CMS Analysis Status: Inclusive $b \rightarrow J/\psi X$, $J/\psi \rightarrow \mu\ \mu$

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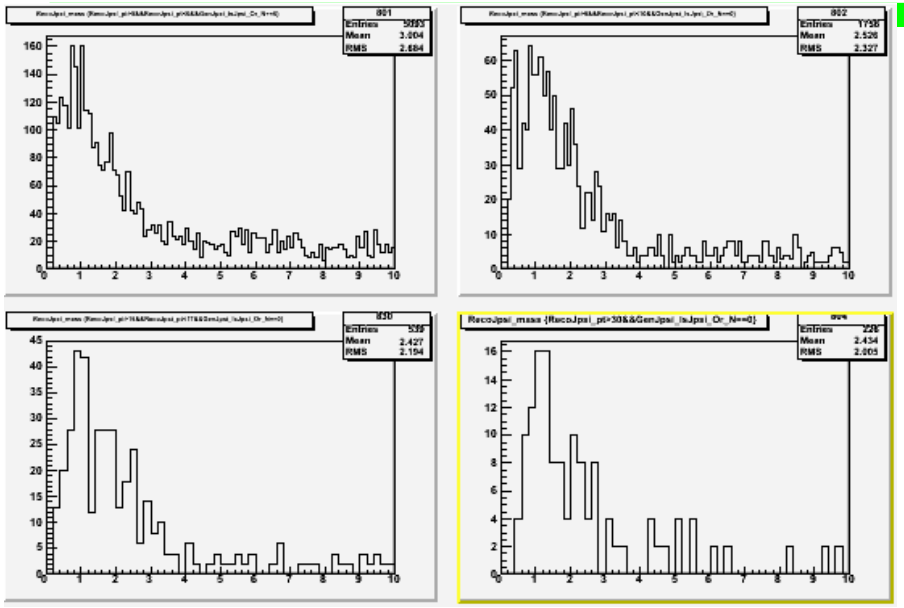
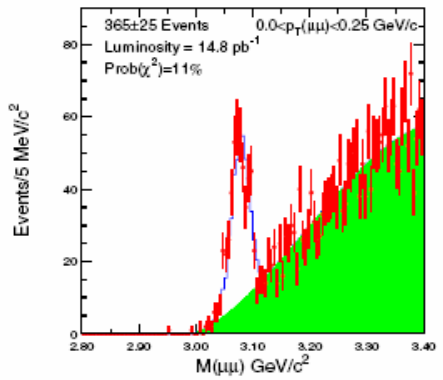
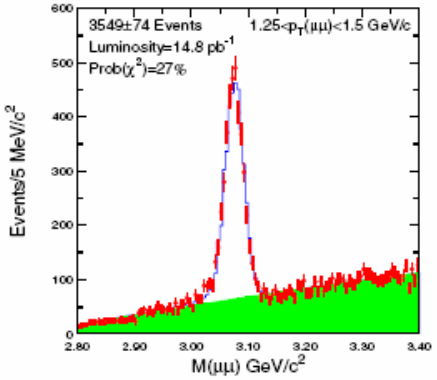
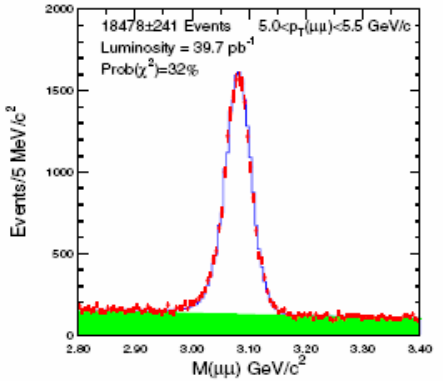
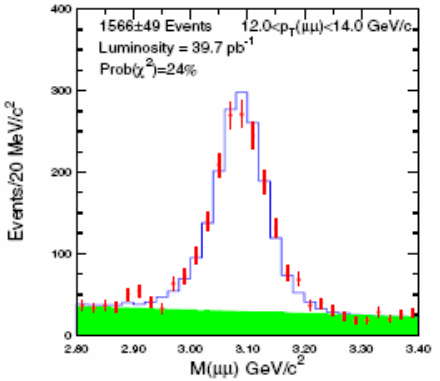
Mass: ppmuX 10M evts j/psi pt bins: 5-6, 9-10,15-17, 30- GeV/c



