PQM fluctuations vs $\sqrt{s_{NN}}$ and T

Shi Yin[1]

[1]*School of Physics, Dalian University of Technology, Dalian, 116024, P.R. China*

PQM fluctuations.

I. THE CHOICE OF β

Here we select the value of β by fitting the values of χ_2^B/χ_1^B with the experimental data. We found that, the χ_2^B/χ_1^B of different collision energy under the PQM model fits well with the experimental data with $\beta = 1.24$. Here we give some plots under different value of β. The freeze-out temperature T_f is obtained by the formulas,

$$T_f = \frac{158.4}{1 + e^{2.6 - \frac{log(\sqrt{S_{NN}})}{0.45}}}, \tag{1}$$

and for baryon chemical potential,

$$\mu_B = \frac{1303}{1 + 0.286\sqrt{S_{NN}}}. \tag{2}$$

Then we apply the β to obtain the freeze-out temperature and chemical potential,

$$T_{f,PQM} = \beta T_f, \tag{3}$$

$$\mu_{B,PQM} = \beta \mu_B. \tag{4}$$

Then we give some comparison of the χ_2^B/χ_1^B. The

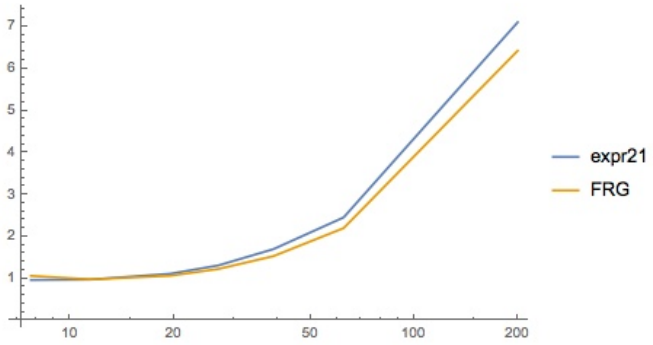

FIG. 1. The χ_2^B/χ_1^B under $\beta = 1.2$

Fig. 1, Fig. 2, Fig. 3 is the comparison of the PQM R_{21} with the experimental data. The blue lines stand for the experimental data, the orange lines stand for the FRG PQM results. So we can see from the pictures, if the $\beta = 1.24$ is better fit. So we use this β to calculate the χ_4^B/χ_2^B, χ_6^B/χ_2^B, χ_8^B/χ_2^B.

II. HIGH ORDER FLUCTUATIONS

Now we use $\beta = 1.24$ to calculate the high order fluctuations. The three pic at the first line is the fluctuations

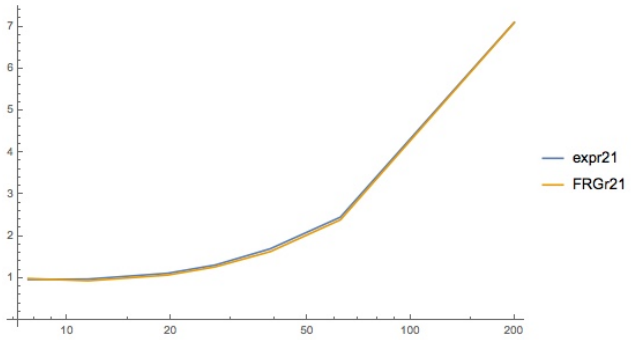

FIG. 2. The χ_2^B/χ_1^B under $\beta = 1.24$

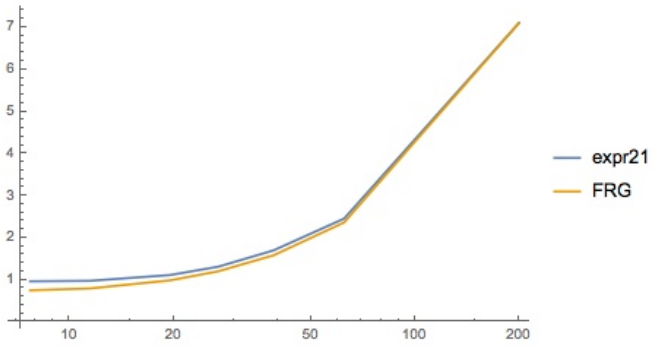

FIG. 3. The χ_2^B/χ_1^B under $\beta = 1.3$

under different collision energy change with temperature. The second line is the fluctuations at the freeze-out temperature and critical temperature change with the collision energy. The red points stand for the freeze-out temperature the blue points stand for the critical temperature.

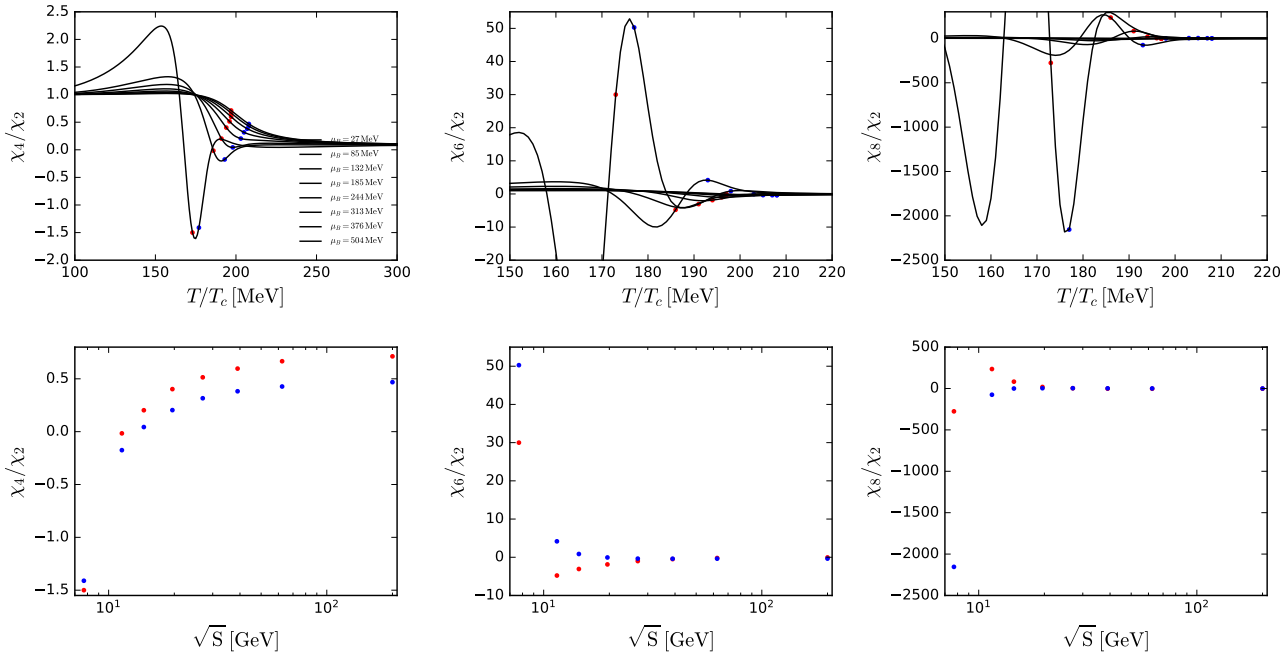

FIG. 4. High order fluctuations