Abstract Submitted
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**Extension of the formation time concept to general planforms
and trajectories** MICHELE MILANO, MORY GHARIB, Caltech — We propose
a generalization of the concept of formation time for flapping wings and appendages,
that overcomes the drawbacks of Strouhal number and paves the way to the devel-
opment of a unified theory for the unsteady aerodynamics of flapping propulsion.
We show experimental evidence of the universality of the generalized formation time
concept coming from results on flapping flat plates, shape optimization of flapping
wings, and trajectory optimization for the caudal fin of an arrtificial fish.

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