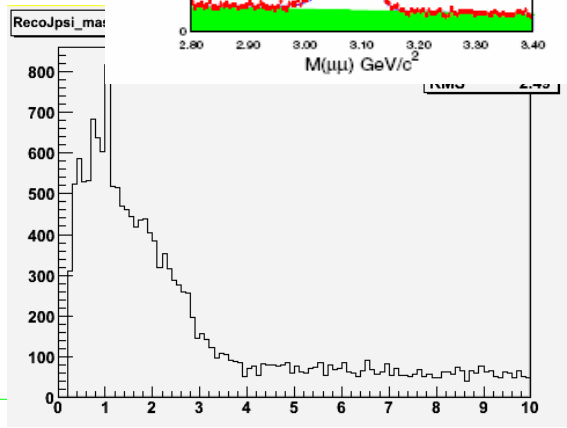








$$\mathcal{M}_{\mathrm{Bkg}}(m_{\mu\mu}) = \frac{1}{m_{\mu\mu}^{\max} - m_{\mu\mu}^{\min}} + M_{\mathrm{slope}}\left(m_{\mu\mu} - \frac{m_{\mu\mu}^{\max} + m_{\mu\mu}^{\min}}{2}\right),$$



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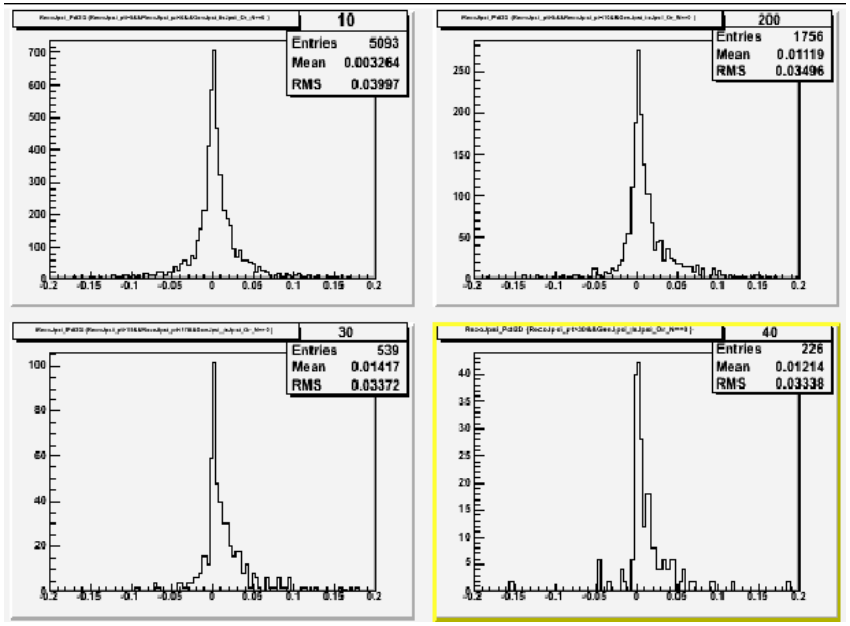
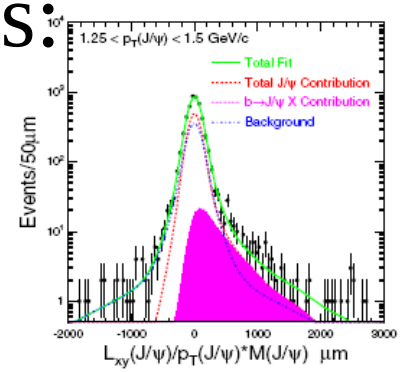
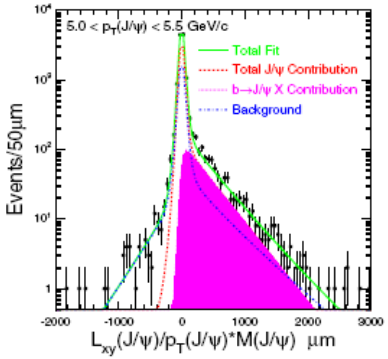






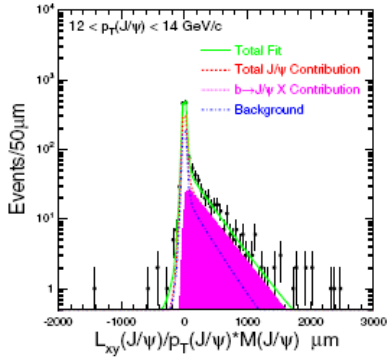
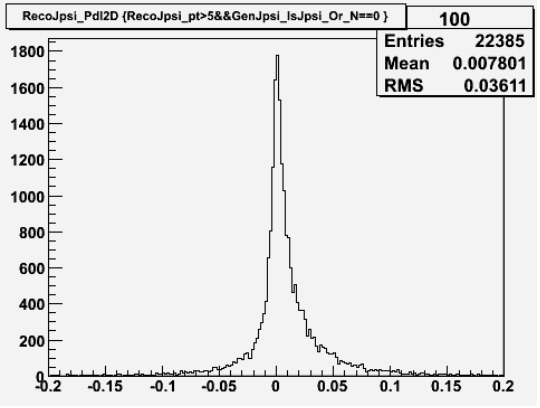


