Corrigendum

Effects of turbulence on the geometric collision rate of sedimenting droplets. Part 2. Theory and parameterization

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In equation (76) of the paper, the term $(v_{p_1} - v_{p_2}/\phi)$ should be written as $(v_{p_1} - v_{p_2})/\phi$. This typo occurs at two places in equation (76), once on page 20, and a second on page 21 of the paper in the long equation (76). The same problem occurs again on page 38 when the theory was recompiled.

We also wish to take this opportunity to comment on the numerical equivalence of equation (80) and the alternative form mentioned on page 37 of the paper. The rigorous form, equation (80), states that the radial relative velocity can be written as

$$\langle |w_r| \rangle = \sqrt{\frac{2}{\pi}} \sigma f(b) \tag{1}$$

$$f(b) = \frac{1}{2}\sqrt{\pi}\left(b + \frac{0.5}{b}\right)\mathrm{erf}(b) + \frac{1}{2}\exp\left(-b^2\right) \tag{2}$$

$$b = \frac{|\mathbf{g}| \times |\tau_{p1} - \tau_{p2}|}{\sigma\sqrt{2}}, \tag{3}$$

while the alternative form is

$$\langle |w_r| \rangle = \sqrt{\frac{2}{\pi}}\left(\sigma^2 + \frac{\pi}{8}(\tau_{p1} - \tau_{p2})^2|\mathbf{g}|^2\right)^{1/2}. \tag{4}$$

To demonstrate that the approximate form, equation (4), is numerically equivalent to the rigorous form, we compare the two forms in terms of $\langle |w_r| \rangle / w_{r0}$ as a function of b, in figure 1, for a wide range of possible b, where $w_{r0} = \sqrt{2/\pi} \times \sigma$. Clearly, they are almost the same, with the approximate form giving a slightly larger value. The maximum relative error for the approximate form is about 2.5%, as shown in figure 2. Since the difference is so small and since the second form is much simpler, we recommend that the second form be used when coding our theory.
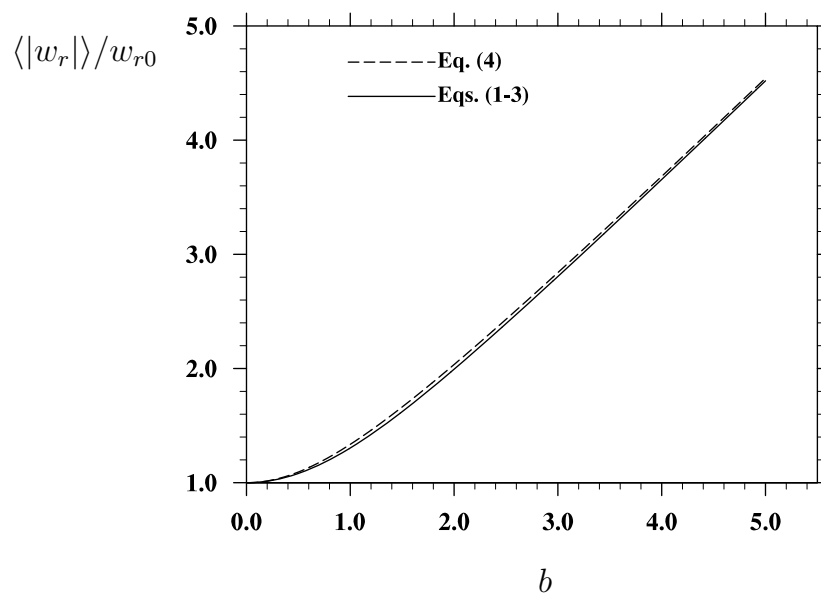
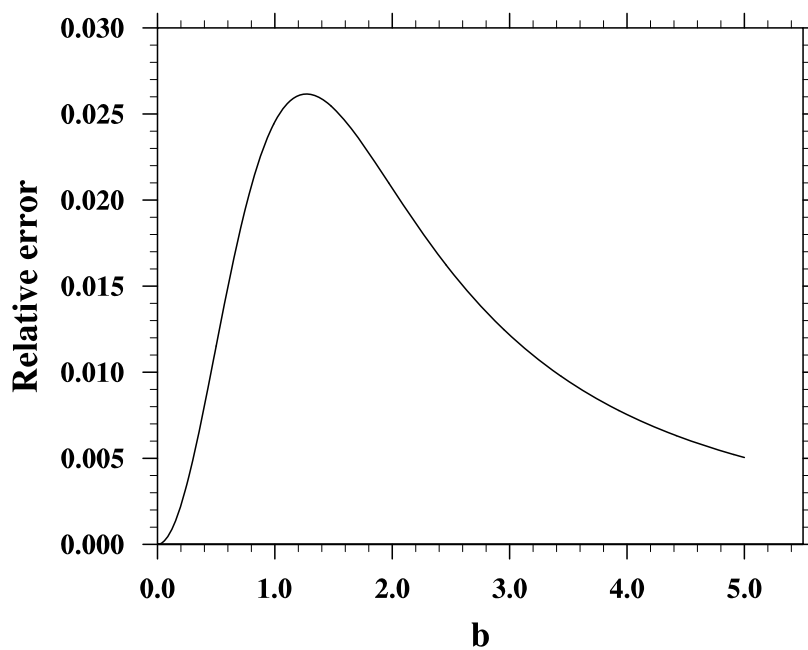**Figure 1.** Comparison of the rigorous form, equations (1)–(3), and the approximate form, equation (4).

Figure 2. The relative error of the approximate form of $\langle |w_r| \rangle$ as a function of b.