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Study of heavy-quark production in p+p collisions at RHIC using different Monte-Carlo event generators YUE HANG LEUNG, ALAN DION, AXEL DREES, DEEPALI SHARMA, State Univ of NY- Stony Brook — Heavy flavor is one of the most sought observables to study the properties of the hot and dense medium created in heavy-ion collisions. A variety of heavy-flavor (charm and bottom) related measurements in different collision systems, as well as different collision energies have been measured at RHIC. However, the total and differential charm and bottom cross-sections are still not understood in detail. We present a comprehensive study of all the heavy flavor measurements in p+p collisions at RHIC at $\sqrt{s_{NN}} = 200$ GeV. We compare the measured charm and bottom p_T, rapidity, and correlation distributions to three different Monte-Carlo event generators, PYTHIA, MC@NLO and POWHEG. Various data sets are fitted to the spectral shapes from these event generators with the charm and bottom cross-sections as free parameters. Although the spectral shapes are well described in general, the normalization of the simulated samples are different between data sets describing different regions of phase space. These measurements suggest that while current Monte-Carlo event generators describe experimental data near mid rapidity, they are inconsistent when compared over a wide range in phase space.

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