FIG. 7 (color online). Fits to the J/ψ pseudoproper decay time in the ranges of $1.25 < p_T(\mu\mu) < 1.5$ GeV/c (top panel), $5.0 < p_T(\mu\mu) < 5.5$ GeV/c (bottom left panel), and $12.0 < p_T(\mu\mu) < 14.0$ GeV/c (bottom right panel). The solid lines are the fits to all the events in the mass window of 2.85 to 3.35 GeV/c^2, the dashed lines are the fit to all signal events, the solid histograms are the fits to the portion of the signal events that are from b-hadron decays, and the dot-dashed lines are the fits to background events including events in the invariant mass sidebands.

$$\mathcal{F}_{\mathrm{Bkg}}(x) = (1 - f_+ - f_- - f_{\mathrm{sym}})R(x, s\sigma) + \frac{f_+}{\lambda_+}\exp\left(-\frac{x'}{\lambda_+}\right)\theta(x') \otimes R(x' - x, s\sigma)$$
$$+ \frac{f_-}{\lambda_-}\exp\left(\frac{x'}{\lambda_-}\right)\theta(-x') \otimes R(x' - x, s\sigma) + \frac{f_{\mathrm{sym}}}{2\lambda_{\mathrm{sym}}}\exp\left(-\frac{x'}{\lambda_{\mathrm{sym}}}\right)\theta(x') \otimes R(x' - x, s\sigma$$
$$+ \frac{f_{\mathrm{sym}}}{2\lambda_{\mathrm{sym}}}\exp\left(\frac{x'}{\lambda_{\mathrm{sym}}}\right)\theta(-x') \otimes R(x' - x, s\sigma),$$



backups

CDFII's result

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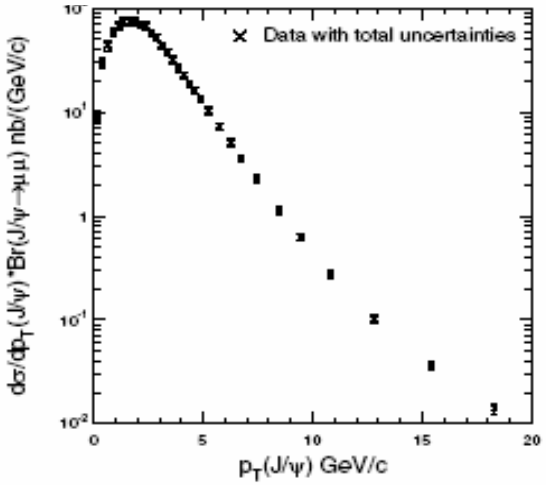
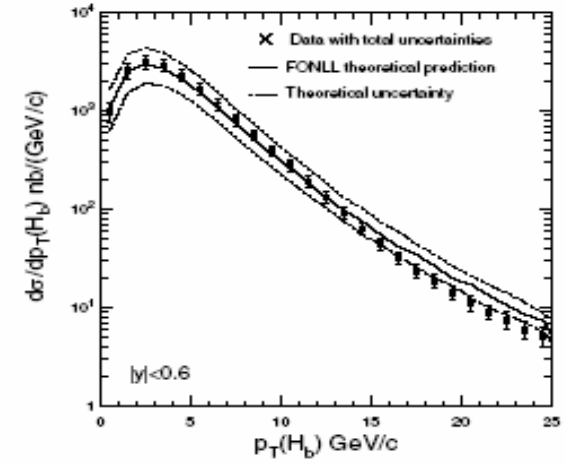
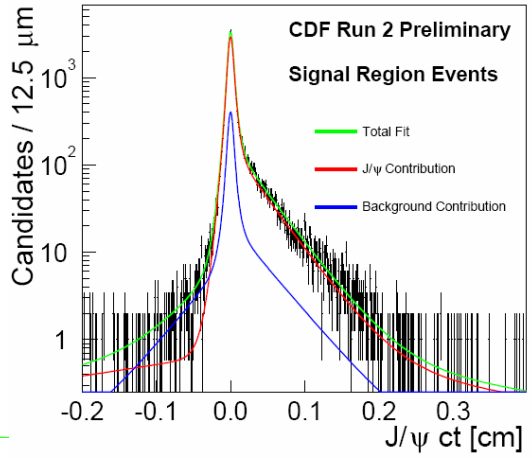




