Some remarks on Δg

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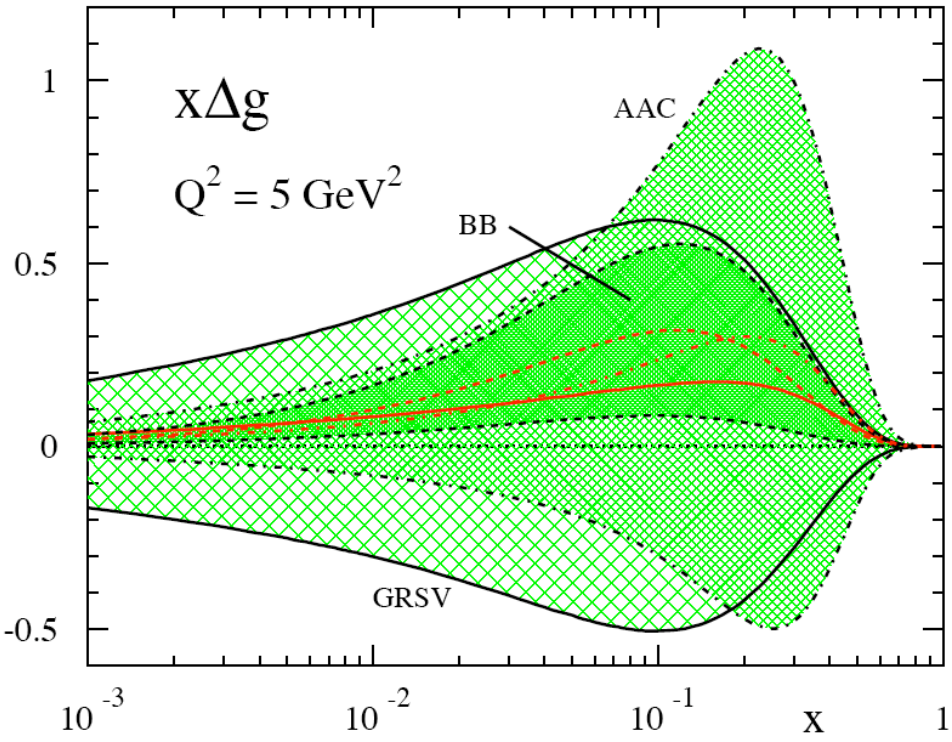
BNL Nuclear Theory

