

# Study of the charmonium production in ultra-peripheral lead-lead collisions at LHCb

LHCb collaboration

## Abstract

This document presents performance plots to be shown at Quark Matter 2019 related to the cross-section ratio measurement of  $J/\psi$  and  $\psi(2S)$ .



1 Figures [1]

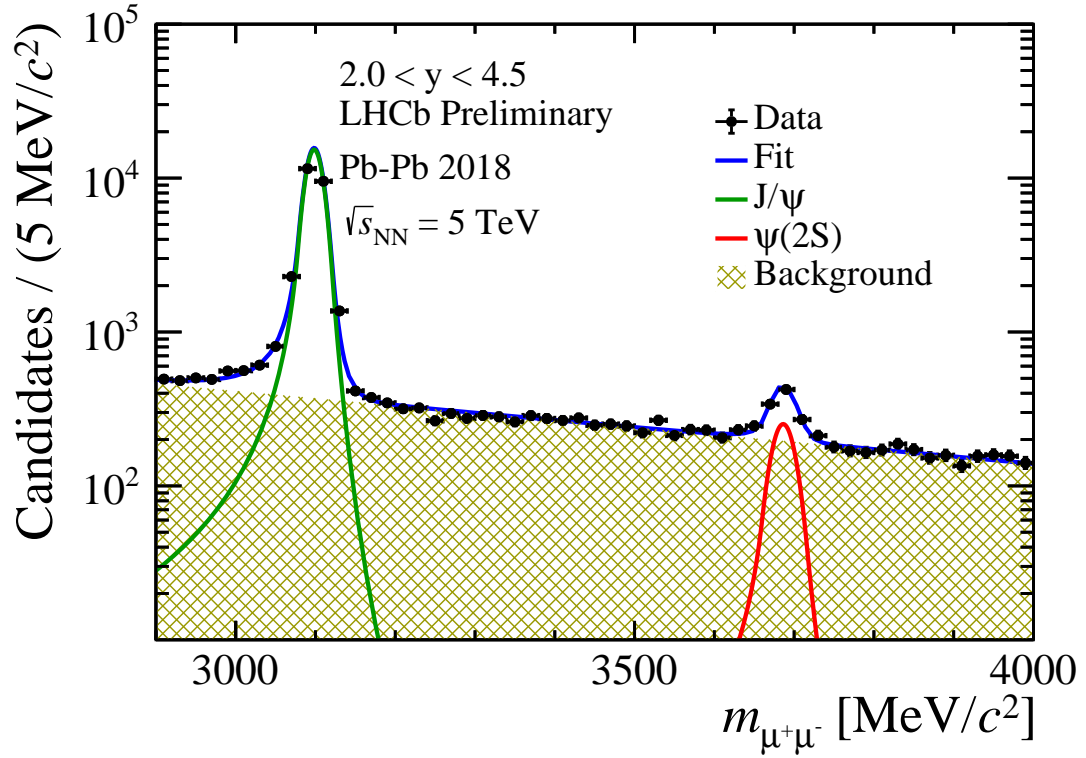


Figure 1: Mass distributions fit to determine the fractions of  $J/\psi$ ,  $\psi(2S)$  and non-resonant events. The black dots are the data points, the blue line is the result of the fit described in the text. The green line is the  $J/\psi$  contribution, the red line is the  $\psi(2S)$  contribution, and the yellow fill is the non resonance background contribution.

