

CORRIGENDUM

Bubble–particle collisions in turbulence: insights from point-particle simulations – CORRIGENDUM

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An error was made for the drag term in the simulations reported in Chan, Ng & Krug (2023), where instead of $f_i = 1 + 0.169 Re_i^{2/3}$ as stated in the article, $f_i = 1.169$ was used. This error predominantly affects bubbles, as indicated by figure 1, which plots the mean drag correction against the Stokes number. We reassess the effect of nonlinear drag by showing the corrected version of figures 14 and 15 as figures C14 and C15 (where the prefix ‘C’ denotes the corrected version). Linear drag ($f_i = 1$) increases the collision kernels of bubble–particle (bp) and bubble–bubble (bb) collisions by enhancing the effective radial bp collision velocity S_-^{bp} , and increasing $g_{bb}(r_c)$ and S_-^{bb} , respectively. Therefore, the original statement that ‘the results remain largely unchanged for the $f_i = 1$ case’ (page 20) holds only for particle–particle (pp) collisions but not for bb and bp collisions. Instead, this should be replaced by ‘Taking $f_i = 1$, in contrast, changes the results involving bubbles significantly. The bb collision kernel Γ_{bb} increases over the whole range of St tested because of stronger clustering and a larger effective radial bb collision velocity S_-^{bb} . In contrast, the bp collision kernel Γ_{bp} increases only for $St > 1$ due to an enhanced S_-^{bp} , whereas for $St \leq 1$ the change in Γ_{bp} is minimal as the increase in S_-^{bp} is compensated by stronger segregation.’ Furthermore, nonlinear drag is not negligible for simulations and modelling approaches, in contrast to the original sentence at the end of § 4.3.

In light of this finding, we revisit the other figures shown in the article. While the quantitative results are changed slightly, the main qualitative conclusions drawn from the figures are the same. Below are the corrected version of figures 2, 3, 5–9, 10(a–b), and 11–13.

REFERENCE

CHAN, T.T.K., NG, C.S. & KRUG, D. 2023 Bubble-particle collisions in turbulence: insights from point-particle simulations. *J. Fluid Mech.* **959**, A6.

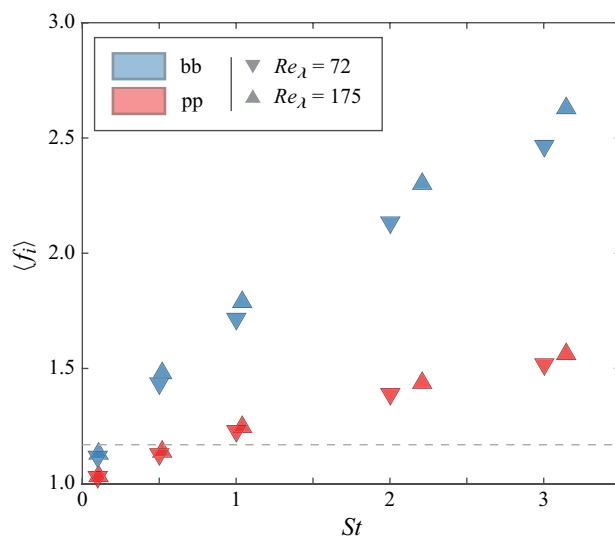


Figure 1. The mean drag correction as a function of the Stokes number. The dashed line shows $f_i = 1.169$ as used in the original simulations.

