

CORRIGENDA

FAIR, M. C. & ANDERSON, J. L. 1990 Electrophoresis of dumbbell-like colloidal particles. *Int. J. Multiphase Flow* **16**, 663–679.

The authors regret that calculated values of K^n and N in the above paper were incorrect because of a sign error in the angular velocities of the two spheres for the “free” case. To correctly express the results of Keh & Chen (1989b) and Chen & Keh (1988) for the “free” angular velocities, [15c] and [15d] should read:

$$a_1 \boldsymbol{\Omega}_1^f = \frac{\epsilon}{4\pi\eta} (\zeta_1 - \zeta_2) C_1 \mathbf{e} \times \mathbf{E}_\infty \quad [15c]$$

and

$$a_2 \boldsymbol{\Omega}_2^f = \frac{\epsilon}{4\pi\eta} (\zeta_1 - \zeta_2) C_2 \mathbf{e} \times \mathbf{E}_\infty \quad [15d]$$

Also, corrections must be made to [27g] and [27j] to account for these sign errors and a misprint:

$$h_3 = (R_{13}^s + R_{23}^s + R_{14}^s + R_{24}^s) \left(\frac{B_1 + B_2 - 1}{l} \right) - (R_{13}^s + R_{23}^s) \frac{C_1}{a_1} - (R_{14}^s + R_{24}^s) \frac{C_2}{a_2} \quad [27g]$$

and

$$h_6 = \left[(R_{33}^n + R_{34}^n + R_{43}^n + R_{44}^n + lR_{23}^s + lR_{24}^s) \left(\frac{B_1 + B_2 - 1}{l} \right) - (R_{33}^n + R_{43}^n + lR_{23}^s) \frac{C_1}{a_1} - (R_{34}^n + R_{44}^n + lR_{24}^s) \frac{C_2}{a_2} \right]. \quad [27j]$$

After making these corrections, we reevaluated K^n and N in tables 1 and 2 and in figures 4 and 5. Figure 6 has also been corrected using the updated values for N . The only change in the conclusions is that the method-of-reflections approximations for the “free” and “connector” parts of the problem, both correct through $O(l^{-7})$, provide an adequate estimate for N for virtually all separations in the cases of $a_1/a_2 = 1$ and $1/2$, as well as an excellent estimate for K^n and K^p . The corrected tables and figures are presented below.

Also, there is a typographical error in [A.1], which should be

$$A_1 = (a_2^3)l^{-3} + \left(\frac{13a_1^3 a_2^3}{2} \right) l^{-6} + O(l^{-8}). \quad [A.1]$$

We thank Professor H. J. Keh for drawing our attention to the sign error.

Tables and Figures Overleaf

Table 1. Numerical values of the dimensionless parameters defined in [26] and [27] and plotted in figures 2-5*

a_1/a_2	$(a_1 + a_2)/l$	K^p	K^n	N	X_{o1}
0.20	0.20	0.8638		0.8486	
	0.40	0.8995		0.8694	
	0.60	0.9359		0.8978	
	0.80	0.9656		0.9319	
	0.90	0.9767		0.9491	
	0.95	0.9813		0.9572	
	0.97	0.9830		0.9603	
	0.98	0.9838		0.9618	
	0.99	0.9845		0.9634	
	0.50	0.20	0.6925	0.6784	0.9339
0.40		0.7266	0.6907	0.8016	0.6970
0.60		0.7665	0.7034	0.6739	0.7224
0.80		0.8060	0.7170	0.5713	0.7552
0.90		0.8245	0.7246	0.5286	0.7734
0.95		0.8334	0.7287	0.5092	0.7826
0.97		0.8369	0.7304	0.5019	0.7863
0.98		0.8386	0.7312	0.4984	0.7882
0.99		0.8403	0.7320	0.4949	0.7900
1.00		0.20	0.5000	0.5000	0.9557
	0.40	0.5000	0.5000	0.8631	0.5000
	0.60	0.5000	0.5000	0.7694	0.5000
	0.80	0.5000	0.5000	0.6939	0.5000
	0.90	0.5000	0.5000	0.6642	0.5000
	0.95	0.5000	0.5000	0.6515	0.5000
	0.97	0.5000	0.5000	0.6469	0.5000
	0.98	0.5000	0.5000	0.6448	0.5000
	0.99	0.5000	0.5000	0.6427	0.5000

*These results were computed using the composite solution of Jeffrey & Onishi (1984a) through $O(l^{-50})$ for the resistance coefficients and the tabulated results of Keh & Chen (1989a,b) for the "free" velocities.

