Production of D and B mesons and their semileptonic decays

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I will discuss production of D and B mesons in proton-proton collisions at BNL RHIC. Presented production rates for open charm and bottom were estimated by detailed analysis of so-called nonphotonic electrons. The distributions for charm and bottom quarks/antiquarks are calculated in the framework of the k_t -factorization approach with help of the Kwieciński unintegrated parton distributions. The hadronization for heavy quarks is done by means of Peterson et al. and Braaten et al. fragmentation functions. The semileptonic decay functions are found by fitting recent semileptonic data obtained by the CLEO and BABAR collaborations. In the next step of our analysis, we have calculated the kinematical correlations between charged leptons from semileptonic decays of open charm/bottom as well as leptons produced in the Drell-Yan mechanism. In both cases, we get good description of the PHENIX and STAR data. We have also taken into account some other sources of leptons never calculated before, which give a contribution to electron/positron continuum and can improved our understanding of D and B mesons production.

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