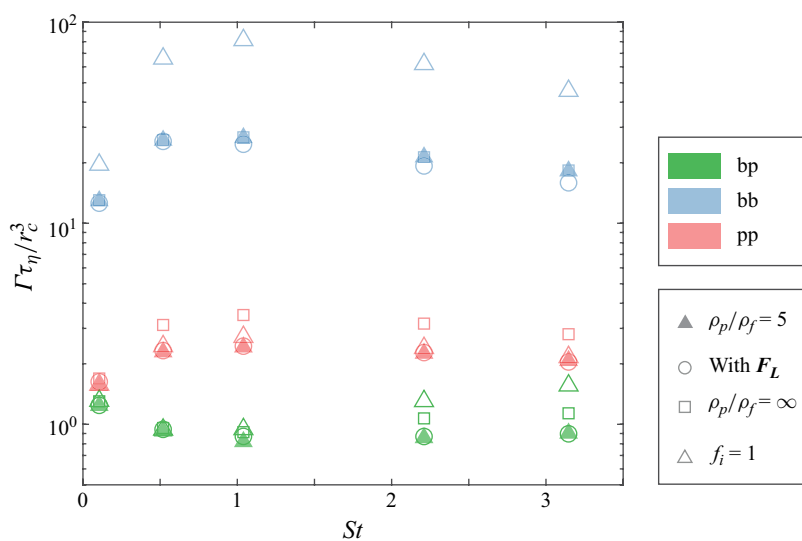


Figure C14.

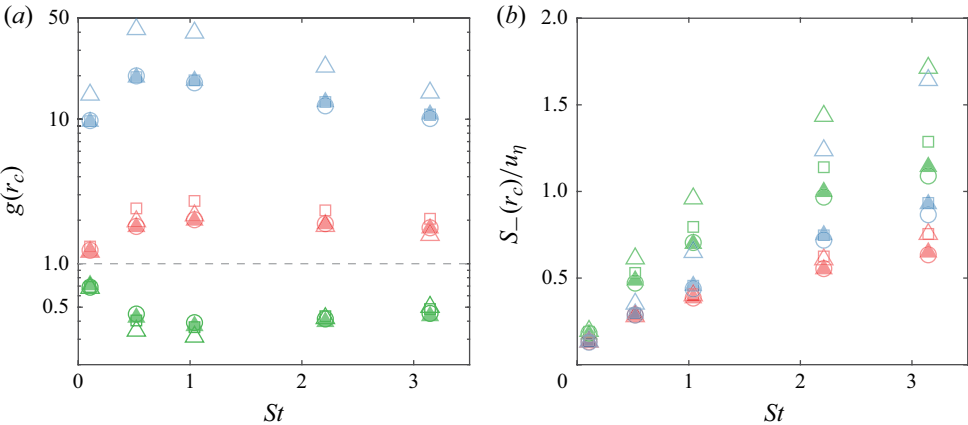


Figure C15.

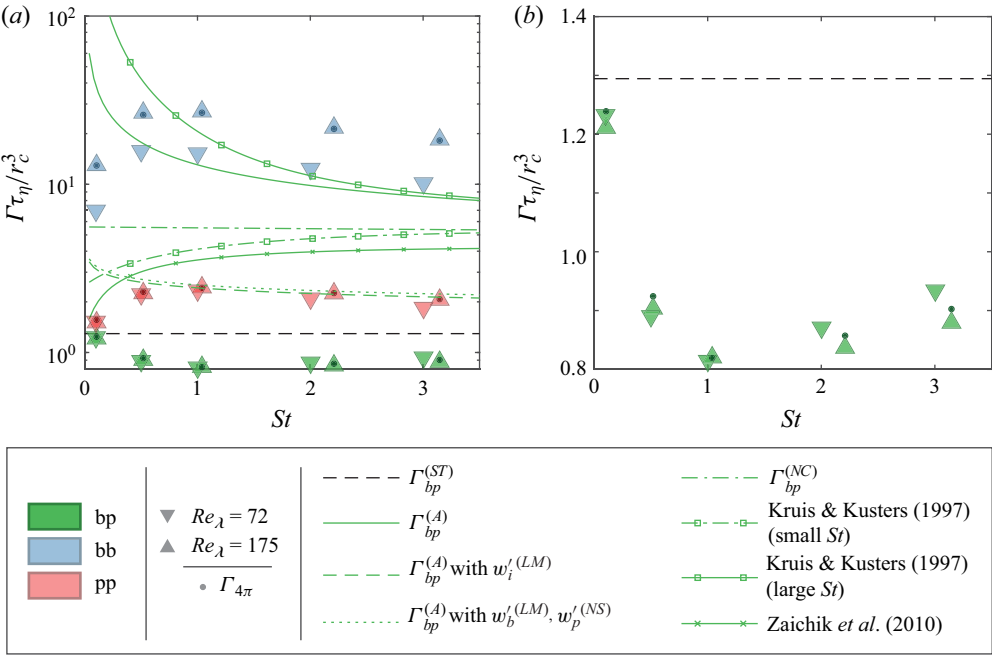


Figure C2.

