

**Stony Brook University
The Graduate School**

Doctoral Defense Announcement

Abstract

A Measurement of Electrons From Heavy Quarks in p+p Collisions at $\sqrt{s} = 200$
GeV/c²)

By

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Open heavy quarks, that is charm and bottom not forming $c\bar{c}$ or $b\bar{b}$ pairs are important probes of the Quark Gluon Plasma at the Relativistic Heavy Ion Collider at BNL. They are formed only at the initial collision of the nuclei and thus any effect to their transverse momentum spectra or azimuthal distribution can only come from their interaction with the matter created in the collision. One of the most powerful techniques of measuring these effects is to divide AuAu data by appropriately scaled pp data. RHIC offers a unique opportunity in that it is capable of colliding both species. PHENIX is able to produce its own pp reference thus providing the opportunity for a significant reduction in systematic error.

Transverse momentum (p_T) spectra of electrons from semileptonic weak decays of heavy flavor mesons in the range of $0.3 < p_T < 15.0$ GeV/c have been measured at midrapidity ($|y| < 0.35$) beyond the previous published range of $p_T < 9.0$ GeV/c. This is done using a new technique exploiting the observed characteristics of energy deposition in the PHENIX electromagnetic calorimeters. We present this technique as well as the final measurement compared to FONLL theory predictions of open charm and bottom cross section

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