Erratum: Transverse Momentum and Centrality Dependence of High-p_T Nonphotonic Electron Suppression in Au + Au Collisions at $\sqrt{s_{NN}} = 200$ GeV [Phys. Rev. Lett. 98, 192301 (2007)]

B. I. Abelev, M. M. Aggarwal, Z. Ahammed, B. D. Anderson, D. Arkhipkin, G. S. Averichev, Y. Bai, J. Balewski, O. Barannikova, L. S. Barnby, J. Baudot, S. Baumgart, V. V. Belaga, A. Bellingeri-Laurikainen, R. Bellwied, F. Benedosso, R. R. Betts, S. Bhardwaj, A. Bhasin, A. K. Bhati, H. Bichsel, J. Bielcik, J. Bielcikova, L. C. Bland, S-L. Blyth, M. Bombara, B. E. Bonner, M. Botje, J. Bouchet, A. V. Brandin, A. Bravar, T. P. Burton, M. Bystersky, R. V. Cadman, X. Z. Cai, H. Caines, M. Calderón de la Barca Sánchez, J. Callner, O. Catu, D. Cebra, Z. Chajecki, P. Chaloupka, S. Chattopadhyay, H. F. Chen, J. H. Chen, J. Y. Chen, J. Cheng, M. Cherney, A. Chikanian, W. Christie, S. U. Chung, J. P. Coffin, T. M. Cormier, M. R. Cosentino, J. G. Cramer, H. J. Crawford, D. Das, S. Dash, M. Daugherity, M. M. de Moura, T. G. Dedovich, M. DePhillips, A. A. Derevschikov, L. Didenko, T. Dietel, P. Djawotho, S. M. Dogra, X. Dong, J. L. Drachenberg, J. E. Draper, F. Du, V. B. Dunin, J. C. Dunlop, M. R. Dutta Mazumdar, V. Eckardt, W. R. Edwards, L. G. Efimov, V. Emelianov, J. Engelage, G. Eppley, B. Erazmus, M. Estienne, P. Fachini, R. Fatemi, J. Fedorisin, A. Feng, P. Filip, E. Finch, V. Fine, Y. Fisyak, J. Fu, C. A. Gagliardi, L. Gaillard, M. S. Ganti, E. Garcia-Solis, V. Ghazikhanian, P. Ghosh, Y. G. Gorbunov, H. Gos, O. Grebenyuk, D. Grosnick, S. M. Guertin, K. S. F. F. Guimaraes, N. Gupta, B. Haag, T. J. Hallman, A. Hamed, J. W. Harris, W. He, M. Heinz, T. W. Henry, S. Heppelmann, B. Hippolyte, A. Hirsch, E. Hjort, A. M. Hoffman, G. W. Hoffmann, D. Hofman, R. Hollis, M. J. Horner, H. Z. Huang, E. W. Hughes, T. J. Humanic, G. Igo, A. Iordanova, P. Jacobs, W. W. Jacobs, P. Jakl, F. Jia, P. G. Jones, E. G. Judd, S. Kabana, K. Kang, J. Kapitan, M. Kaplan, D. Keane, A. Kechechyan, D. Kettler, V. Yu. Khodyrev, B. C. Kim, J. Kiryluk, A. Kisiel, E. M. Kislov, S. R. Klein, A. G. Knospe, A. Kocoloski, D. D. Koetke, T. Kollegger, M. Kopytine, L. Kotchenda, V. Kouchpil, K. L. Kowalik, P. Kravtsov, V. I. Kravtsov, K. Krueger, C. Kuhn, A. I. Kulikov, A. Kumar, P. Kurnadi, A. A. Kuznetsov, M. A. C. Lamont, J. M. Landgraf, S. Lange, S. LaPointe, F. Laue, J. Lauret, A. Lebedev, R. Lednicky, C -H. Lee, S. Lehocka, M. J. LeVine, C. Li, Q. Li, Y. Li, G. Lin, X. Lin, S. J. Lindenbaum, M. A. Lisa, F. Liu, H. Liu, J. Liu, L. Liu, T. Ljubicic, W. J. Llope, R. S. Longacre, W. A. Love, Y. Lu, T. Ludlam, D. Lynn, G. L. Ma, J. G. Ma, Y. G. Ma, D. Magestro, D. P. Mahapatra, R. Majka, L. K. Mangotra, R. Manweiler, S. Margetis, C. Markert, L. Martin, H. S. Matis, Yu. A. Matulenko, C. J. McClain, T. S. McShane, Yu. Melnick, A. Meschanin, J. Millane, M. L. Miller, N. G. Minaev, S. Mioduszewski, C. Mironov, A. Mischke, J. Mitchell, B. Mohanty, D. A. Morozov, M. G. Munhoz, B. K. Nandi, C. Nattrass, T. K. Nayak, J. M. Nelson, N. S. Nepali, P. K. Netrakanti, L. V. Nogach, S. B. Nurushev, G. Odyniec, A. Ogawa, V. Okorokov, M. Oldenburg, D. Olson, M. Pachr, S. K. Pal, Y. Panebratsev, A. I. Pavlinov, T. Pawlak, T. Peitzmann, V. Perevoztchikov, C. Perkins, W. Peryt, S. C. Phatak, M. Planinic, J. Pluta, N. Poljak, N. Porile, A. M. Poskanzer, M. Potekhin, E. Potrebenikova, B. V. K. S. Potukuchi, D. Prindle, C. Pruneau, J. Putschke, I. A. Qattan, R. Raniwala, S. Raniwala, R. L. Ray, D. Relyea, A. Ridiger, H. G. Ritter, J. B. Roberts, O. V. Rogachevskiy, J. L. Romero, A. Rose, C. Roy, L. Ruan, M. J. Russcher, R. Sahoo, I. Sakrejda, T. Sakuma, S. Salur, J. Sandweiss, M. Sarsour, P. S. Sazhin, J. Schambach, R. P. Scharenberg, N. Schmitz, J. Seger, I. Selyuzhenkov, P. Seyboth, A. Shabetai, E. Shahaliev, M. Shao, M. Sharma, W. Q. Shen, S. S. Shimanskiy, E. P. Sichtermann, F. Simon, R. N. Singaraju, N. Smirnov, R. Snellings, P. Sorensen, J. Sowinski, J. Speltz, H. M. Spinka, B. Srivastava, A. Stadnik, T. D. S. Stanislaus, D. Staszak, R. Stock, M. Strikhanov, B. Stringfellow, A. A. P. Suaide, M. C. Suarez, N. L. Subba, M. Sumbera, X. M. Sun, Z. Sun, B. Surrow, T. J. M. Symons, A. Szanto de Toledo, J. Takahashi, A. H. Tang, T. Tarnowsky, J. H. Thomas, A. R. Timmins, S. Timoshenko, M. Tokarev, T. A. Trainor, S. Trentalange, R. E. Tribble, O. D. Tsai, J. Ulery, T. Ullrich, D. G. Underwood, G. Van Buren, N. van der Kolk, M. van Leeuwen, A. M. Vander Molen, R. Varma, I. M. Vasilevski, A. N. Vasiliev, R. Vernet, S. E. Vigdor, Y. P. Viyogi, S. Vokal, S. A. Voloshin, W. T. Waggoner, F. Wang, G. Wang, J. S. Wang, X. L. Wang, Y. Wang, J. W. Watson, J. C. Webb, G. D. Westfall, A. Wetzler, C. Whitten, Jr., H. Wieman, S. W. Wissink, R. Witt, J. Wu, Y. Wu, N. Xu, Q. H. Xu, Z. Xu, P. Yepes, I. -K. Yoo, Q. Yue, V. I. Yurevich, W. Zhan, H. Zhang, W. M. Zhang, Y. Zhang, Z. P. Zhang, Y. Zhao, C. Zhong, J. Zhou, R. Zoulkarneev, Y. Zoulkarneeva, A. N. Zubarev, and J. X. Zuo