- **PPbar energy: 1.96 TeV.**
- **Integrated luminosity: 39.7 pb^{-1}.**



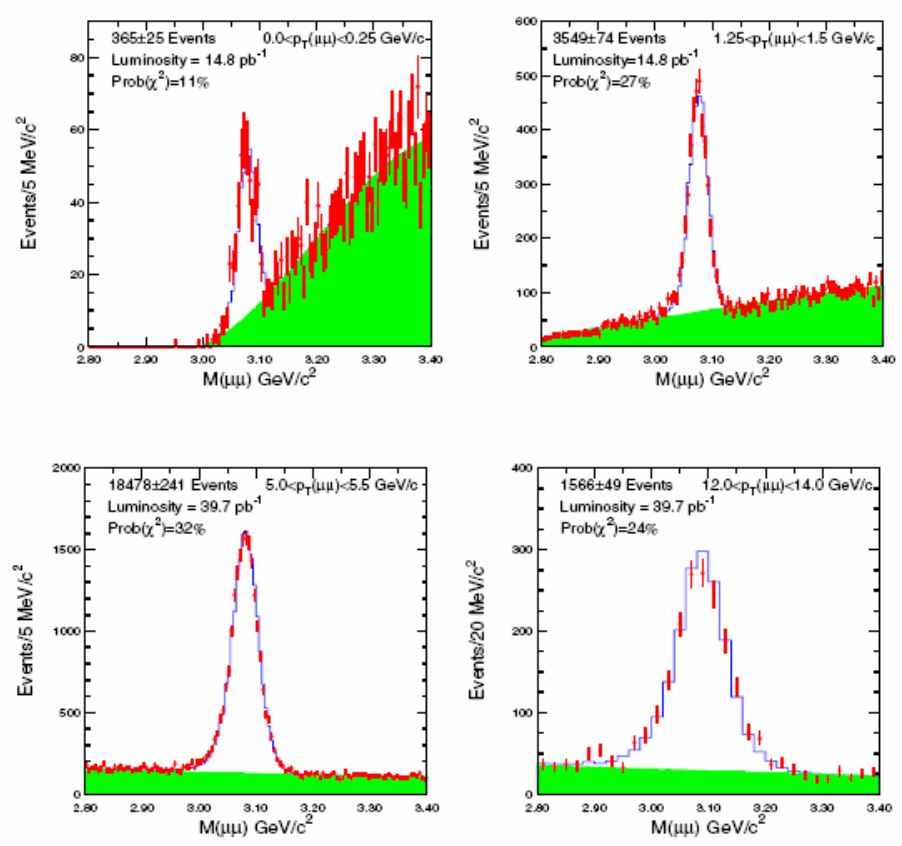
$$\sigma[p\overline{p} \to J/\psi X, |y(J/\psi)| < 0.6] = 4.08 \pm 0.02(\text{stat})^{+0.36}_{-0.33}(\text{syst})\ \mu\text{b}.$$

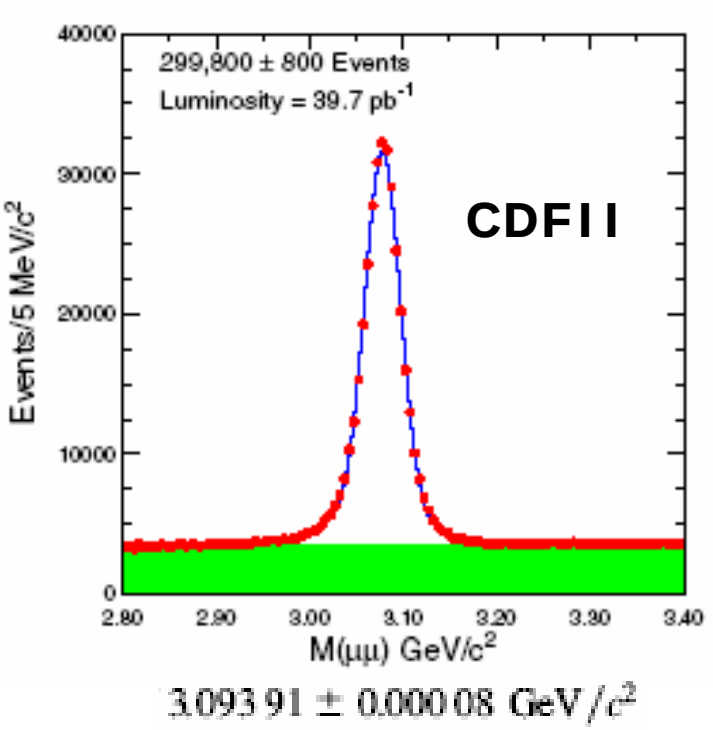
$$\sigma(p\bar{p} \to H_b X, |y| < 0.6) = 17.6 \pm 0.4(\text{stat})^{+2.5}_{-2.3}(\text{syst})\ \mu\text{b}.$$

