

η_c production

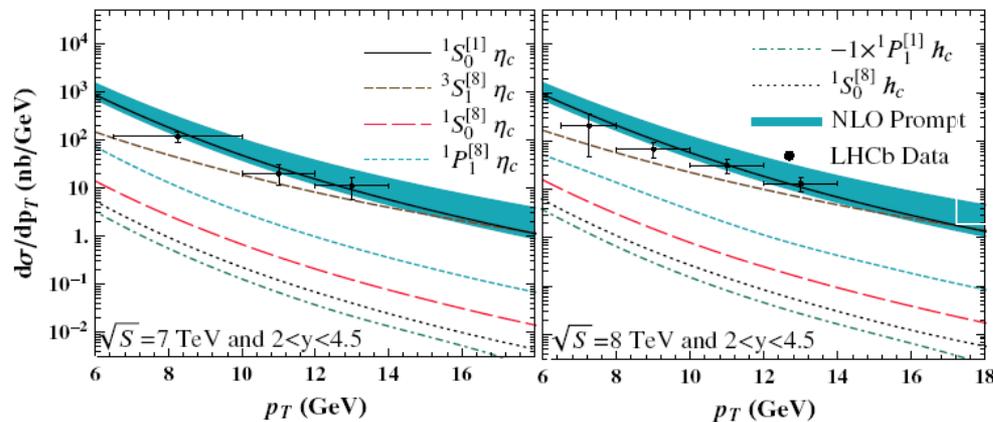
➤ LDMEs from J/ψ production

YQM, Wang, Chao, 1009.3655

$$M_{0,r_0} = \langle O^\psi(^1S_0^{[8]}) \rangle + (r_0/m_c^2) \langle O^\psi(^3P_0^{[8]}) \rangle = (7.4 \pm 1.9) \times 10^{-2} \text{ GeV}^3,$$

$$M_{1,r_1} = \langle O^\psi(^3S_1^{[8]}) \rangle + (r_1/m_c^2) \langle O^\psi(^3P_0^{[8]}) \rangle = (0.05 \pm 0.03) \times 10^{-2} \text{ GeV}^3$$

➤ LDMEs constrained by η_c production, assuming HQSS

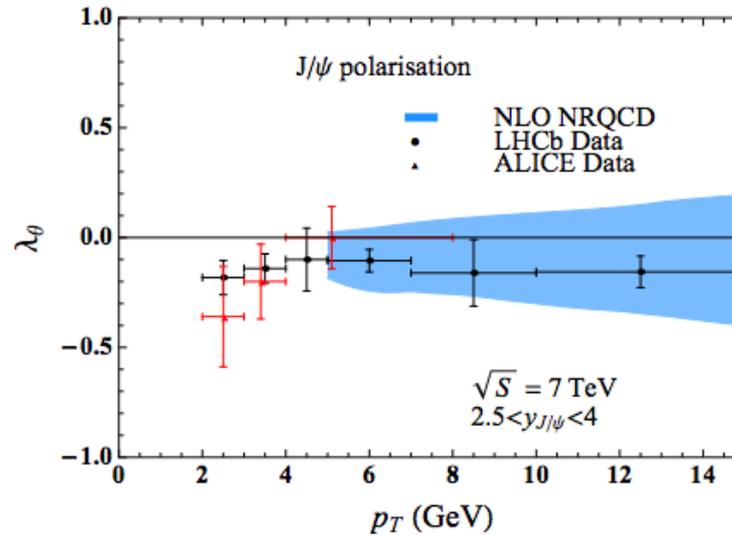


$$0 < \langle O^{J/\psi} (^1S_0^{[8]}) \rangle < 1.46 \times 10^{-2} \text{ GeV}^3$$

- $\langle O^{J/\psi} (^3P_0^{[8]}) \rangle \sim \langle O^{J/\psi} (^3S_1^{[8]}) \rangle \sim 10^{-2} \text{ GeV}^3$
- **Very large cancellation!**
- **HQSS or naturalness?**

Constraint to J/ψ polarization

Before using η_c data



After using η_c data