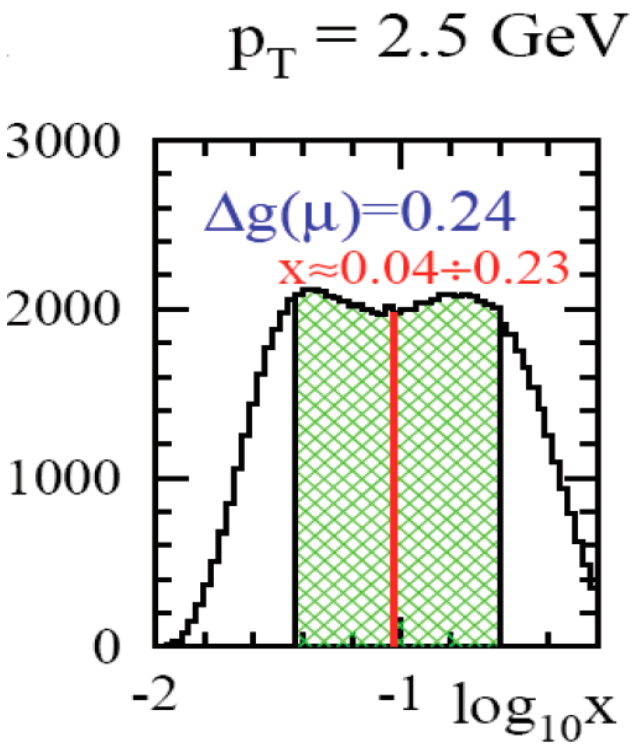
11/09/2006

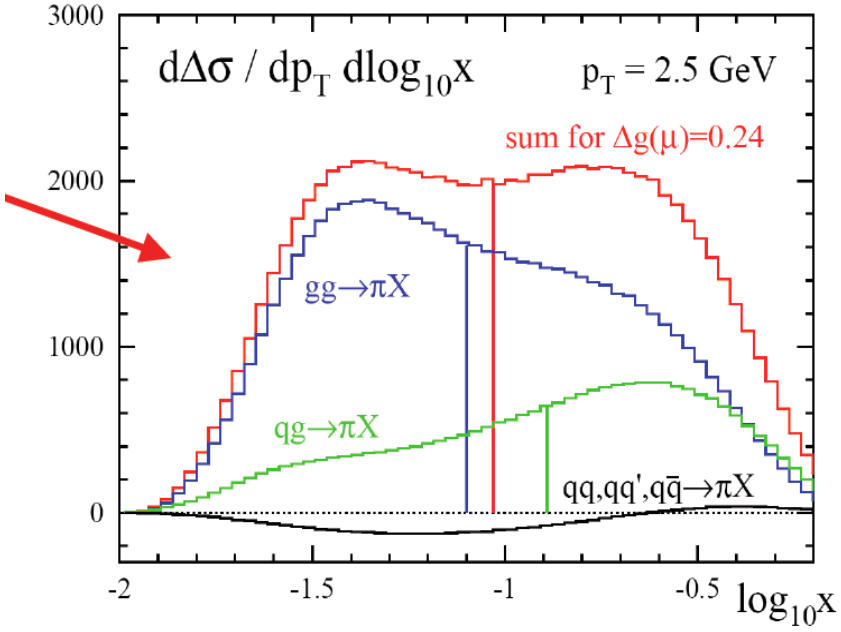


~ 200 GeV RHIC data

$$\frac{d\sigma^{\Rightarrow\Leftarrow} - d\sigma^{\Rightarrow\Rightarrow}}{dp_T d\eta} = \sum_{ab} \int dx_a \int dx_b\ \Delta f_a(x_a, p_T)\ \Delta f_b(x_b, p_T)\ \frac{d\hat{\sigma}_{ab}^{\Rightarrow\Leftarrow} - d\hat{\sigma}_{ab}^{\Rightarrow\Rightarrow}}{dp_T d\eta}$$

- To which x_{gluon} does measurement at given p_T correspond ?
- How does one extract Δg from measured A_{LL} ?
- For integral, how large is contribution from smaller x ?



