

# Antonios Gementzopoulos

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## EDUCATION

- Ph.D. Aerospace Engineering, University of Maryland, College Park, expected 2024  
M.Res. Aeronautical Engineering, University of Cambridge, 2019  
B.S. Mechanical Engineering, New York University, Tandon School of Engineering, 2018

## RESEARCH EXPERIENCE

- 2024– NASA Goddard Space Flight Center  
University Space Research Association (USRA) Intern  
This project seeks to develop Monte Carlo uncertainty quantification tools as well as data visualization software, for the Energetic Neutral Atom (ENA) imager. The effort is part of the NASA Storm Time O+ Ring current Imaging Evolution (STORIE) mission.
- 2020– Separated and Transient Aerodynamics Laboratory (STAL)  
University of Maryland, College Park  
Graduate Research Assistant, Department of Aerospace Engineering  
This dissertation encompasses an experimental investigation of the aerodynamics of wing-gust encounters as well as the development of lift regulation strategies for gust load alleviation. Emphasis is placed on simultaneous measurement of the load transients, unsteady pressure distributions and flowfields associated with transverse gust encounters, as well as the incorporation of flow sensing information in estimation and control.
- 2021– NATO Applied Vehicle Technology (AVT) Panel  
AVT-347: Large-amplitude gust mitigation strategies for rigid wings  
Technical Team Member  
This panel consists of an international team of scientists committed to determining the most promising control methods for large-amplitude gust encounters and integrating flow models into control algorithms. Participation in this group involves presenting and sharing research results as well as discussing research ideas and questions.
- 2018–19 Whittle Laboratory  
University of Cambridge  
Graduate Research Assistant  
This project aimed to create a methodology capable of predicting Low Frequency Rumble (LFR) in aviation gas turbines, by characterizing the reflectivity of the Nozzle Guide Vanes (NGV). A thermoacoustic solver was developed and used to predict the reflectivity of one-dimensional subsonic and choked nozzles.

2016–18    Dynamical Systems Laboratory  
New York University, Tandon School of Engineering  
Undergraduate Researcher

This research studied causal relationships in swimmer models as part of a project to develop biomimetic underwater robots. Transfer entropy was validated as a tool to quantify information transfer between tandem airfoils in a uniform flow.

## PUBLICATIONS

### Journal Articles

- [1] G. Sedky, **A. Gementzopoulos**, I. Andreu-Angulo, F. D. Lagor, and A. R. Jones, “Physics of gust response mitigation in open-loop pitching manoeuvres,” *Journal of Fluid Mechanics*, vol. 944, A38, 2022.
- [2] **A. Gementzopoulos**, G. Sedky, and A. R. Jones, “Role of vorticity distribution in the rise and fall of lift during a transverse gust encounter,” *Physical Review Fluids*, 2023, Under review.
- [3] G. Sedky, **A. Gementzopoulos**, F. D. Lagor, and A. R. Jones, “Experimental mitigation of large-amplitude transverse gusts via closed-loop pitch control,” *Physical Review Fluids*, vol. 8, no. 6, p. 064 701, 2023.
- [4] X. Xu, **A. Gementzopoulos**, G. Sedky, A. R. Jones, and F. D. Lagor, “Design of optimal wing maneuvers in a transverse gust encounter through iterated simulation or experiment,” *Theoretical and Computational Fluid Dynamics*, pp. 1–20, 2023.
- [5] X. Xu, **A. Gementzopoulos**, G. Sedky, A. R. Jones, and F. D. Lagor, “Iterative maneuver optimization in a transverse gust encounter,” *AIAA Journal*, vol. 61, no. 5, pp. 2083–2099, 2023.

### Conference Articles

- [1] **A. Gementzopoulos**, G. Sedky, and A. Jones, “Lift and vortex development during transverse wing-gust encounters for a blunt-edge airfoil,” in *AIAA Scitech 2022 Forum*, 2022, p. 0045.
- [2] G. Sedky, **A. Gementzopoulos**, F. D. Lagor, and A. Jones, “Experiments in transverse gust mitigation using open-loop pitch maneuvers,” in *AIAA Scitech 2022 Forum*, 2022, p. 0333.
- [3] Y. T. Lee, **A. Gementzopoulos**, N. Chitralla, A. V. Suresh Babu, A. Jones, and A. Gopalarathnam, “Combined theoretical and experimental investigation of airfoil encountering transverse gust,” in *AIAA Aviation 2023 Forum*, 2023, p. 4012.

### Conference Abstracts

## TRAINING

- 2022        Particle Image Velocimetry  
Burgers Program for Fluid Dynamics  
Delft University of Technology, Netherlands, October 10-14 2022
- 2019        Combustion Aerodynamics and Technical Computing  
National Centre for Combustion and Aerothermal Technology  
Loughborough University, United Kingdom, January 2019

- 2019      Combustion-Turbine Interaction and Integration  
             Oxford Thermofluids Institute  
             Oxford University, United Kingdom, March 2019
- 2019      Compressor Stall  
             Whittle Laboratory  
             Cambridge University, United Kingdom, February 2019

## **GRANTS AND AWARDS**

### **Awards and Honors**

- 2023      Clark Doctoral Fellows Mid-Career Award
- 2023      Outstanding Graduate Assistant Award
- 2017      Undergraduate Student Research Fellowship
- 2014–18   Tandon Scholarship of Academic Merit

## **COURSES TAUGHT**

### **University of Maryland, College Park**

Dynamics of Aerospace Systems (Teaching Assistant)  
Aerodynamics (Teaching Assistant)

## **MEMBERSHIPS**

The American Institute of Aeronautics and Astronautics  
American Physical Society Division of Fluid Dynamics

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