J/ψ prompt production discussion session

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	Butenschoen, Kniehl[18]	Gong, Wang, Wan, Zhang[53]	Chao, Ma, Shao, Wang, Zhang[52] default set	set 2	set 3
$\langle \mathcal{O}^{J/\psi}(^3S_1^{[1]})\rangle$	1.32 GeV^3	1.16 GeV^3	1.16 GeV^3	1.16 GeV^3	1.16 GeV^3
$\langle \mathcal{O}^{J/\psi}(^1S_0^{[8]})\rangle$	0.0497 GeV^3	0.097 GeV^3	0.089 GeV^3	0	0.11 GeV^3
$\langle \mathcal{O}^{J/\psi}(^3S_1^{[8]})\rangle$	0.0022 GeV^3	-0.0046 GeV^3	0.0030 GeV^3	0.014 GeV^3	0
$\langle \mathcal{O}^{J/\psi}(^3P_0^{[8]})\rangle$	-0.0161 GeV^5	-0.0214 GeV^5	0.0126 GeV^5	0.054 GeV^5	0
$\langle \mathcal{O}^{\psi'}(^3S_1^{[1]})\rangle$		0.758 GeV^3			
$\langle \mathcal{O}^{\psi'}(^1S_0^{[8]})\rangle$		-0.0001 GeV^3			
$\langle \mathcal{O}^{\psi'}(^3S_1^{[8]})\rangle$		0.0034 GeV^3			
$\langle \mathcal{O}^{\psi'}(^3P_0^{[8]})\rangle$		0.0095 GeV^5			
$\langle \mathcal{O}^{\chi_0}(^3P_0^{[1]})\rangle$		0.107 GeV^5			
$\langle \mathcal{O}^{\chi_0}(^3S_1^{[8]})\rangle$		0.0022 GeV^3			

- Butenschön Kniehl arXiv:1212.2037

A related issue:

- What errors are included in the theoretical bands?
- And on the experimental side, why compare data with feed-down with theoretical determinations without feed-down?

Proof of factorization

There exists a proof of factorization for the production of heavy quarkonia of large transverse momentum p_T at collider energies, which includes both the leading power and next-to-leading power contributions to the cross section in the m_Q^2/p_T^2 expansion for heavy quark mass m_Q. Can this be extended?

Also the definition of the NRQCD matrix elemets has been revised in this process.

- Kang Qiu Sterman PRL 108 (2012) 102002
  Nayak Qiu Sterman PRD 77 (2008) 034022, PRL 99 (2007) 212001,
  PRD 74 (2006) 074007, PRD 72 (2005) 114012, PLB 613 (2005) 45

SCET + NRQCD and power counting

Systematics necessary to organize the expansions in p_T/Q, m_Q/p_T and v, and resum potentially large logarithms in these ratios.

- `Fleming Leibovich Mehen Rothstein arXiv:1207.2578`