Erratum: Hydrodynamics of helical-shaped bacterial motility

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Equation (C15) presented in this paper is generally incorrect. In addition to a change of twist angle about its local tangent $\hat{e}_3 = \partial_s r$, twist density $\Omega_3$ also receives a change due to the variations of the filament centerline $r(s)$ (i.e., writhe). Therefore, there is no globally defined single function $\phi(s)$ that can satisfy Eq. (C15) for arbitrary deformations of a filament [1]. When and only when the filament shape change is forbidden, i.e., $\delta r(s) = 0$ for all $s$ (such as one-dimensional twist diffusion problem in a straight rod [2]), Eq. (C15) is applicable.

A few misprints found in this paper are also corrected here. In the caption of Fig. 10, $\Delta D^4 = 4a^4$ must be $\Delta D^2 = 4a^2$. The formula, Eq. (D18), should appear correctly as

$$\cos(\alpha_i + \gamma_i) = \frac{\hat{e}_{1,i+1} + \hat{e}_{2,i+1}}{1 + \cos \beta_i}. \quad (1)$$

Finally, correct expressions of Eqs. (D30) and (D31) should be

$$B^+_i = \frac{-(T_{i})_{23} \hat{e}_{1,i} + (T_{i})_{13} \hat{e}_{2,i}}{u_{i}[1 + (T_{i})_{33}]}, \quad (2)$$

$$B^-_i = \frac{(T_{i})_{23} \hat{e}_{1,i} - (T_{i})_{13} \hat{e}_{2,i}}{u_{i}[1 - (T_{i})_{33}]} \quad (3)$$

We apologize for those mistakes appeared in Appendices. The main body of the paper and all conclusions are unchanged.