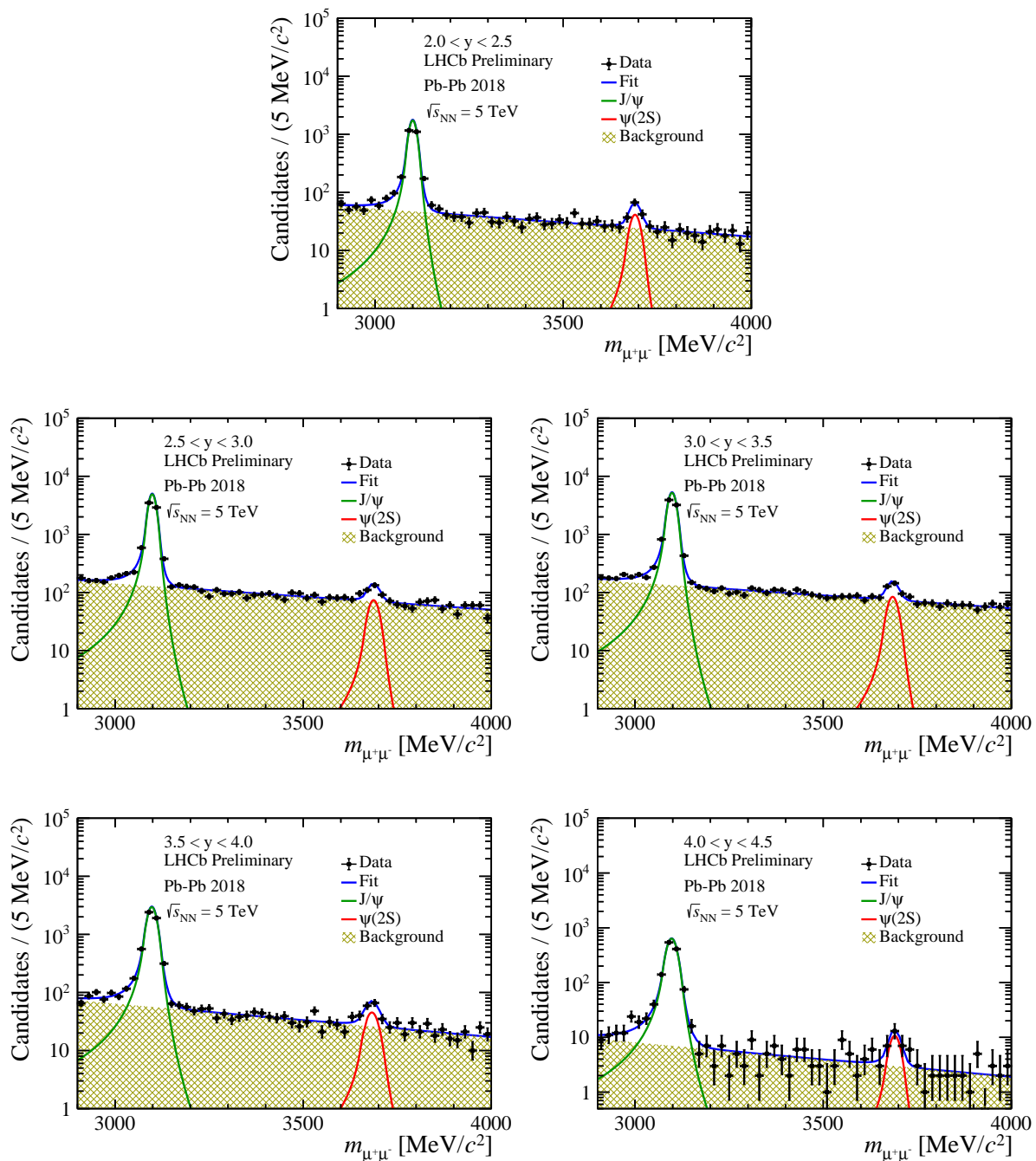


Figure 2: Mass distributions and fit to determine the fractions of  $J/\psi$ ,  $\psi(2S)$  and non-resonant events in different rapidity bins.

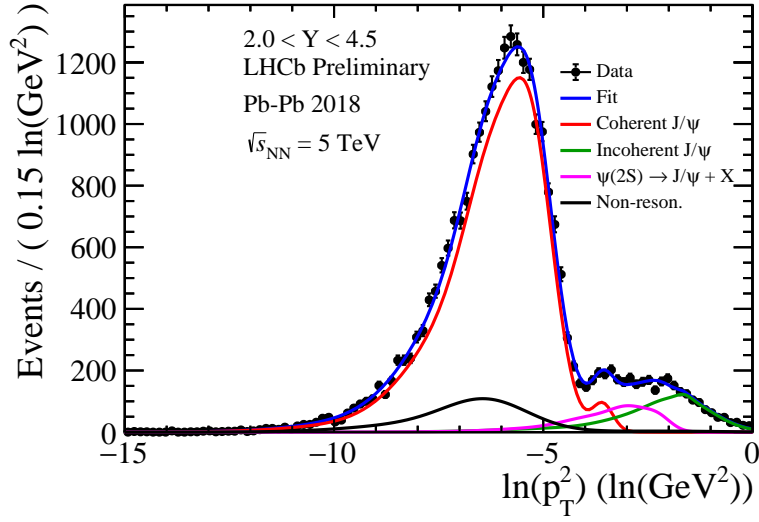


Figure 3: The  $\log(p_T^2)$  distributions and fit to determine the fractions of  $J/\psi$  coherent, incoherent, feed down and non-resonant. The black dots are the data points, the blue line is the result of the fit described in the text, considering coherent  $J/\psi$  template shifts in  $\log(p_T^2)$ . The red line is the  $J/\psi$  coherent contribution, the green line is the  $J/\psi$  incoherent contribution, the pink line is the feed down contribution, the black line is the background contribution.

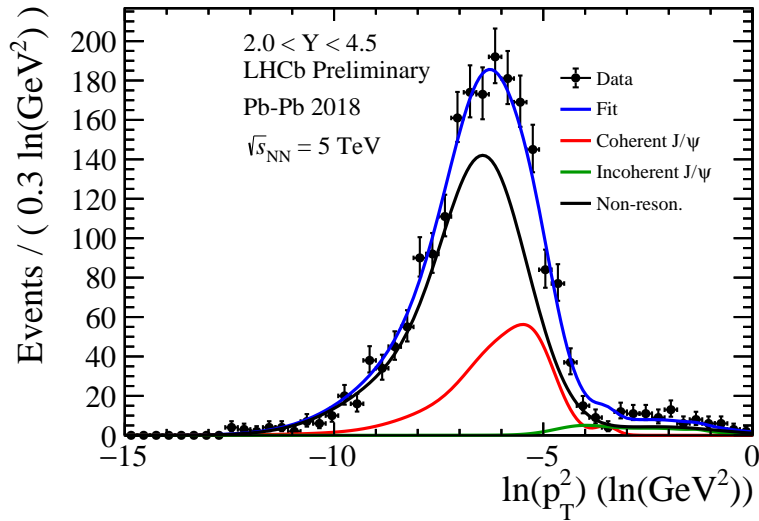


Figure 4: The  $\log(p_T^2)$  distributions and fit to determine the fractions of coherent  $J/\psi$ , incoherent  $J/\psi$ , and non-resonant. The black dots are the data points, the blue line is the result of the fit described in the text, considering coherent  $\psi(2S)$  template shifts in  $\log(p_T^2)$ . The red line is the coherent  $\psi(2S)$  contribution, the green line is the incoherent  $\psi(2S)$  contribution, the pink line is the feed down contribution, the black line is the background contribution.

## 2 References

- 3 [1] LHCb collaboration, *Study of the charmonium production in ultra-peripheral lead-lead*  
4 *collisions at LHCb*, LHCb-ANA-2019-040, 2019.