

# Systematic Uncertainties Budget

Systematic	$p_T$	$A_{LL}$ ( $10^{-3}$ )
Relative Luminosity (BBC/ZDC + bkg)		0.6
Non-Longitudinal		1.8
Background effects		0.7
Energy scale	5%	
Hadronization and underlying event effects	[-0%, +4%] (asymmetric)	
Trigger and reconstruction bias		[-3.6,+5] (asymmetric)
$p_T$ shift correction	[-0.30 - -0.53, 0.07 - 0.78] GeV	

Correlated Uncertainties {

# $\chi^2$ Minimization

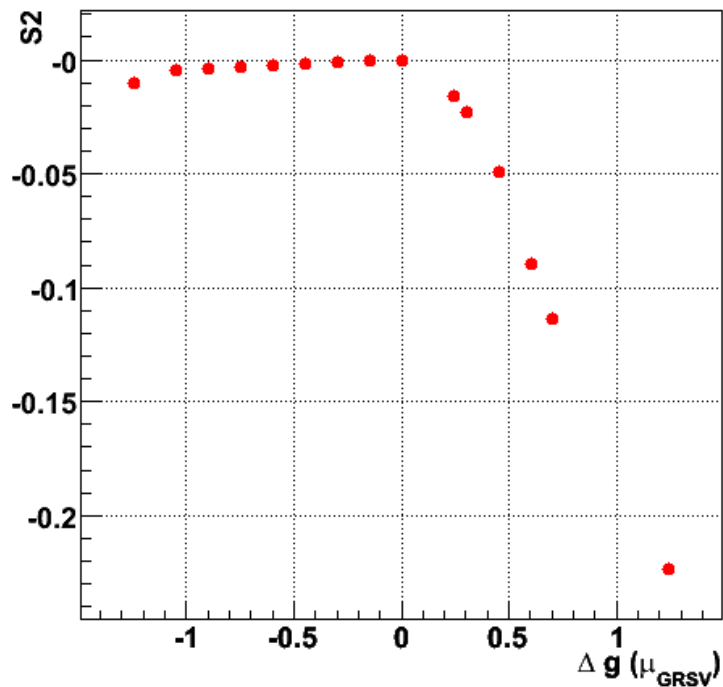
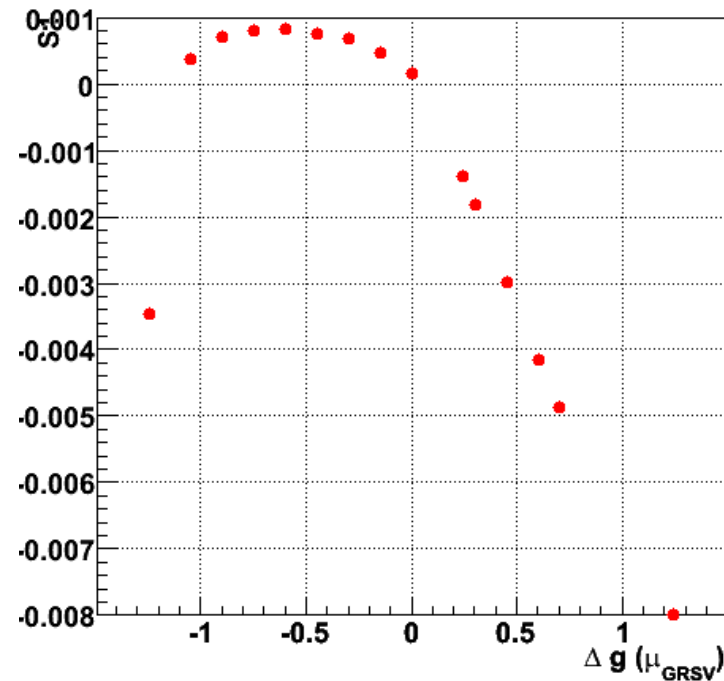
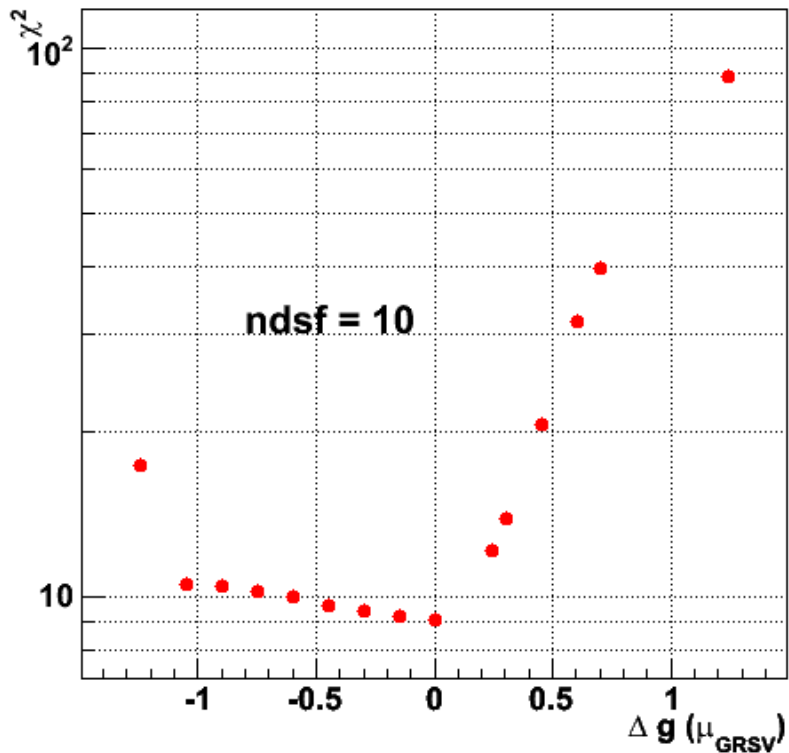
❖ Using the data that results from the overlap between the QA'd inclusive jets sample and Itaro's offline polarization list