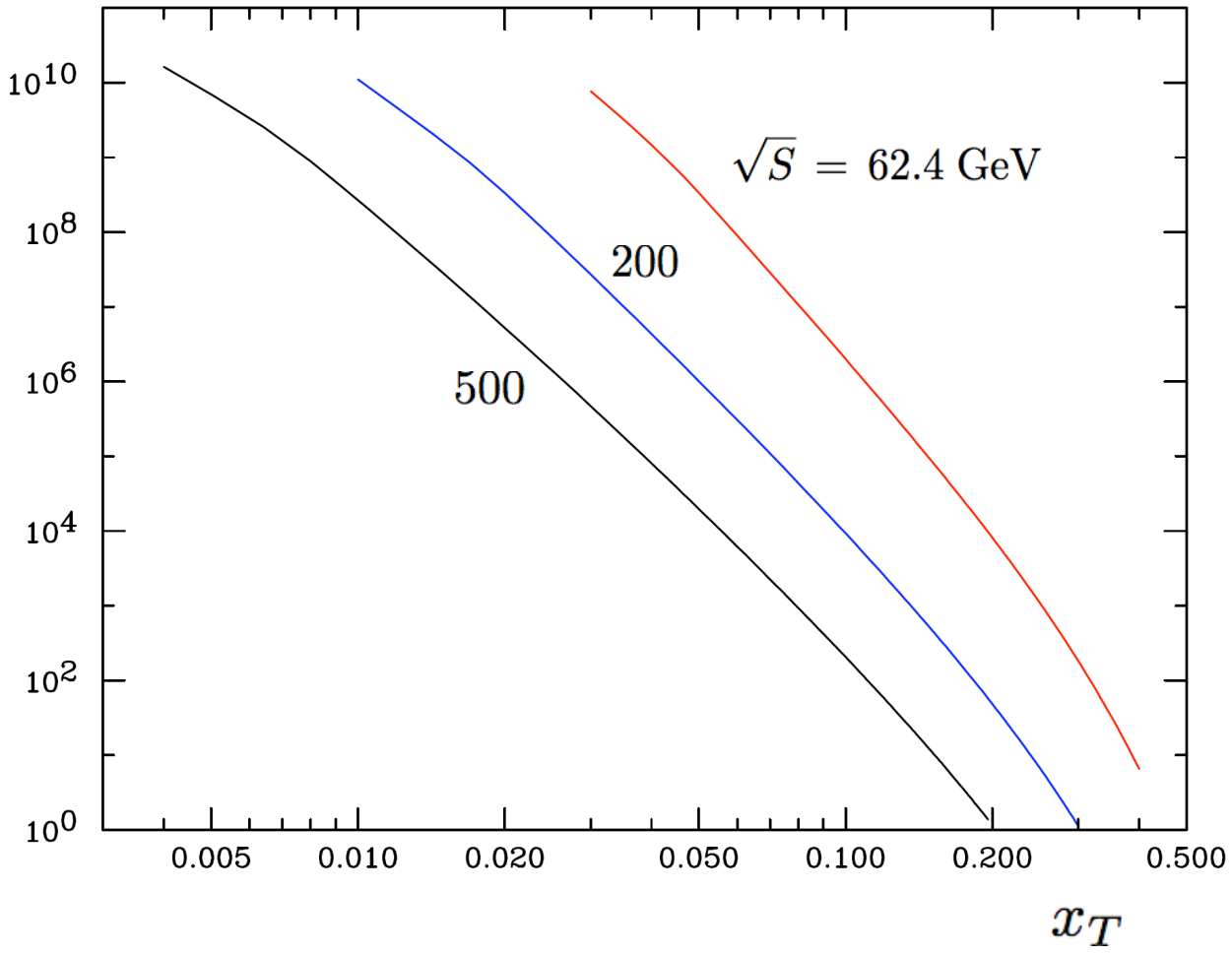


These questions now being addressed in "global" QCD analysis of DIS & RHIC data

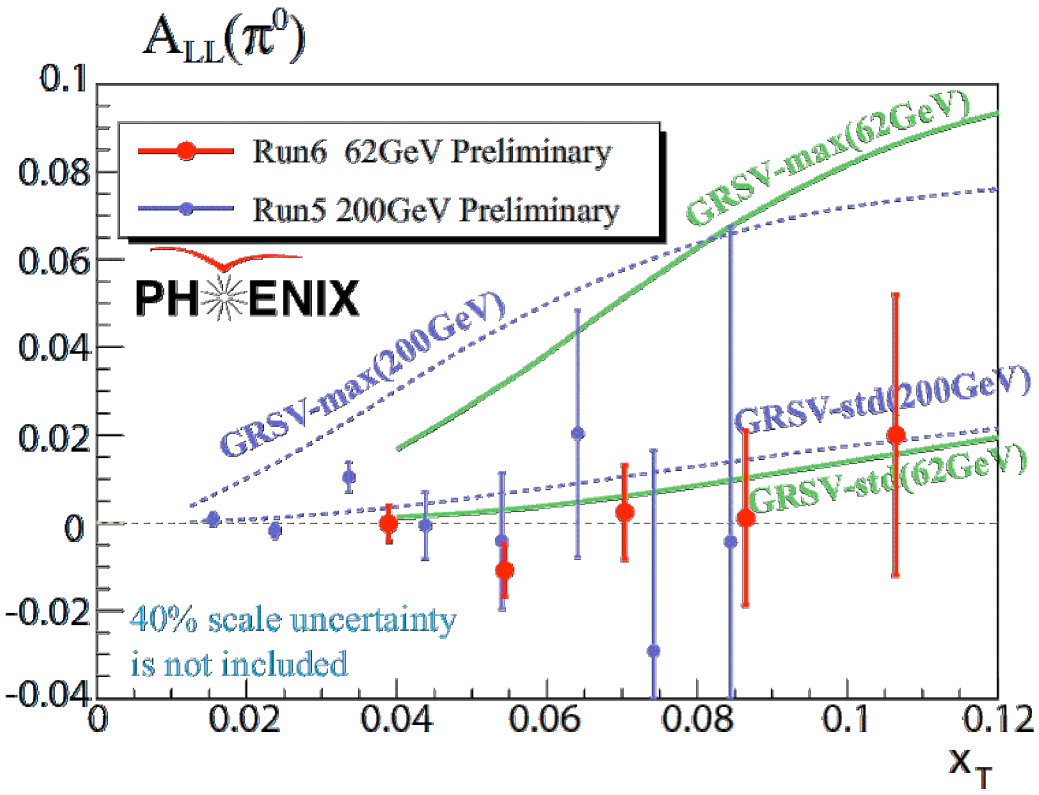
Stratmann, WV; de Florian, Navarro, Sassot; Hirai, Kumano, Saito

