

Abstract Submitted  
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**Analysis of the aerodynamic interaction between two plunging plates in tandem at low Reynolds number for maximum propulsive efficiency**<sup>1</sup> JOAQUIN ORTEGA-CASANOVA, RAMON FERNANDEZ-FERIA, Universidad de Malaga (Spain) — The thrust generated by two heaving plates in tandem is analysed for two particular sets of configurations of interest in forward flight: a plunging leading plate with the trailing plate at rest, and the two plates heaving with the same frequency and amplitude, but varying the phase difference. The thrust efficiency of the leading plate is augmented in relation to a single plate heaving with the same frequency and amplitude in most cases. In the first configuration, we characterize the range of nondimensional heaving frequencies and amplitudes of the leading plate for which the stationary trailing plate contributes positively to the global thrust. The maximum global thrust efficiency, reached for an advance ratio slightly less than unity and a reduced frequency close to 5, is about the same as the maximum efficiency for an isolated plate. But for low frequencies the tandem configuration with the trailing plate at rest is more thrust efficient than the isolated plate. In the second configuration, we find that the maximum thrust efficiency is reached for a phase lag of 180 (counterstroking), particularly for an advance ratio unity and a reduced frequency 4.4, and it is practically the same as in the other configuration and that for a single plate.

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