⇒ Ignoring 3 fills from the QA'd inclusive jets sample (7048,7055,7327)

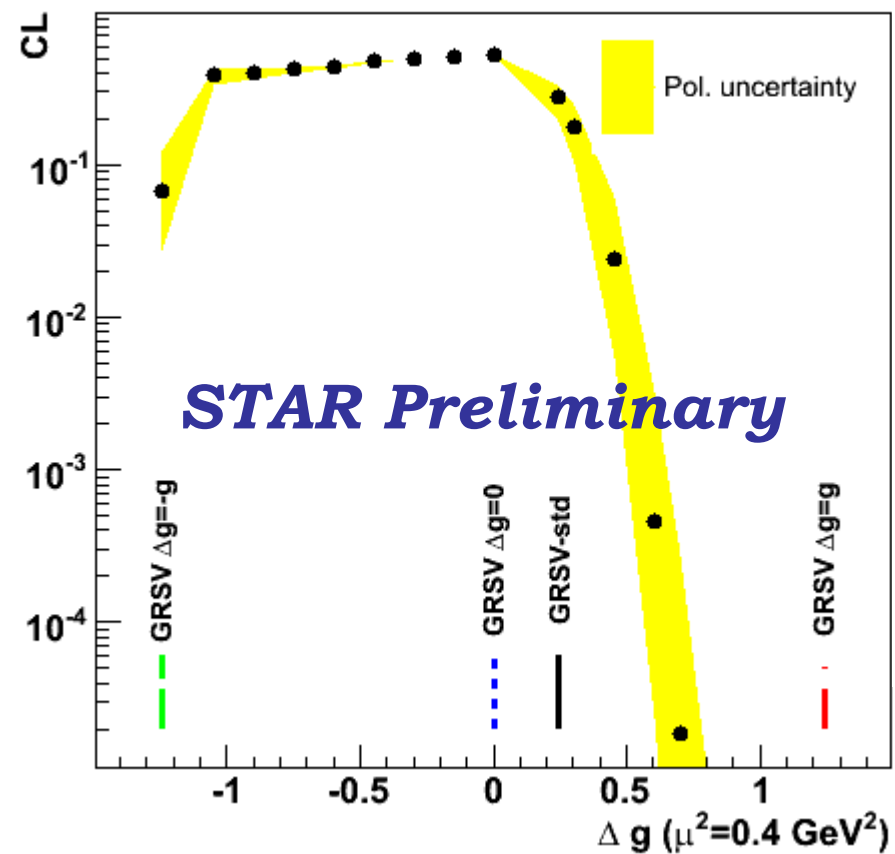
$$\chi^2 = \frac{s_1^2}{\sigma_{s_1}^2} + \frac{s_2^2}{\sigma_{s_2}^2} + \sum_{p_T} \frac{[A_{LL}^{theo} + (\frac{dA_{LL}^{theo}}{dp_T}) * p_T * s_2 - A_{LL}^{data} + s_1]^2}{\sigma_{uncor}^2}$$