CDF note 6023

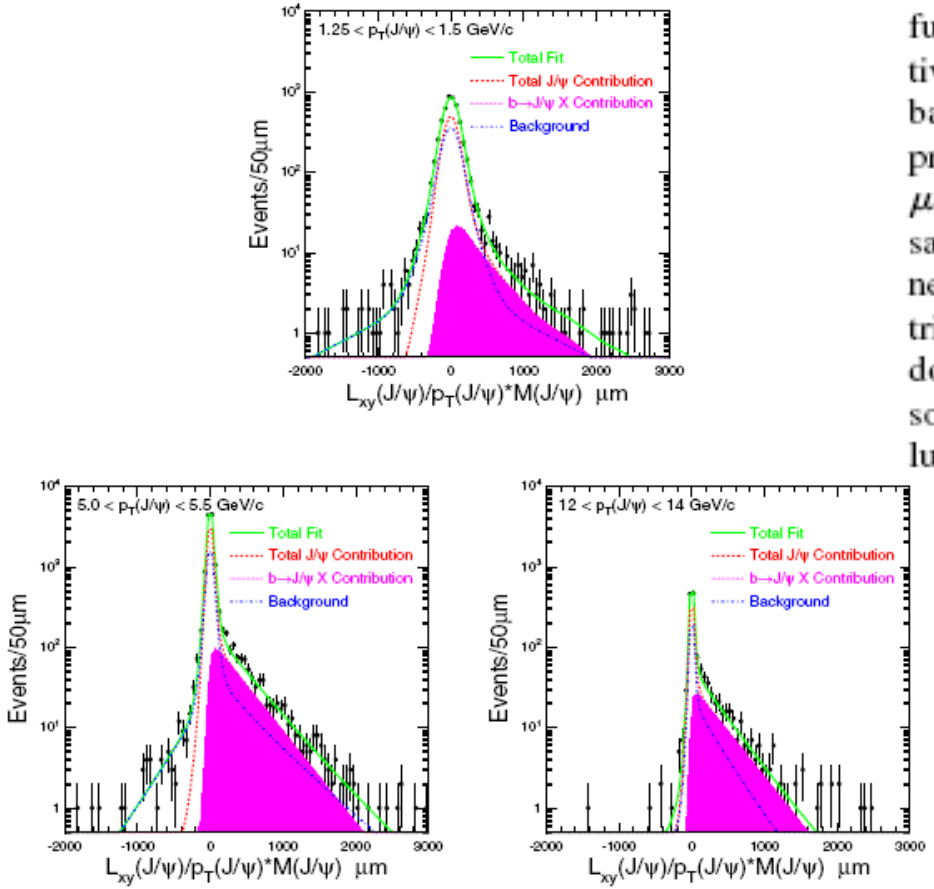
$$\tau_B = 1.526 \pm 0.034\ (\text{stat}) \pm 0.035\ (\text{syst})\ \text{ps}$$

Inv. Mass of J/ψ vs diff. pT bin





The background requires a more complicated parametrization to obtain a good fit to the data outside the J/ψ signal region. The pseudoproper decay time background function is composed of four parts: the zero lifetime component, a positive slope exponential function, a negative slope exponential function, and a symmetric exponential function with both positive and negative slopes. The positive slope exponential function is chosen to model the background from other long-lived b-hadron events that produce opposite sign muons such as $b \rightarrow c\mu^-\bar{\nu}X$, $c \rightarrow \mu^+\nu X$. The zero lifetime component is chosen to be the same shape as the resolution function. The symmetric and negative slope exponential functions are added to parametrize the remaining components of the background pseudoproper decay time distributions which are from unknown sources. The background exponential tails are also convoluted with the resolution function.



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