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Measurement of production cross sections and polarization of J/psi mesons in proton-proton collision at $\sqrt{s} = 7$ TeV at the LHCb experiment

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Despite the large experimental and theoretical efforts, the J/psi production rate and states in hadronic collisions are not yet satisfactorily understood. The comparison between the measured J/psi differential cross section with the most recent theoretical models shows a general good agreement but the cross section alone is not sufficient to discriminate between the different models proposed and other observables, like for example the J/psi polarization, must be measured.

The double differential J/psi cross section as a function of transverse momentum and rapidity has been measured at LHCb with 5 pb^{-1} out of the 37 pb^{-1} data sample recorded by the experiment during the 2010 data taking, disentangling the prompt component and the component coming from the b-hadrons decays.

With the full data sample LHCb aims to give a measurement of the prompt J/psi polarization with a full angular analysis, in both the polar and azimuthal angle.

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