Erratum: Flapping States of a Flag in an Inviscid Fluid: Bistability and the Transition to Chaos [Phys. Rev. Lett. 100, 074301 (2008)]

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In our Letter [1], an error was made in the computation of the nondimensional flag mass $R_1 = \rho_s/\rho_f L$ and dimensionless rigidity $R_2 = B/\rho_f U^2 L^3$. Here ρ_s is flag mass per unit length, ρ_f is fluid mass per unit area, B is flag bending rigidity, and U is the fluid stream speed. L is defined as the flag length, but R_1 and R_2 in [1] were computed using only the half flag length $L/2$ in place of L. Therefore, all of the values of R_2 in [1] (including those reported for the simulations) are a factor of 8 too large (due to the factor of L^3), and the values of R_1 are a factor of 2 too large.

Figure 1 is a revised version of Figure 2 in [1] comparing the stability boundary with those of recent reduced models by [2–4] (Fig. 3, dash-dotted line in [4]). The correction moves our boundary considerably closer to the others.

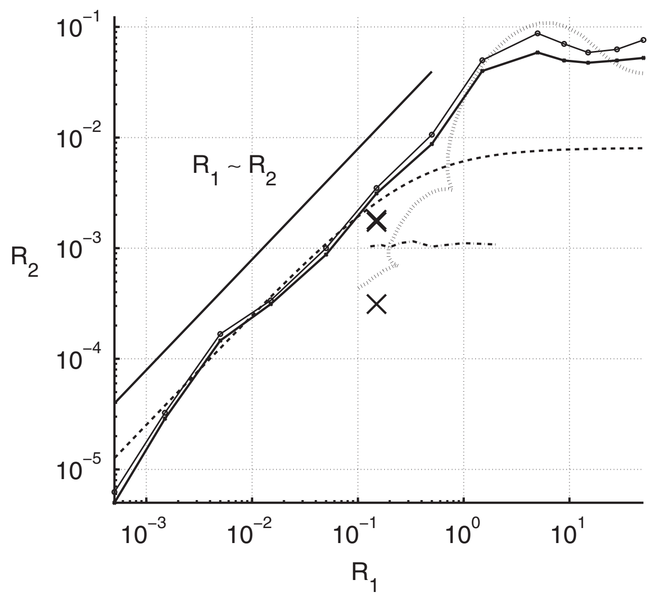

FIG. 1. Computed stability boundary in the $R_1 R_2$ plane. The upper solid boundary gives the smallest R_2 above which a small leading-edge forcing ($y(t) = 10^{-5}(2t)^2 e^{-(2t)^2}$) does not lead to flapping. The lower solid boundary is the largest R_2 below which such forcing leads to exponential growth of elastic energy in time until the flag saturates with $O(1)$ flapping, as shown in Figs. 1 and 2 of [1]. The solid line gives the scaling $R_1 \sim R_2$ for comparison at small flag masses. The black crosses mark the cases shown in Fig. 2 of [1] [upper cross is (a) and (b), and lower is (c)]. The dashed line shows the stability boundary from the reduced model of [2], and the dash-dotted line the corresponding boundary plotted in Fig. 3 of the reduced model of [3] (showing only the portion $R_2 \approx$ const, but having the same asymptotic scalings as the model here and in [2]). The dotted line (with cusps) is the stability boundary for the 2D model of [4].

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