$$pp \longrightarrow \pi^0 X$$

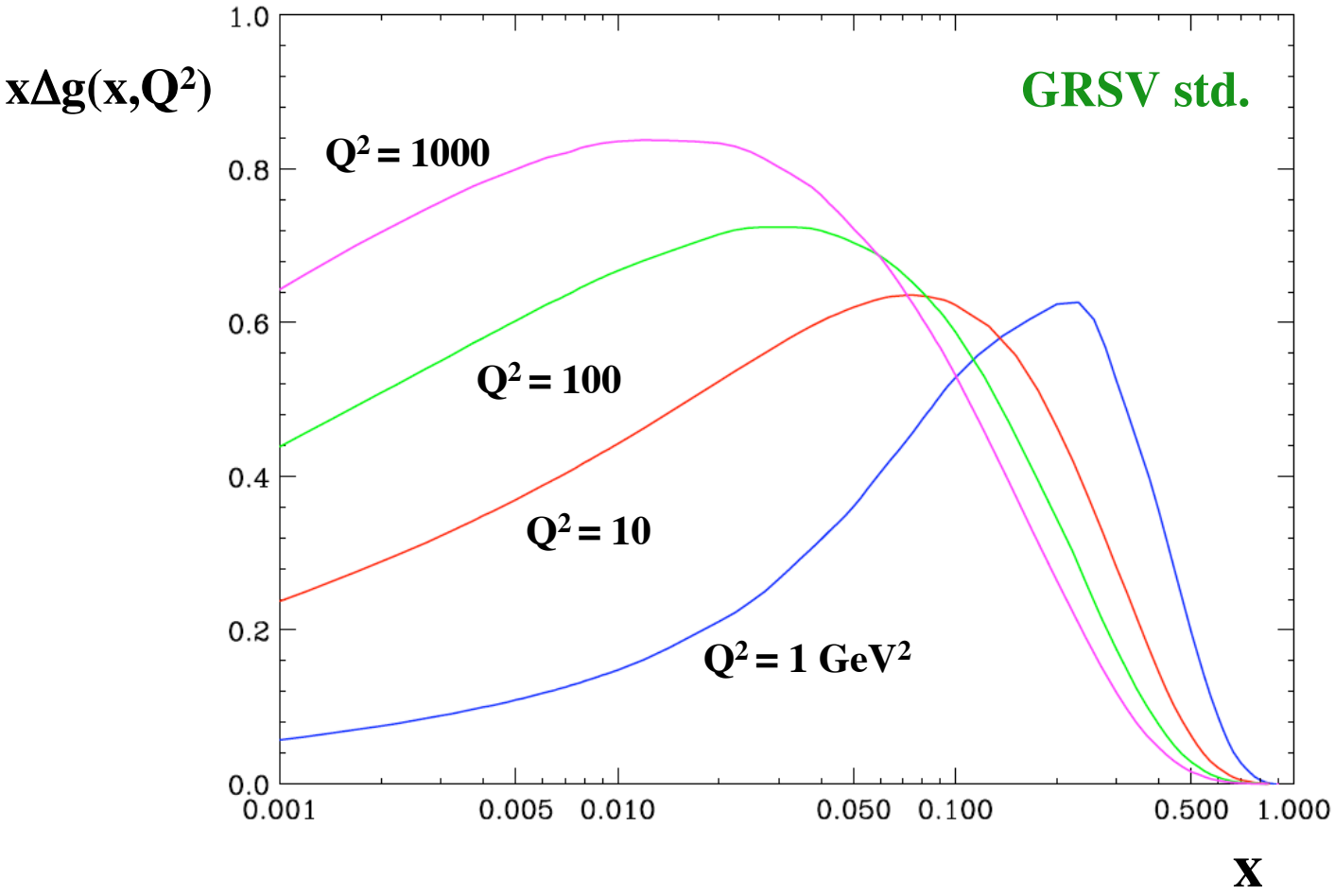
$$\frac{d\sigma}{dp_T\, d\eta} \text{ [pb/GeV]}$$



