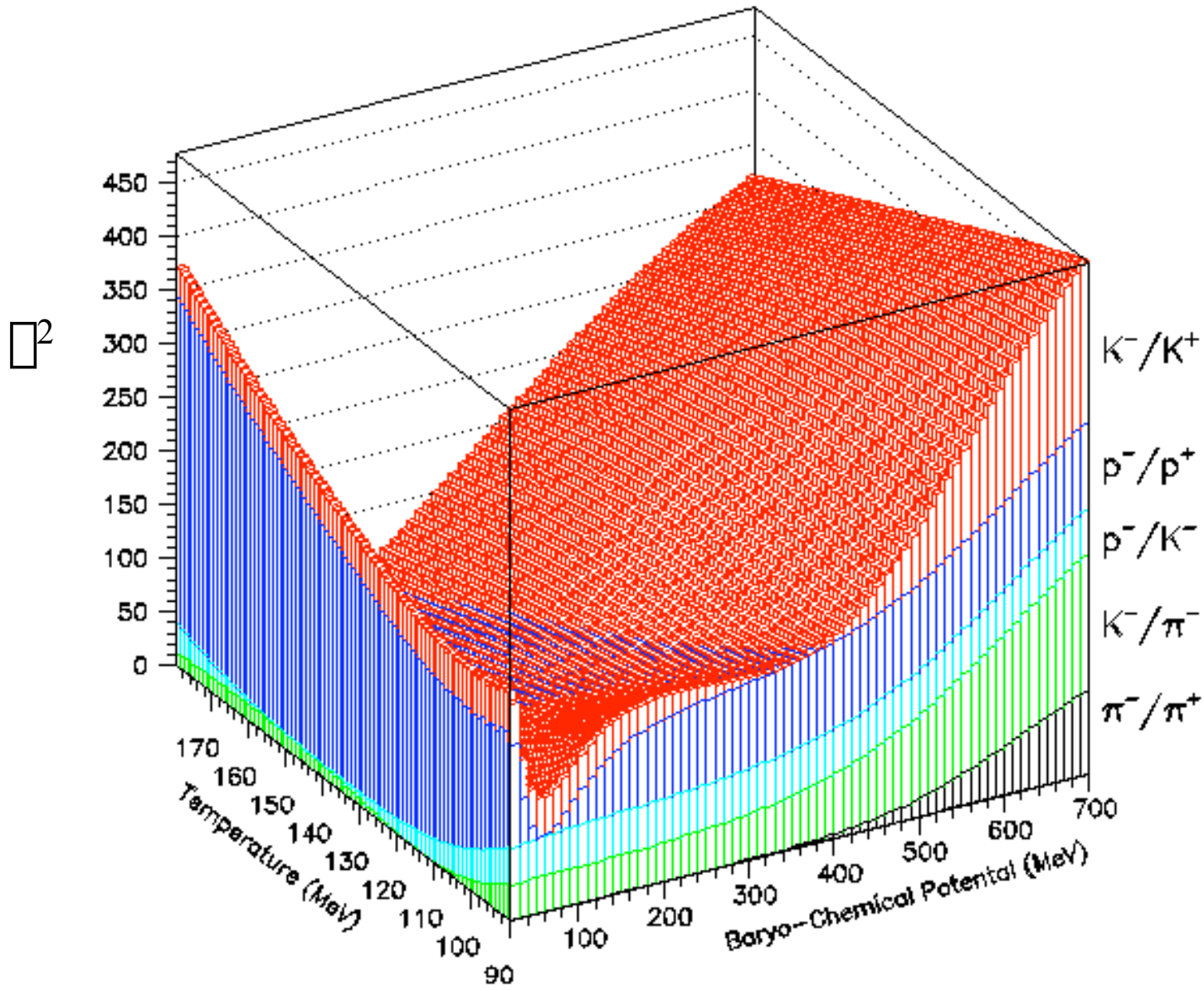






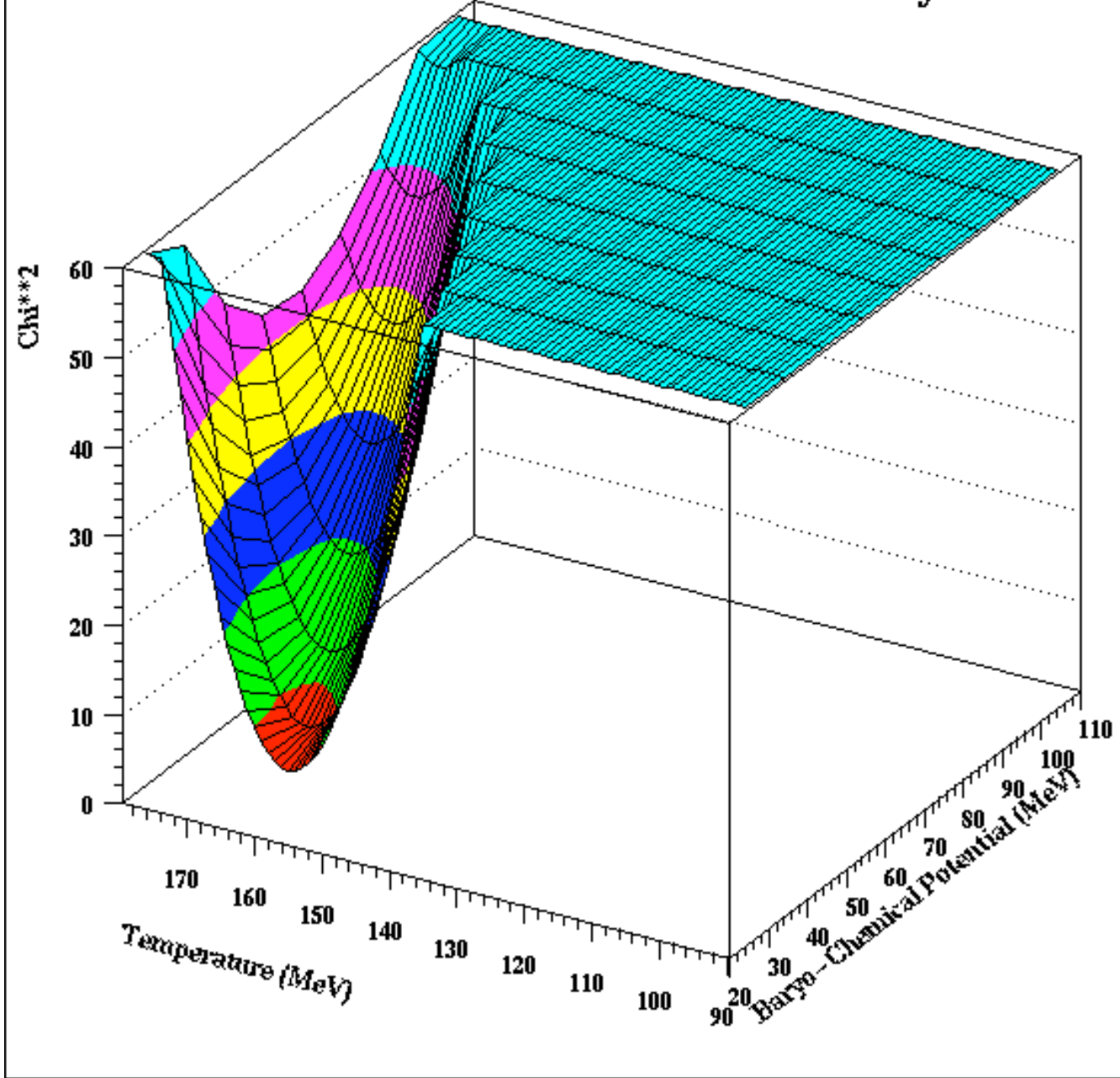
Michael Murray University of Kansas

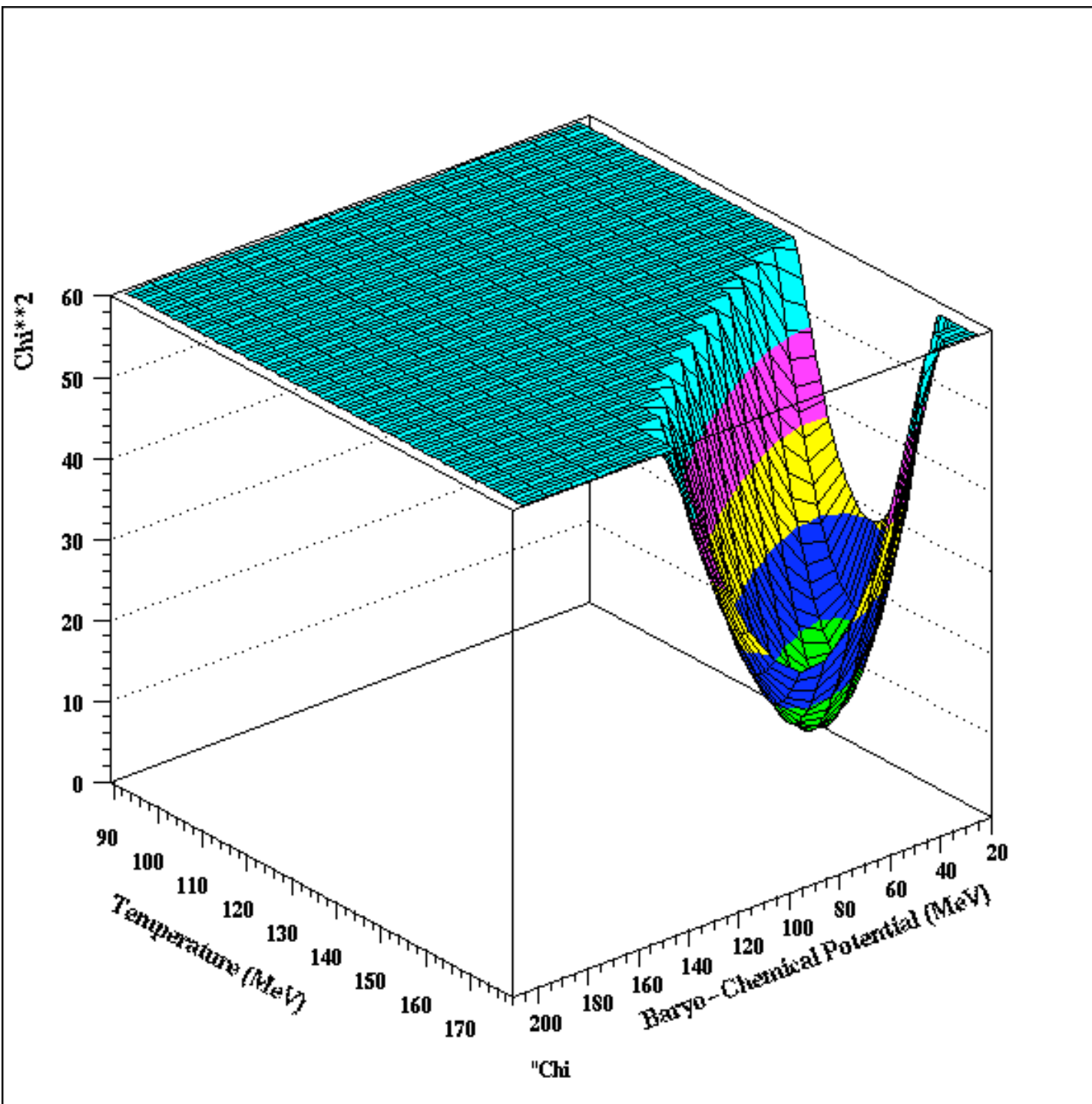