(STAR Collaboration)

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In the original Letter [1] we reported on measurements of the transverse momentum spectra of nonphotonic electrons in $p + p$, $d + \mathrm{Au}$, and $\mathrm{Au} + \mathrm{Au}$ collisions at $\sqrt{s_{\mathrm{NN}}} = 200$ GeV.

We have uncovered a mistake in the application of the background finding efficiency in the subtraction of the background from Dalitz decays and photon conversion. While the effective background reconstruction efficiency quoted in the original Letter is correct, the ones actually applied were 10%–15% higher. Because of this the background levels reported were underestimated and consequently the yields of nonphotonic electrons published were higher than their actual values. This mistake affected results from all three collision systems used in [1].

Figure 1 shows the revised ratio of inclusive over background electron yield as a function of p_T for $p + p$ and $\mathrm{Au} + \mathrm{Au}$ collisions. Because of the increase in background the ratio decreased systematically over the full p_T range.

Figure 2 shows the corrected nonphotonic electron spectra for 200 GeV $p + p$, $d + \mathrm{Au}$, and $\mathrm{Au} + \mathrm{Au}$ collisions. The curves correspond to FONLL (Fixed Order Next-to-Leading Log) predictions [2] for semileptonic D and B meson decays.

Recent studies reported that feed-down from J/ψ decays contributes noticeably to the observed nonphotonic electron signal [3]. This correction is not applied to the spectra shown in Fig. 2 but will be included and discussed in detail in a recent analysis of high statistics data [4].

Comparisons of the corrected $p + p$ spectrum with a pQCD FONLL calculation and the result from the PHENIX collaboration [5] are shown in Fig. 3. Within statistical errors our measurement agrees well with the pQCD calculation and the STAR and PHENIX results are consistent with each other. The results at low p_T that were derived from a separate analysis using STAR's time of flight detector [6] were also investigated and found to be correct.

