contribution from $B^0 \to J/\psi\pi\pi$ on the $B_s^0 \to J/\psi\pi\pi$ channel.
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feedback from LHCP: the lifetime measurements presented by Nuno at LHCP were well received by the community. However, a comment was raised by LHCb regarding the $B_s^0 \to J/\psi\pi\pi$ channel which deserves our consideration. A contribution from $B^0 \to J/\psi\pi\pi$ is quite visible in the Jpsi pipi mass plot at around 5.27 GeV: it should be taken into account (or removed) in the final analysis. I hope that you can address this issue quickly.

Answer: Following the comment, we add a component in the pdf to take in account the $B^0 \to J/\psi\pi\pi$ contribution. The mass will be modeled by a gaussian function with the mean fixed from the pdg value and the width shared with the width used for B_s^0 gaussian signal, which is a free parameter of the fit.The fraction (the number of events, N_{B_d}) for this component is a free parameter of the fit too.
For ct, this component is modeled by an exponential decay convoluted with the resolution. The lifetime for this contribution is fixed to the B^0 lifetime taken from the PDG, being corrected by the factor $M_{B^0}/M_{B_s^0}$, since the ct variable was calculated using the B_s^0 mass. The invariant mass and ct distributions obtained from data are shown with the fit results superimposed Fig. 1. The average B_s^0 lifetime obtained from the fits is $ct = 502.5 \pm 10.2~\mu m$, which is in agreement with the previous one.
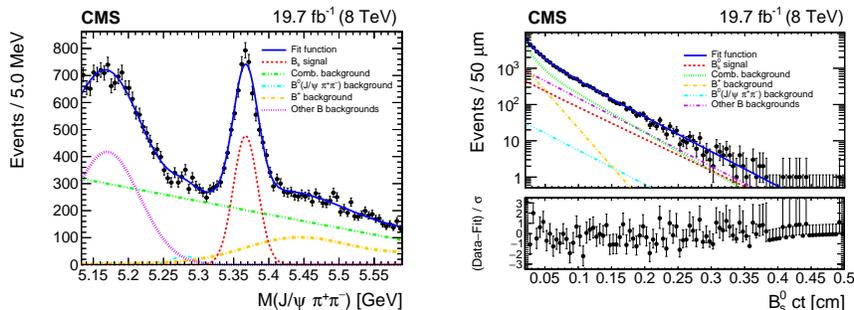

Figure 1: Invariant mass (left) and ct (right) distributions for B_s^0 candidates reconstructed from $B_s^0 \to J/\psi\pi\pi$ decays. The curves are projections of the maximum-likelihood fit to the data, with the contributions from signal (dashed), background (dotted), misidentified $B^+ \to J/\psi K^+$ background (dashed-dotted), $B^0 \to J/\psi\pi\pi$ contribution (dashed-dotted-dotted-dotted) , partially reconstructed and (other) misidentified B backgrounds (dashed-dotted-dotted) and the sum of signal and background (solid) shown. The bottom panel of the right figure show the difference between the observed data and the fit divided by the data uncertainty.