Erratum: Elliptic flow in $\sqrt{s} = 200$ GeV Au + Au collisions and $\sqrt{s} = 2.76$ TeV Pb + Pb collisions: Insights from viscous hydrodynamics + hadron cascade hybrid model [Phys. Rev. C 83, 054912 (2011)]

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In the version of VISHNU used in the original paper, the baryon-antibaryon annihilation channels in the hadron cascade module UrQMD were accidentally turned off. When redoing the calculations with those channels turned on, we found that baryon-antibaryon annihilation in the late hadronic stage reduces the final proton and antiproton multiplicities by about 30% in central (0–5% centrality) and by about 15% in peripheral (60–70% centrality) collisions while simultaneously slightly increasing the pion and kaon multiplicities. These observations are consistent with recent analyses presented in Refs. [1,2]. To compensate for the resulting slight overall increase in the final total charged hadron multiplicity when using the corrected version of VISHNU, we had to reduce the normalization of the initial entropy density by about 4%. Keeping the original parameter sets for η/s and $\tau_0(\eta/s)$, we confirmed that (within the statistical uncertainties of the results) the changes in the hydrodynamic evolution caused by this slight renormalization of the initial density profile are negligible, and the main effects of including $B-\bar{B}$ annihilation are a small change in the chemical composition of the hadron gas phase, as well as a renormalization and slight hardening of the proton p_T spectra. The hardening of the proton spectra arises from preferential annihilation of low-p_T baryons and antibaryons. Figure 1 shows that the reduction in yield and slightly harder shape of the proton p_T spectrum significantly improves the agreement with the experimental data from STAR and PHENIX. For Pb + Pb collisions at the LHC, the reduced proton and antiproton yield will help to explain the observed suppression of the measured p/π ratio below the chemical equilibrium model expectation [5].

The corrected curves for the pion spectra in Fig. 1(b) are, within the available statistical precision, indistinguishable from those originally published. The same holds true for all curves shown in the original Figs. 1(a), 2, 3, and 5. Only the integrated elliptic flow v_2 as a function of centrality, shown in the corrected Fig. 4, exhibits a small visible reduction compared to the original Fig. 4. None of the conclusions are affected by the corrections reported here.

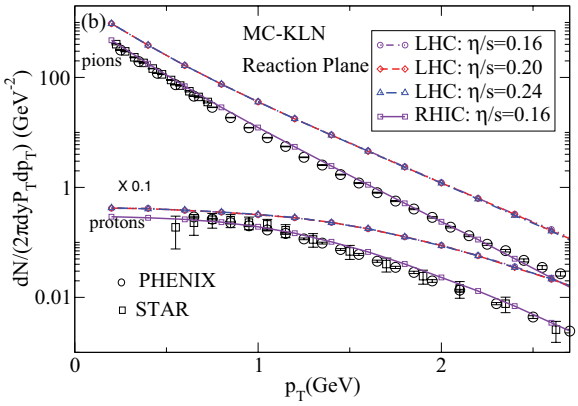

FIG. 1. (Color online) (b) p_T spectra for pions and protons in central Au + Au (RHIC) and Pb + Pb (LHC) collisions. Experimental RHIC data are from STAR [3] and PHENIX [4].

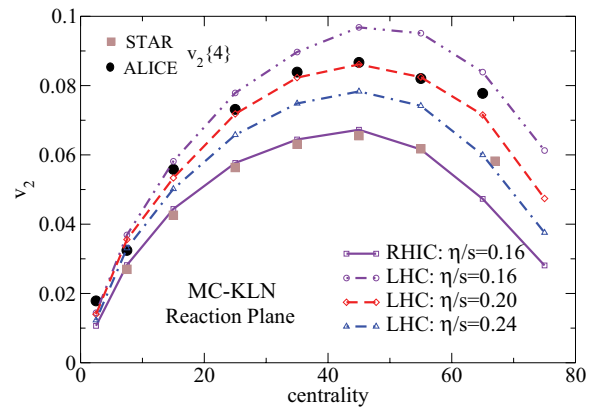

FIG. 4. (Color online) Integrated charged hadron v_2 as a function of centrality.

[1] F. Becattini, M. Bleicher, T. Kollegger, M. Mitrovski, T. Schuster, and R. Stock, Phys. Rev. C **85**, 044921 (2012).

[2] J. Steinheimer, J. Aichelin, and M. Bleicher, arXiv:1203.5302 [nucl-th].

[3] J. Adams *et al.* (STAR Collaboration), Phys. Rev. Lett. **92**, 112301 (2004); B. I. Abelev *et al.* (STAR Collaboration), *ibid.* **97**, 152301 (2006).

[4] S. S. Adler *et al.* (PHENIX Collaboration), Phys. Rev. C **69**, 034909 (2004).

[5] B. Abelev *et al.* (ALICE Collaboration), arXiv:1208.1974 [hep-ex].

