Compiled data of flapping foil wake development in 3D single and tandem configurations

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1. Overview

The dataset within this folder was used to form the figures shown in Chapter 3 and the Appendix of the FLOW paper*: Effect of aspect ratio on the propulsive performance of tandem flapping foils.* In addition, wake videos of selected cases are included in GIF format. The aforementioned data is derived from numerical simulations conducted by the BDIM solver LOTUS (adapted for 3D experiments by Dr. Andhini N. Zurman-Nasution)via the *Iridis Compute Cluster* of the University of Southampton. In the following paragraphs, specific guidance is given to the reader with respect to each figure separately.

2. Wing model used in simulations

A model of an AR=2 flipper, used in our simulations, can be found in IGS format as *WingAR2.igs.*

3. Movies of cases shown in Figure 6

Animation of the normalised vorticity field for single flipper wakes at AR=2 and AR=8 can be found in GIF format within this folder. More specifically, the movies entitled *SingleAR2.gif* and *SingleAR8.gif* represent figures 6(a) and 6(d) respectively.

4. Movies of cases shown in Figure 11

Normalised vorticity animation of tandem flipper wakes at AR=2 and AR=8 can be found within the folder in GIF format. Cases named *TandemAR2.gif* and *TandemAR8.gif* represent figures 11(c) and 11(d) respectively.

5. Data of hydrodynamic loads and efficiencies

Data for the figures 5,8,9,10,13,15 can be found in *Force\_Data.csv*. This includes the cycle averaged hydrodynamic loads and efficiencies of both single and tandem configurations. To enable easy navigation, each spreadsheet is named after the respective figure.

6. Data and post processing of LEV circulation

Data for the figures 7,12,16 can be found inseparate spreadsheets within *Circulation\_Data.csv.* The post processing routine, included in the folder, is an adaptation of the original Python script, made by Martin Lauber. As an example, we also include the input file for AR=2 where the calculation domain is set around the LEV of the front flipper at t=0.25T.