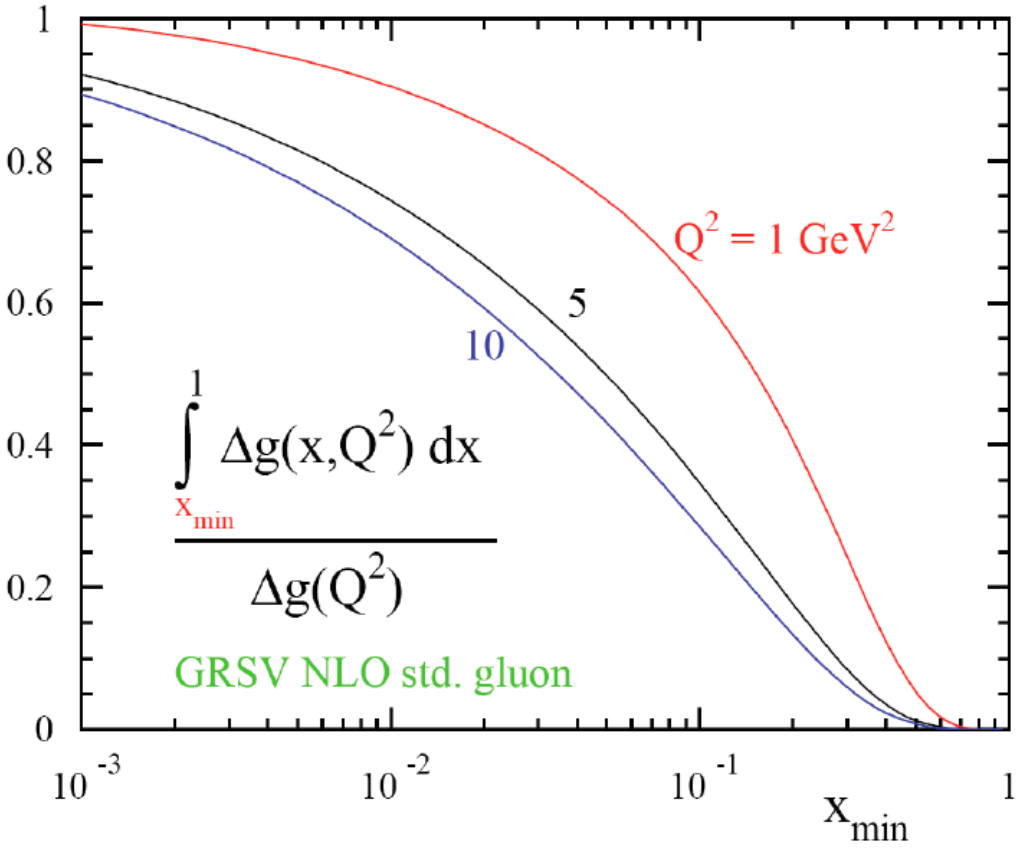
RHIC has run at 200 and at 62.4 GeV:



- **Keep in mind that for different energies same x_T is probed at different p_T. Tests QCD evolution.**



Glück, Reya, Stratmann, WV '96 / '00


1
0.8
0.6
0.4
0.2
0
10^{-3}
10^{-2}
10^{-1}
1
x_{min}
$Q^2 = 1\ GeV^2$
5
10
$\int_{x_{min}}^{1} \Delta g(x,Q^2)\, dx$
$\Delta g(Q^2)$
GRSV NLO std. gluon