Table 2. Extrapolations of the curves in figures 2-5 to $(a_1 + a_2)/l \rightarrow 1^*$

a_1/a_2	K^p	K^n	N	X_{o1}
0.20	0.9852			0.9650
0.50	0.8420	0.7328	0.4914	0.7918
1.00	0.5000	0.5000	0.6406	0.5000

*Linear extrapolations were performed using the slope at $(a_1 + a_2)/l = 0.99$, obtained by a cubic-spline fit.

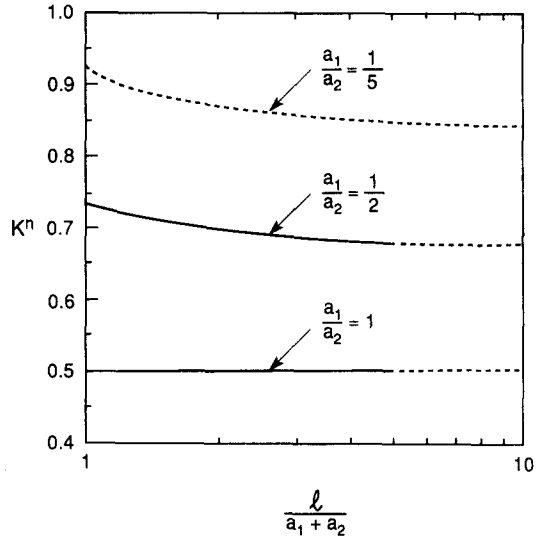


Figure 4. K^n , as defined by [26] and [27], vs the dimensionless center-to-center distance. Dashed lines indicate the method-of-reflections solution and solid lines indicate the solution listed in table 1.

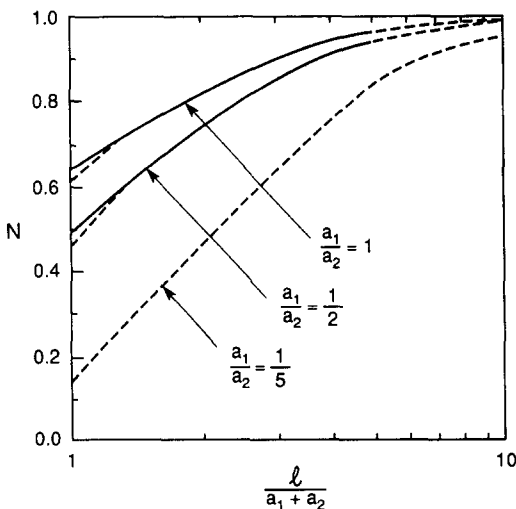


Figure 5. N , as defined by [26] and [27], vs the dimensionless center-to-center distance. Dashed lines indicate the method-of-reflections solution and solid lines indicate the solution listed in table 1.

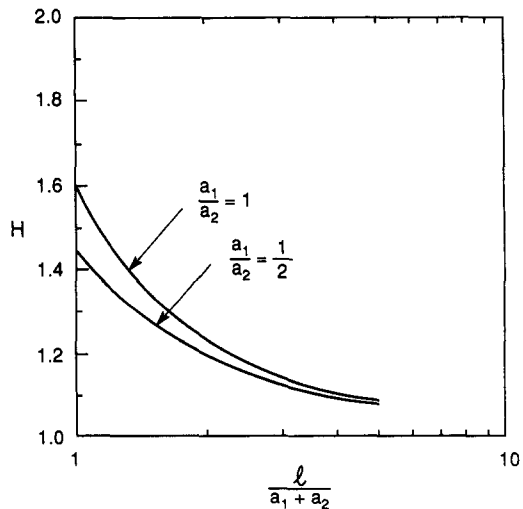


Figure 6. H , obtained using [36] and the values listed in table 1, vs the dimensionless center-to-center distance.