- $s_1$  and  $s_2$  are fit parameters for minimum  $\chi^2$
- $\sigma_{uncor}^2$  is the quadrature sum of the uncorrelated systematic uncertainties and statistics.
- $\sigma_{s_1}^2$  is the quadrature sum of the vertical correlated uncertainties (direct on  $A_{LL}$ ).
- $\sigma_{s_2}^2$  is the quadrature sum of the horizontal correlated uncertainties ( $p_T$  uncertainties).
- $A_{LL}^{theo}$  are (GRSV) asymmetries for different sub-g  $\Delta g$  values provided by Werner.
- $A_{LL}^{data}$  are the asymmetries from 2005 inclusive jet data

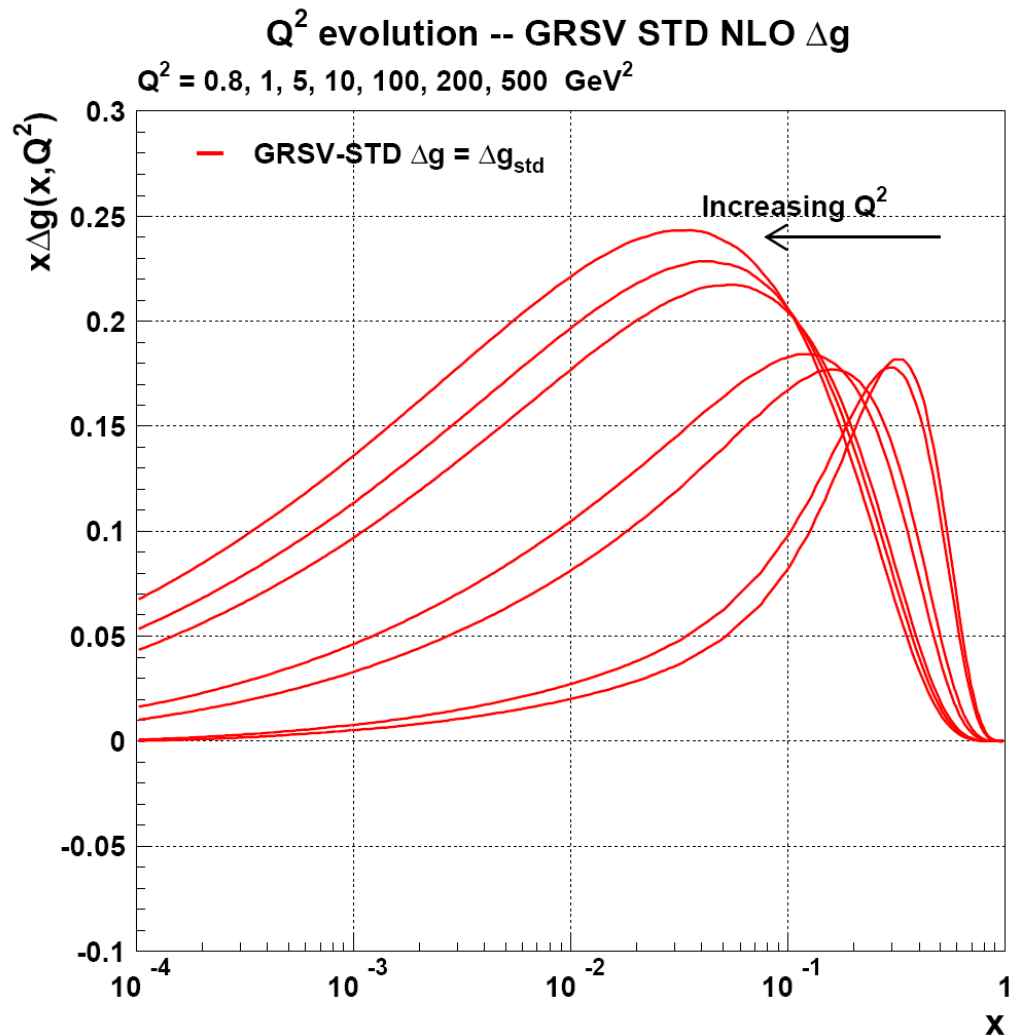
# $\chi^2$ and Minimization Parameters



# Confidence Levels



Uncertainties from  $\Delta g(x)$  shape and pQCD scale not included



The yellow band show what happens if  $|P_Y P_B|$  is increased (decreased) by 10%