Minimize  $\chi^2$  by searching over  $\mu_B$  and T

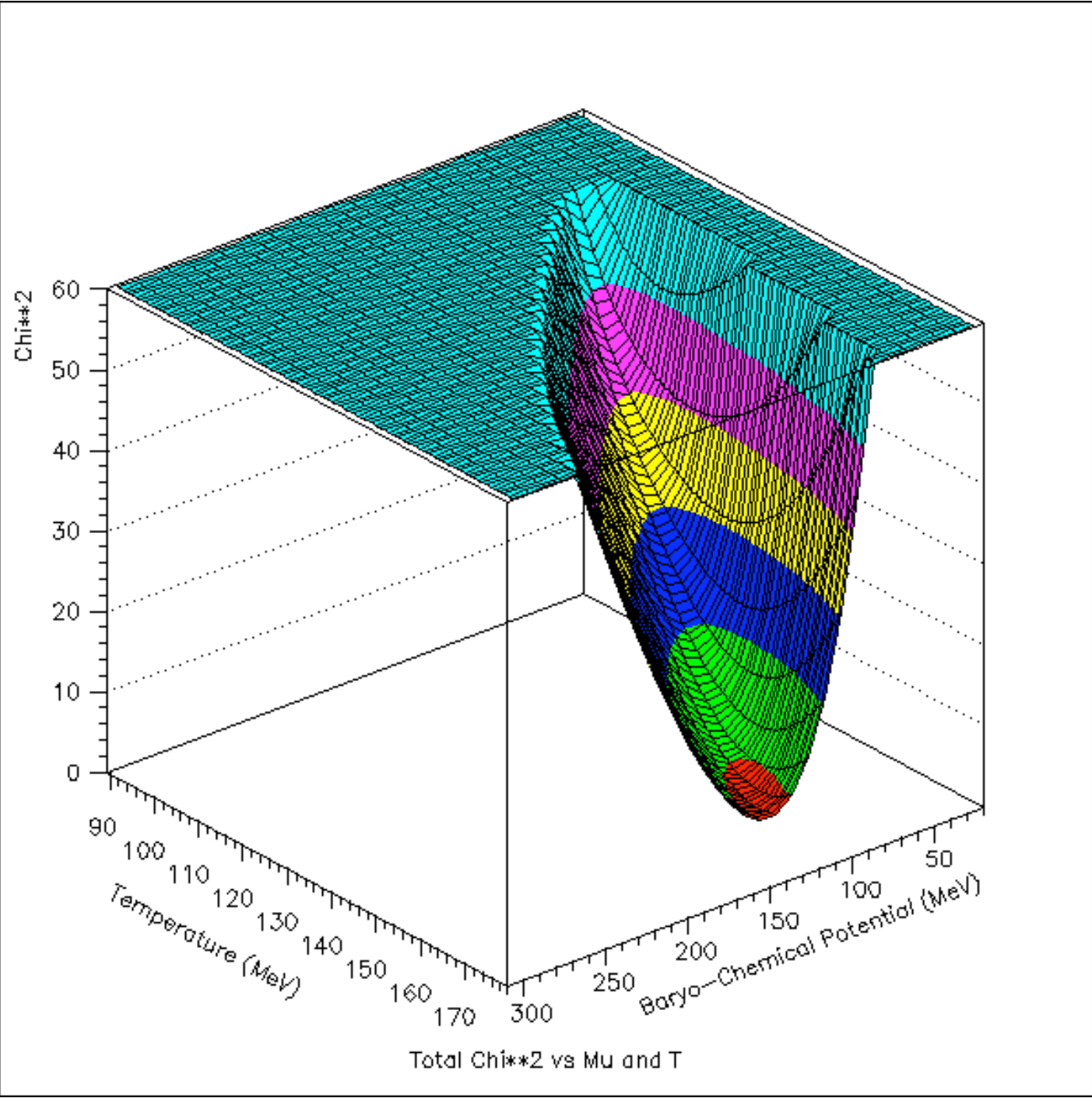




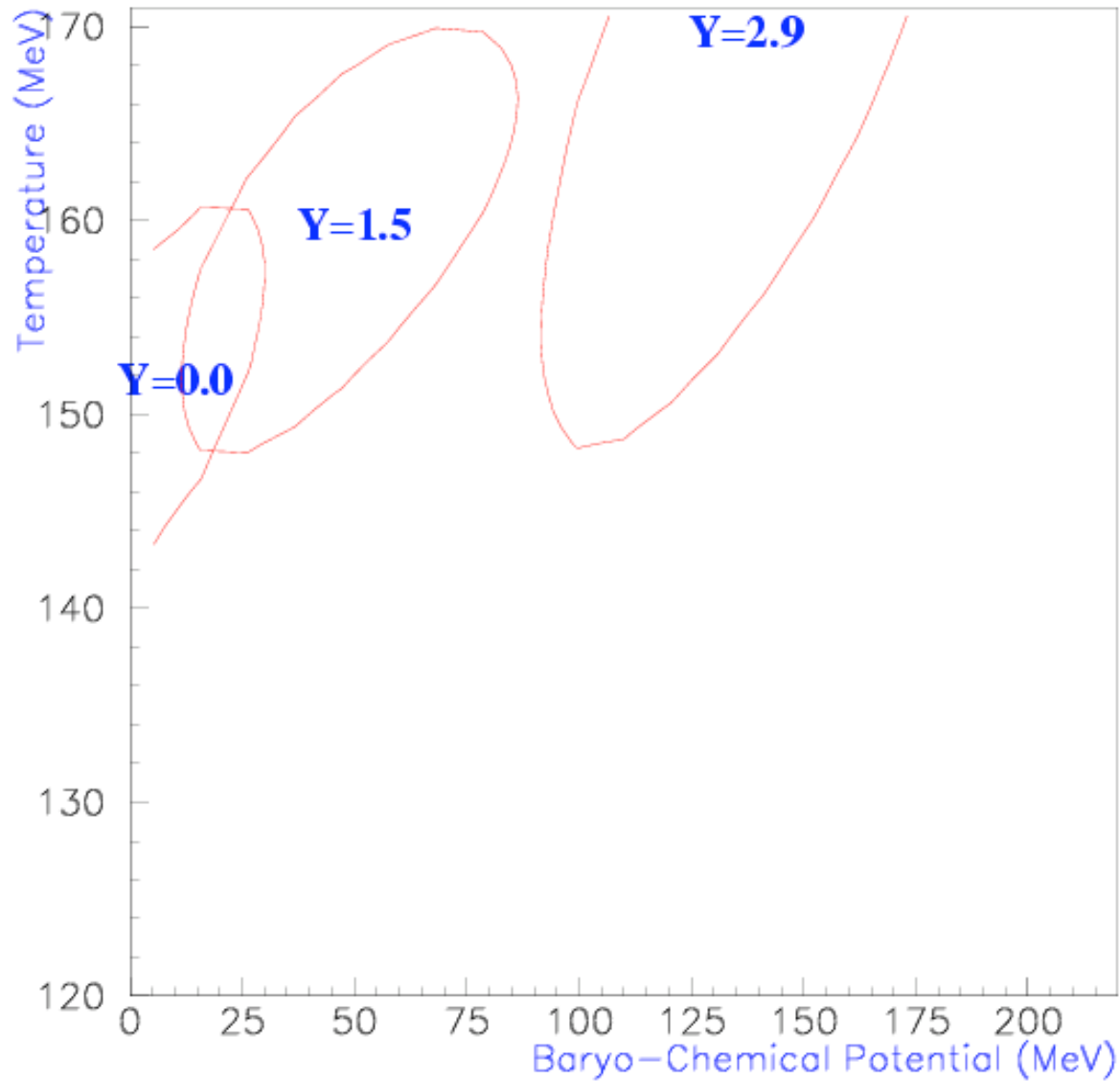
**Thermal Model Predictions vs AuAu Data  $y=0$**







# Rapidity Dependence of Temperature and Chemical Potential



# Conclusions

- Picture will be clearer when final data are used
  - Fit to  $dN/dy$  and volume directly
  - Use a grid that extends to  $T=185\text{MeV}$  or so.
- Thermal model with multiple sources gives a reasonable description of our data.
  - This hints that strangeness is locally conserved
  - Temperature and  $\mu_B$  increase with rapidity.

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