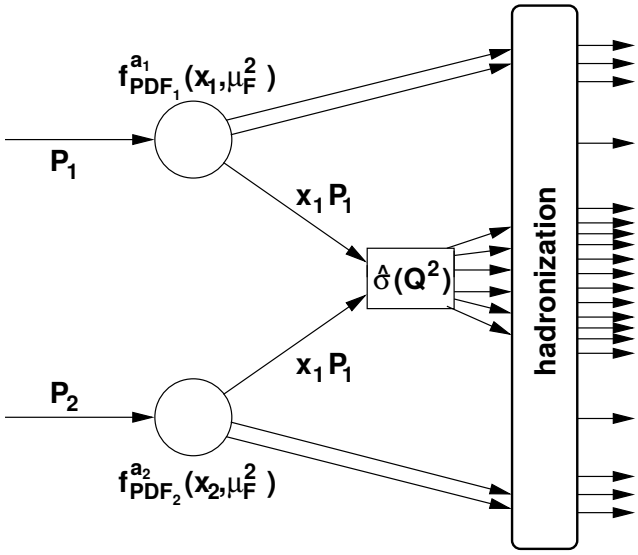

Figure 2: *Schematic drawing illustrating the concept of factorization. Shown is a collision of two hadrons leading to a hard-scattering process at a scale Q^2. This hard interaction is initiated by two partons of momenta x_1P_1 and x_2P_2, where P_1 and P_2 are the momenta of the colliding hadrons. The partonic cross section $\hat{\sigma}$ of the hard interaction can be calculated perturbatively, based on the renormalization and factorization scales μ_R^2 and μ_F^2. The factorization scale is also used to evaluate the parton distribution functions f_{PDF}, which parametrize the probabilities to find the partons a_1 and a_2 inside the colliding hadrons. If the hard interaction involves the production of top quarks, their decays are included in its description, since the top quark lifetime is so short that no top hadrons are formed. The observable final-state particles are then formed in a hadronization process which again cannot be calculated perturbatively, but is independent of the hard interaction.*

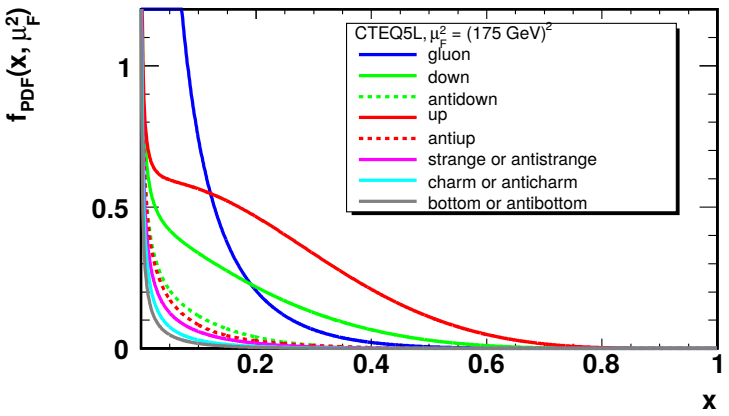

Figure 3: *The* CTEQ5L *parametrization [22] of the distribution functions for different parton species in the proton as a function of the momentum fraction x of the proton carried by the parton, for a factorization scale $\mu_F^2 = (175\ \mathrm{GeV})^2$.*