Haley Dell'Orso
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EDUCATION

Expected May 2017 — **Rensselaer Polytechnic Institute (RPI), Troy, NY**
Ph.D. Candidate in Aeronautical Engineering
Thesis: "Formation of 3-D Stall Cells on NACA0015 Airfoils"
Advisor**:** Michael Amitay

August 2016 — **Rensselaer Polytechnic Institute (RPI), Troy, NY**
M.S. in Mechanical Engineering

Awarded May 2011 — **Smith College, Northampton, MA**
Bachelor's in Physics and Astronomy

Attended Spring 2009 — Williams-Mystic Maritime Studies Program, Mystic, CT
Interdisciplinary Program Accredited Through Williams College

SKILLS

- Certified LabVIEW Associate Developer (CLAD)
- DaVis, MATLAB, Solidworks, TecPlot, Origin
- Wind Tunnel Operation and Maintenance

RESEARCH EXPERIENCE

2014 - Present — **Rensselaer Polytechnic Institute, Center for Flow, Physics and Control**
"Formation of 3-D Stall Cells on NACA0015 Airfoils Numbers"
- Designed and conducted open-return wind tunnel experiments to observe the dynamic stall cell formation at low to moderate Reynolds numbers using surface pressure measurements, stereoscopic particle image velocimetry, and oil flow visualization
- Supervised design and manufacture of new wind tunnel and water tunnel models
- Managed undergraduate research team
- Improved safety practices as an active member of the Center for Flow Physics and Control's safety committee

2012 - 2014 — **Rensselaer Polytechnic Institute, Center for Flow, Physics and Control**
"Active Flow Control at Low Reynolds Numbers"
- Designed and conducted open-return wind tunnel experiments on a flat plate and NACA0009 airfoil at low Reynolds numbers using stereoscopic particle image velocimetry
- Programmed wind tunnel and experiment control code using LabVIEW
- Quantified the deflection of electro-active polymers and piezoelectric discrete oscillating surface actuators using a laser displacement sensor
- Collected hot-wire data and performed FFT to analyze Tollmien-Schlichting wave behavior
- Processed data using DaVis, Tecplot, and MATLAB in order to obtain time-averaged velocity/vorticity and turbulent kinetic energy

RELEVANT WORK EXPERIENCE

2011 - 2012 — **Private Tutor - BuffTutor (Boulder, CO)**
- Provided individual tutoring sessions for college students in calculus, newtonian mechanics, electromagnetism, modern physics, introductory astronomy, and modern cosmology

Summer 2011 — **Research Assistant - Smith College Engineering (Northampton, MA)**
- Developed and distributed a survey of innovative behaviors to thermodynamics professors
- Analyzed data using Mann-Whitney U Test, ANOVA, Friedman Test, and qualitative measures
- Conducted and transcribed interviews with thermodynamics professors across the nation

2008 - 2011 — **Teaching Assistant - Smith College Astronomy (Northampton, MA)**
- Worked with different professors on three separate lab-based astronomy courses
- Provided weekly tutoring and homework help for students in introductory classes
- Administered sky quizzes and instructed students on the use of 8" telescopes

2006 - 2007 — **Teaching Assistant - Smith College Astronomy (Northampton, MA)**
- Penned relevant and poignant editorial columns
- Self-motivated and reliable for topics, substance, and deadlines

LEADERSHIP EXPERIENCE

2012 - 2015 RPI Graduate Society of Women Engineers Co-Organizer
2009 - 2011 Smith Physics Club Treasurer and Vice President
2008 - 2011 University of Massachusetts Amherst Karate Club Assistant Instructor

HONORS AND AWARDS

2015 Boeing Graduate Student Scholarship
2014 APS Conference Travel Grant Recipient
2013 - 2014 RPI Graduate Fellowship
2013 Society of Women Engineers Future Leader
2007 - 2011 Smith College Dean's List
2008 Smith College First Group Scholar
2007 White Rose Scholarship Recipient
2007 Clark Scholarship Recipient

PUBLICATIONS

Dell'Orso, H., "Feasibility of Using Dynamically Oscillating Surfaces to Control Tollmien-Schlichting Waves." Rensselaer Polytechnic Institute M.S. thesis, August 2016.

