Abstract Submitted for the DFD19 Meeting of The American Physical Society

Vortex models for the unsteady aerodynamics of tandem foils.¹ JAVIER ALAMINOS-QUESADA, University of Malaga, JEFF ELDREDGE, University of California, Los Angeles — Configurations of multiple wings and fins arise in various contexts, including biological flying and swimming, biologically-inspired and rotary wing vehicles, and formations of vehicles. Here, we present two-dimensional potential flow models for the separated flows of multiple unsteady foils. In the special case of a longitudinal tandem configuration, these models are evaluated and compared directly with high-fidelity numerical simulations at low Reynolds number. In addition, we have obtained the optimal configuration for an accelerating pair of foils with respect to the separation distance between them. Finally, we consider potential flow models of the trailing airfoil in which the effect of the leading airfoil's wake is replaced by a time-varying vorticity flux into the separated flow of the trailer.

 $^1 \rm Supported$ by the Ministerio de Economa y Competitividad of Spain Grants No. DPI2016-76151-C2-1-R

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Date submitted: 16 Jul 2019

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