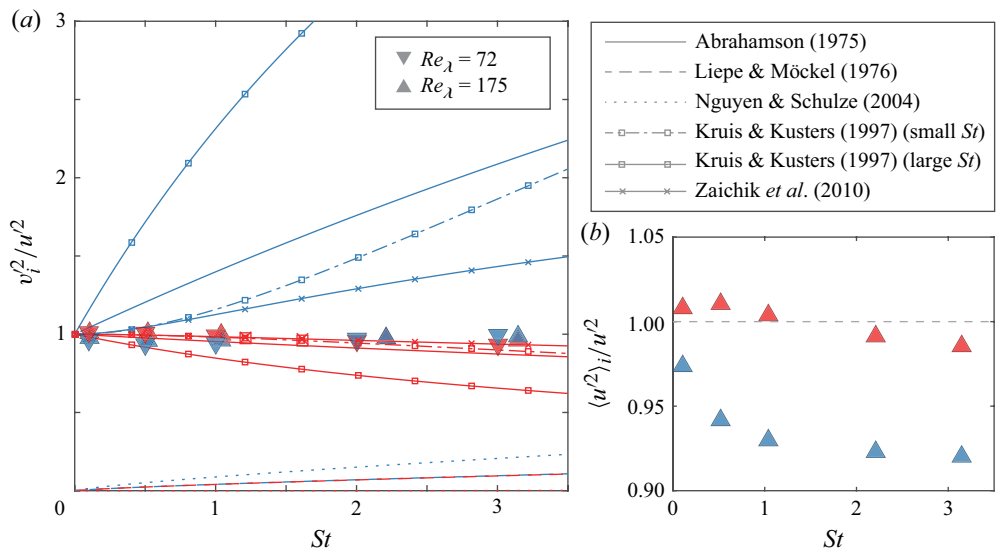


Figure C3.

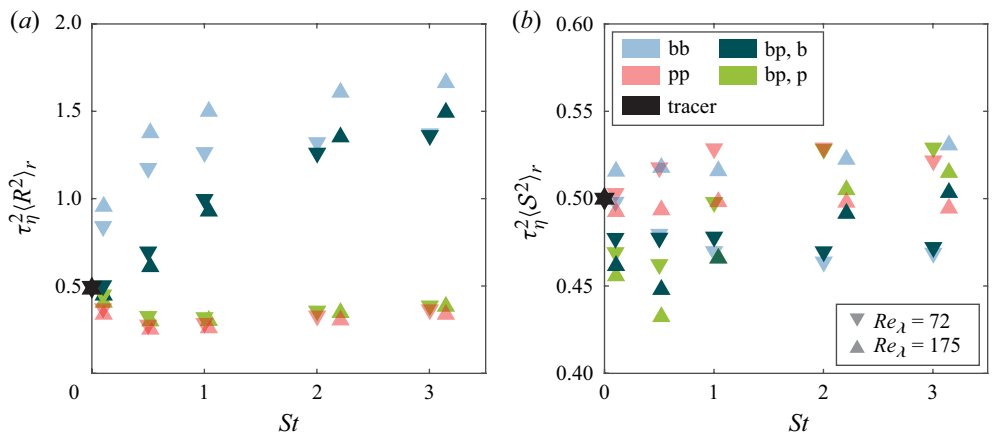


Figure C5.