Since the mistake made in the background finding efficiency affects the $p + p$, $d + \mathrm{Au}$, and $\mathrm{Au} + \mathrm{Au}$ data in a similar fashion, the nuclear modification factor, R_{AA}, for $d + \mathrm{Au}$ and $\mathrm{Au} + \mathrm{Au}$ collisions shown in Fig. 4 shifts only slightly in

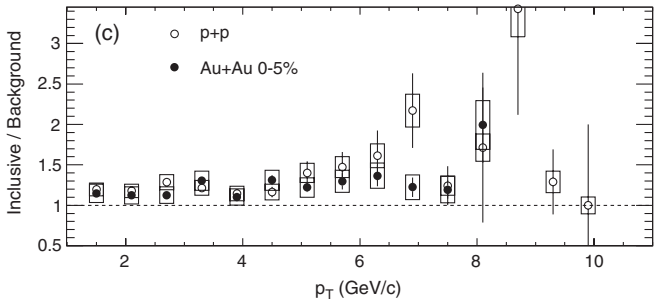

FIG. 1. (c) Ratio of inclusive and background electron yield vs p_T for $p + p$ and $\mathrm{Au} + \mathrm{Au}$ collisions. Vertical bars are statistical errors, boxes are systematic uncertainties.

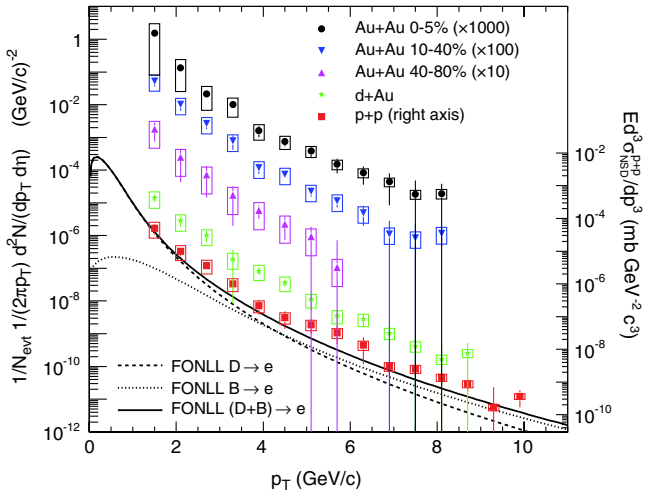

FIG. 2 (color online). Nonphotonic electron spectra. Vertical bars are statistical errors, boxes are systematic uncertainties. The curves are pQCD predictions for $p + p$ [2] (not scaled). Cross section on right axis applies to $p + p$ spectrum only.

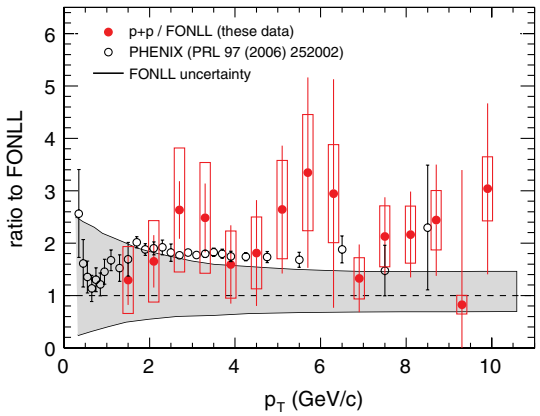

FIG. 3 (color online). Ratio between measured nonphotonic electron spectra and FONLL pQCD calculations [2]. The shaded band around that line reflects the experimental uncertainty in this ratio.

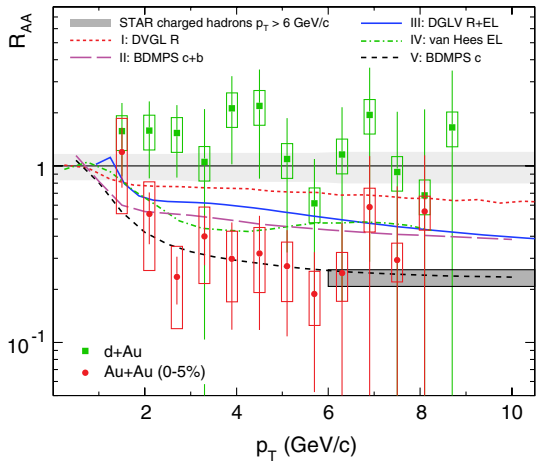

FIG. 4 (color online). The nuclear modification factor, R_{AA}, for d + Au and Au + Au collisions at $\sqrt{s_{\mathrm{NN}}} = 200$ GeV.

central value, but the statistical errors are larger than those in [1]. The main conclusion of the original Letter remains valid: a large suppression of nonphotonic electron yield in central Au + Au collisions is observed, consistent with substantial energy loss of heavy quarks in dense matter created at RHIC.

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