

**common method**

**theory predictions**

consistent (N)NLO

**$\alpha_s(M_Z)$  extraction procedure**

direct  $\chi^2$  minimization

**$\chi^2$  definition**

conventional  $\chi^2$   
(log data – log theory)  
+ relative uncertainties

**PDF and non-perturbative  
uncertainties**

included in  $\chi^2$  definition

**PDF set +  $\alpha_s(M_Z)$  dependence**

additional uncertainty  
on  $\alpha_s(M_Z)$