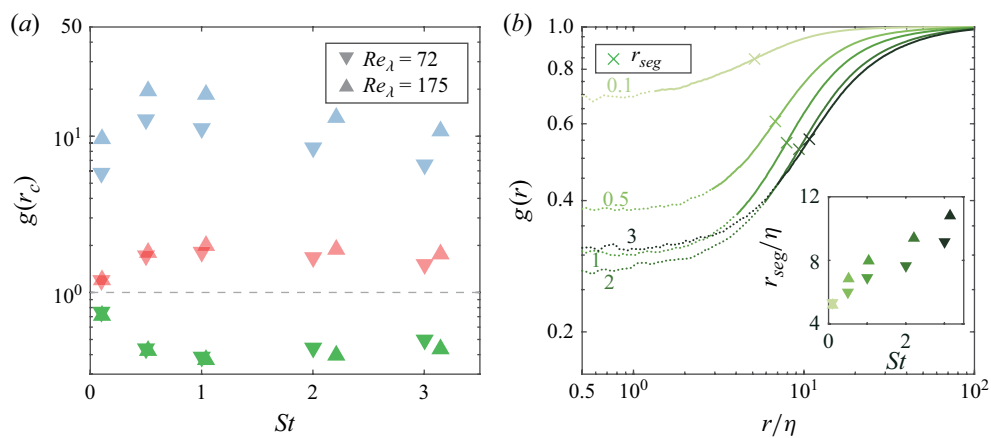


Figure C6.

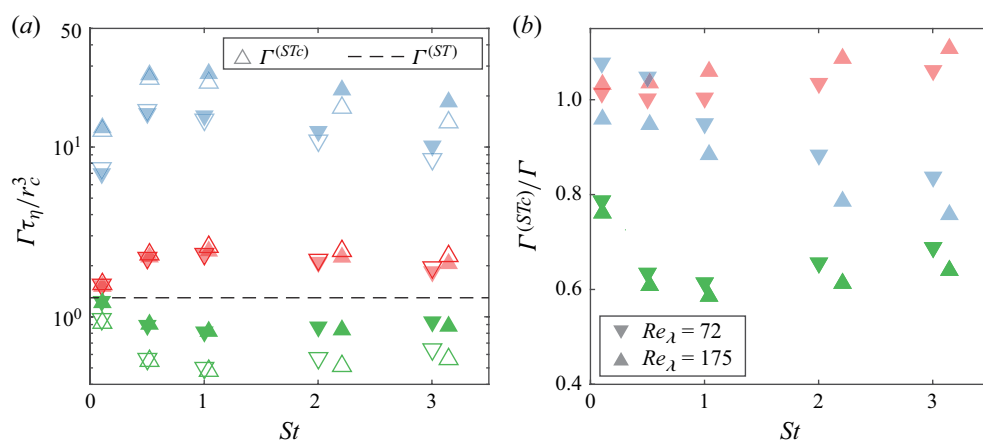


Figure C7.