Dell'Orso, H., Tuna, B.A., and Amitay, M., "Measurement of 3-D Stall Cells on a 2-D NACA0015 Airfoil." *AIAA Journal*, 2016.

Amitay, M., Tuna, B.A., **and Dell'Orso, H**., "Identification and Mitigation of T-S Waves Using Localized Dynamic Surface Modification." *Physics of Fluids*, Volume 28, Issue 6, 2016. DOI: 10.1063/1.4953844.

Dell'Orso, H., Chan, W., & Amitay, M. "Induced Stall Cells on a NACA0015 Airfoil using Passive and Active Trips." In *46th AIAA Fluid Dynamics Conference*, June 2016.

DeMauro, E. P., **Dell'Orso, H.**, Zaremski, S., Leong, C. M., & Amitay, M. (2015). Control of Laminar Separation Bubble on NACA 0009 Airfoil Using Electroactive Polymers. *AIAA Journal*, 1-10.

Dell'Orso, H., Tuna, B. A., & Amitay, M. (2015). Control of Tollmien-Schlichting Waves Using Piezoelectrically Driven Oscillating Surface. In *45th AIAA Fluid Dynamics Conference* (p. 3222).

DeMauro, E. P., **Dell'Orso, H.,** Sivaneri, V., Tuna, B. A., & Amitay, M. (2015). Measurements of 3-D Stall Cells on 2-D Airfoils. In *45th AIAA Fluid Dynamics Conference* (p. 2633).

PRESENTATIONS

Dell'Orso, H., and Amitay, M., November 2015. "3-D Stall Cell Inducement Using Static Trips on a NACA0015 Airfoil." *APS Division of Fluid Mechanics*. Boston, MA.

Dell'Orso, H., Tuna, B. A., & Amitay, M., June 2015. Control of Tollmien-Schlichting Waves Using Piezoelectrically Driven Oscillating Surface. *45th AIAA Fluid Dynamics Conference*. Dallas, TX.

DeMauro, E. P., **Dell'Orso, H.,** Sivaneri, V., Tuna, B. A., & Amitay, M., June 2015. Measurements of 3-D Stall Cells on 2-D Airfoils. *45th AIAA Fluid Dynamics Conference*. Dallas, TX.

Dell'Orso, H., Tuna, B. A., DeMauro, E. P., Amitay, M., November 2014. "Control of Tollmien-Schlichting Waves on a Flat Plate Using a Piezoelectric-Driven Oscillating Surface." *APS Division of Fluid Dynamics.*

Dell'Orso, H., Bogardus, T., Tuccio, M., DeMauro, E.P., Leong, C., Amitay, M., May 2014, "Quantification of a Piezoelectric-Driven Oscillating Surface (PDOS) Actuator." *1000 Islands Fluid Mechanics Meeting.*

Dell'Orso, H., Amitay, M., April 2014, "Active Flow Control at Low Reynolds Numbers." *MIT Women in Aerospace Symposium.*

Tuccio, M., Bogardus, T., **Dell'Orso, H.**, Amitay, M., April 2014, "Active Flow Control at Low Reynolds Numbers Using Piezoelectric Driven Oscillating Surfaces." *RPI Undergraduate Research Symposium.* (Won best presentation.)

Dell'Orso, H., Zaremski, S., DeMauro, E. P., Leong, C., and Amitay, M., November 2013, "Active Flow Control at Low Reynolds Numbers Using Electro-Active Polymers." *APS Division of Fluid Mechanics*

Dell'Orso, H., Zaremski, S., Chang, L., Leong, C., and Amitay, M., April 2013, "Active Flow Control at Low Reynolds Numbers Using Electro-Active Polymers." *1000 Islands Fluid Mechanics Meeting.* Gananoque, Ontario.

PROFESSIONAL MEMBERSHIPS

Society of Women Engineers
American Physical Society
Sigma Xi
American Institute of Aeronautics and Astronautics