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Erratum

Erratum to: Insight into particle production mechanisms via angular correlations of identified particles in pp collisions at $\sqrt{s} = 7$ TeV

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We have identified a mistake in how Fig. 1 is referenced in the text of the article Eur. Phys. J. C 77 (2017) no. 8, 569 which affected three paragraphs of the results section. The corrected three paragraphs as well as the unmodified accompanying figure are reproduced in this document with the correct labeling.

In addition, an editing issue led to a missing acknowledgements section. The missing section is reproduced at the end of this document in the manner in which it should have appeared in the published article.

Amended paragraphs in the results section

For correlation functions (a)–(h) in Fig. 1 the baseline reflecting the energy–momentum conservation is combined with several expected physics mechanisms. For same sign particle pairs of mesons (a)–(b), the near-side peak is consistent with the mini-jet mechanism combined with the Bose–Einstein correlations. The away-side ridge is also prominent, consistent with a mini-jet origin.

The particle–anti-particle correlations (e)–(h) also show a mini-jet like structure on the near-side and a weak away-side one. For pairs of non-identical particles Bose–Einstein and Fermi–Dirac effects are not present; however, resonances play a significant role in shaping the correlation function. Baryon and meson correlations are qualitatively similar. The only difference is the magnitude and width of the near-side peak, which is highest for kaons, lower for protons and lambdas, and lowest for pions. The shape and strength of the correlation functions (a distinct near-side peak) in (a)–(b) and (e)–(h) suggest that they might be dominated by significant mini-jet contributions.

In contrast to like-sign meson correlations, the baryon–baryon (combined with anti-baryon–anti-baryon) distributions for identical proton (c) and lambda (d) pairs show a qualitatively different effect of a wide near-side depression instead of the peak, combined with an away-side ridge. Such a structure resembles the one associated with the baseline global energy-momentum conservation. Thus, this strong near-side suppression means that the mechanisms which would produce a peak are either not present or produce a very different correlation shape. On the other hand, a clear correlation of particles with opposite baryon number (g)–(h) is observed, resembling the structures observed for unlike-sign mesons. Based on the results of these studies we can draw the following conclusion: if we consider a process of mini-jet fragmentation as the one producing a strong, positive near-side correlation then baryon–anti-baryon pairs are produced in mini-jets (see (g)–(h)). However, producing more than one such a pair in a single fragmentation is strongly suppressed (see (c)–(d)).

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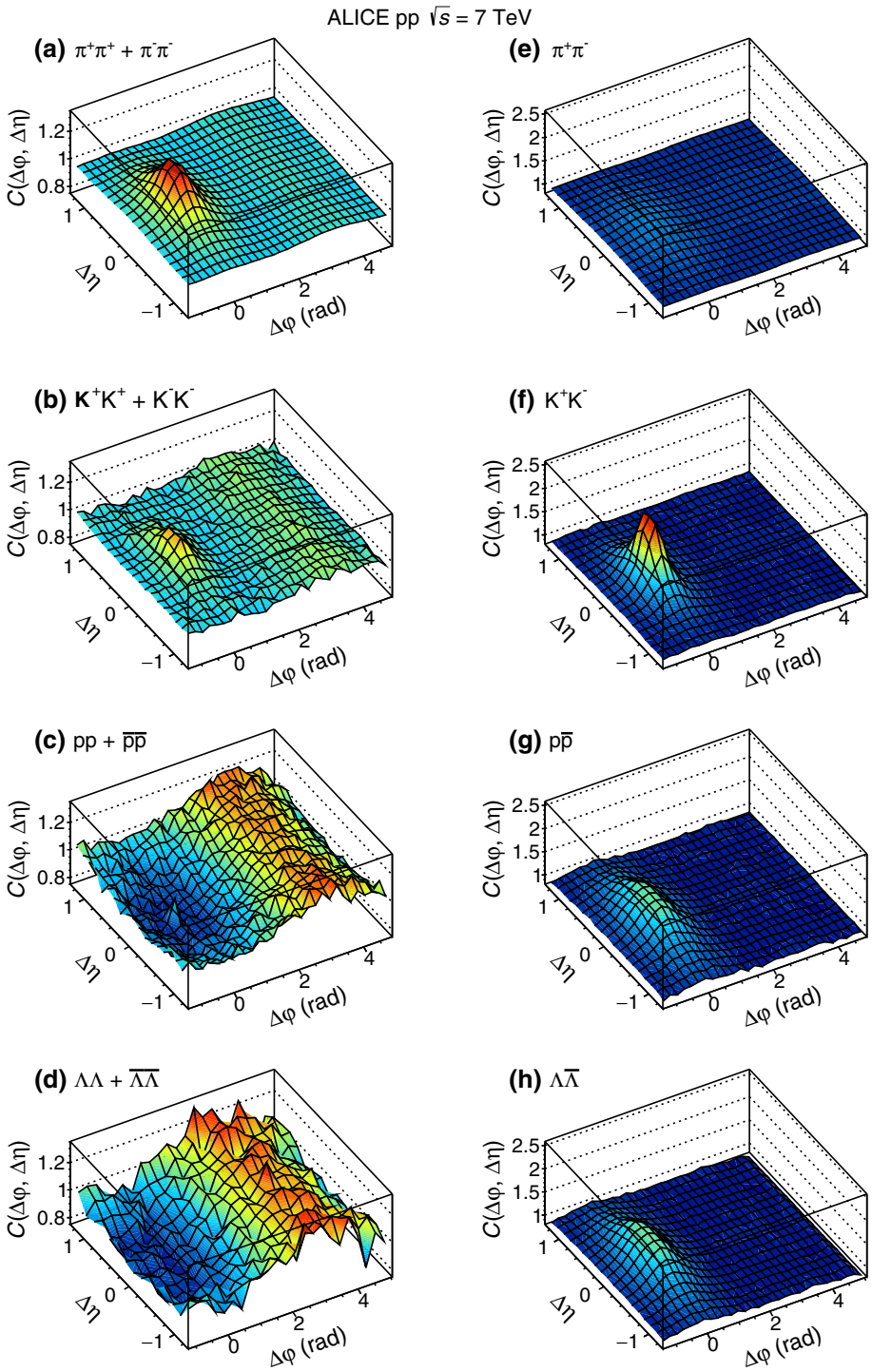

Fig. 1 Correlation functions for identical-particle pairs: $\pi^+\pi^+ + \pi^-\pi^-$, $K^+K^+ + K^-K^-$, $pp + \overline{pp}$, $\Lambda\Lambda + \overline{\Lambda\Lambda}$ (left panel) and particle–anti-particle pairs: $\pi^+\pi^-$, K^+K^-, $p\overline{p}$, $\Lambda\overline{\Lambda}$ (right panel). Plots are mirrored around $\Delta\eta = 0$

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