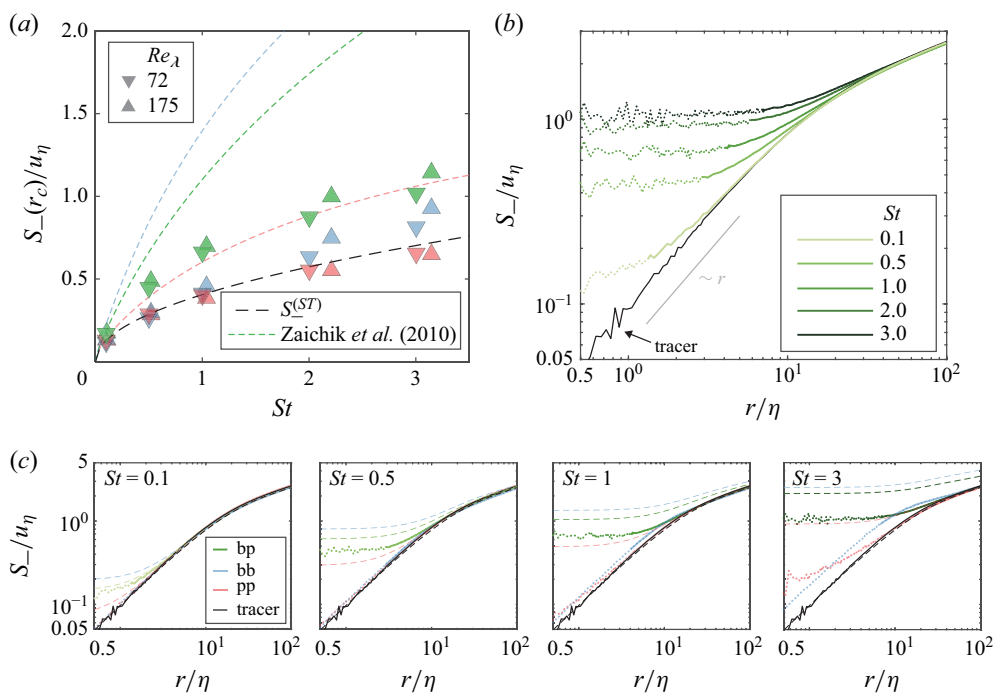


Figure C8.

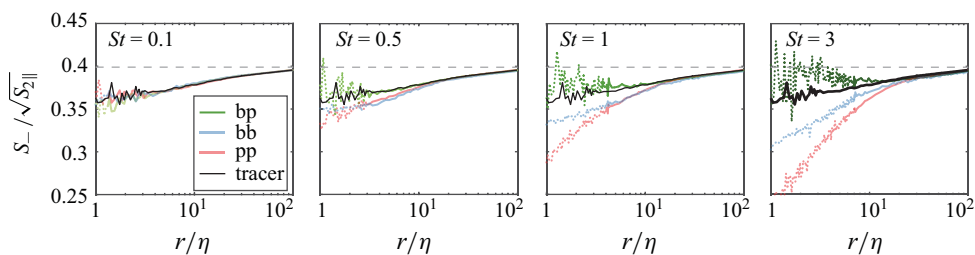


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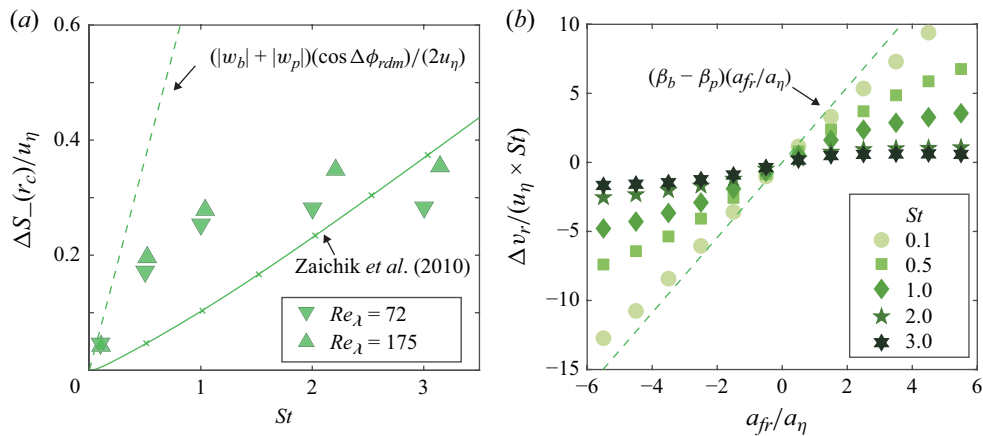


Figure C10.

