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Single muon p_T distributions from heavy quark decay in pp collisions at 7 TeV with ALICE

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Abstract content
 (Max 300 words)
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The study of matter under extreme conditions known as the quark gluon plasma (QGP) is key to the understanding of the early universe. The QGP is a high-density Quantum Chromodynamic (QCD) medium of “free” quarks and gluons (deconfinement), expected to form at high temperature and density where quark and gluon degrees of freedom dominate.

The Large Hadron Collider (LHC) has 4 major experiments, one of which is ALICE (A Large Ion Collider Experiment) - a general purpose heavy-ion detector with the main physics goal to study the formation and properties of the QGP in heavy-ion collisions. ALICE is also studying proton-proton collisions both as a comparison with lead-lead collisions and in physics areas where ALICE is competitive with other LHC experiments.

Heavy quarks which consist of charm and beauty quarks are formed in the initial stages of the collision through gluon fusion which is a dominant process at the LHC. The study of heavy quark production in proton-proton collisions at the LHC provides an important test of perturbative Quantum Chromodynamics (pQCD) calculations, particularly in the forward rapidity of ALICE ($2.5 < y < 4$) where their production is expected to be sensitive to Bjorken- x values down to $\sim 6 \cdot 10^{-6} - 2 \cdot 10^{-5}$. In addition, the investigation of heavy quark production in proton-proton collisions also constitutes an essential baseline for the corresponding measurements in heavy ion collisions.

In this study the production of heavy quarks is measured via the contribution of their muonic decay to the inclusive p_T -differential muon yield reconstructed with the muon spectrometer at forward rapidity ($-4 < \eta < -2.5$).

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and his / her institution**

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 submit a short paper
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no

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yes

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