Homework Exercises for QCD and Collider Physics II

Summer 2006

Exercises for Lecture 3 (S. Glazov, 3. May 2006)

Properties of χ^2

- Show that the total uncertainty of F_2, obtained by minimization of chi^2, is equal to the sum of σ_{uncorr} and $\sigma_{syst} = \sqrt{\sum \left(\frac{dF_2}{d\alpha_j}\sigma_{\alpha_j}\right)^2}$ - sum of stat. and syts. uncertainty in quadrature, $\sigma_{tot} = \sqrt{\sigma^2_{uncorr} + \sigma^2_{syst}}$ (as described on page 13 of the lecture).

Uncertainties of PDFs

- Plot $xg(x)$ uncertainty for fixed x as a function of Q^2 using the durham pdf generator (see page 26 of lecture)