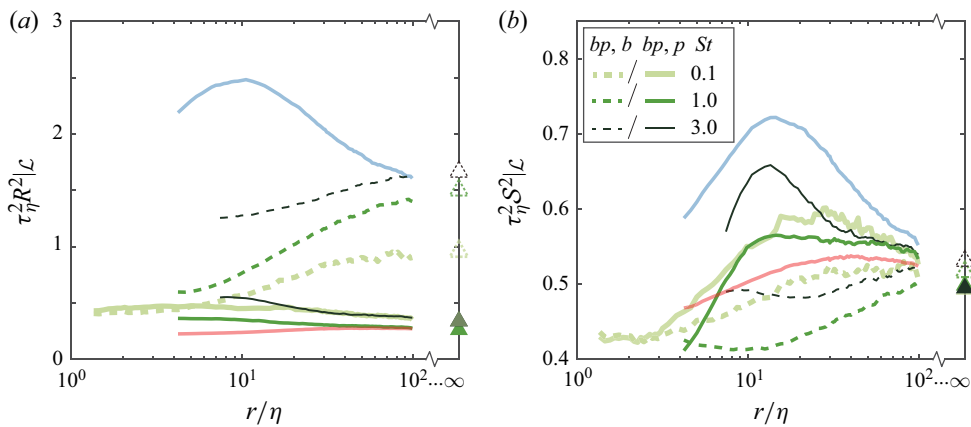


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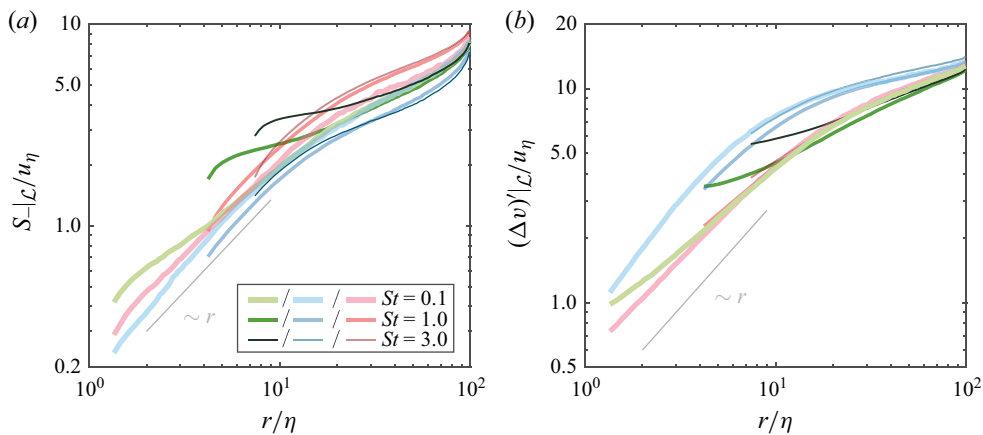


Figure C12.

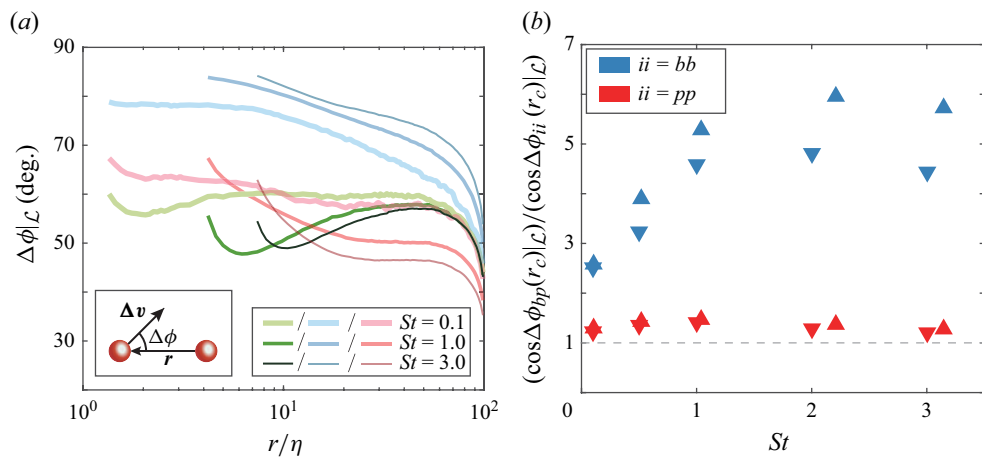


Figure C13.