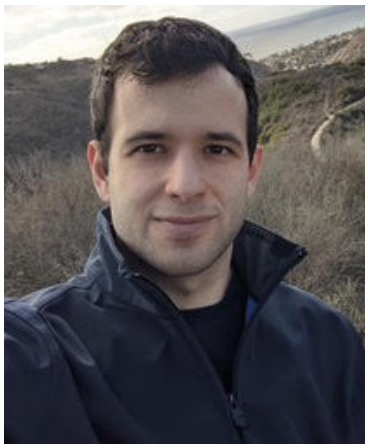
UNIVERSITY OF MARYLAND

THE BURGERS PROGRAM FOR FLUID DYNAMICS
FLUID DYNAMICS REVIEWS SEMINAR SERIES

CONTROLLING GUST LOADS ON AIRFOILS BY PITCHING



Friday, April 29, 2022 | 11am

DeWalt Seminar Room
2164 Glenn L. Martin Hall

Speaker

IGNACIO ANDREU ANGULO

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ABSTRACT

Gusts in the atmosphere can affect the maneuverability of aerial vehicles, especially micro air vehicles. This presentation aims to understand the aerodynamic effects of these vehicle-gust encounters in order to devise control mechanisms to fly in strong gusts. More specifically, we study experimentally the flow and force on a wing travelling at some angle of attack through a transverse gust. After analysing the results, a wing pitch motion is used to attempt to mitigate the gust loads. The pitch motions used for gust mitigation are calculated using a low order model that directly relates the gust velocity to the wing lift and the wing angle of attack.

BIO

Ignacio is originally from Spain. He started to become very interested in aerodynamics research during his B.S. in Aerospace Engineering at the University of Maryland. Afterwards, he went to the University of Illinois to do a M.S. also in Aerospace Engineering and he is currently a last year Ph.D. student at the University of Cambridge. Ignacio's research focuses on low-speed unsteady aerodynamics, doing experiments and using aerodynamic theory to understand the flow characteristics.

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