Determining gluon polarization by Heavy Flavor Production

$\Delta G \equiv$ polarization of gluon structure function

assuming dominance of gg fusion at leading order ($\sqrt{\hat{s}} \gg m_Q$)

$$A_{LL}(x_1,x_2) \cong \frac{\Delta G}{G}(x_1)\ \frac{\Delta G}{G}(x_2)\ \hat{a}$$

$\hat{a}$ is analyzing power

$$\hat{a} = \frac{-(32y^2 - 16y^4 - 8x^2 - 8x^2y^2 + 8x^2y^4 + x^4 - x^4y^4)}{32 - 32y^2 - 16y^4 + 8x^2 - 8x^2y^2 + 8x^2y^4 + x^4 - x^4y^4}$$

$$x = \sqrt{\hat{s}}/m_Q \qquad \hat{s} = sx_1x_2 \qquad y = \cos\theta$$

$|\hat{a}|$ needs to be large for helicity asymmetry measurement to be robust