

Tyler Van Buren

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EDUCATION

Rensselaer Polytechnic Institute, Troy NY

Ph.D., Aeronautical Engineering May 2013
“Synthetic jet actuator performance enhancement and in-depth exploration”

M.S., Aeronautical Engineering May 2010
“Control of a laminar boundary layer using electro-active polymers”

B.S., Aeronautical and Mechanical Engineering May 2008

RESEARCH

University of Delaware, Newark, DE

Mechanical Engineering

Assistant Professor

August 2019 – Present

Princeton University, Princeton, NJ

Mechanical and Aerospace Engineering

Adviser: Prof. Alexander Smits

Research Scholar

July 2018 – August 2019

Professional Specialist

August 2015 – June 2018

Postdoctoral Researcher

January 2014 – July 2015

Visiting Research Collaborator

January – December 2013

Rensselaer Polytechnic Institute, Troy, NY

Mechanical, Aerospace, and Nuclear Engineering

Adviser: Prof. Michael Amitay

Postdoctoral Researcher

June – August 2013

Graduate Research Assistant (Ph.D.)

June 2009 – May 2013

Graduate Research Assistant (M.S.)

August 2008 – May 2009

TEACHING

University of Delaware

Assistant Professor

August 2019 – Present

MEEG332 Fluids II (S21) - 1 sections, 147 students (student evaluation: **4.97/5**, 48 responses)

MEEG432 Aerodynamics (F20) - 1 section, 30 students (student evaluation: **4.86/5**, 9 responses)

MEEG401 Senior Design (F20) - 2 groups, 10 students (student evaluation: **5/5**, 5 responses)

MEEG332 Fluids II (S20) - 2 sections, 113 students (student evaluation: **4.89/5**, 56 responses)

Rensselaer Polytechnic Institute

Full-Time Lecturer

August – December 2013

Introduction to Engineering Design (F13) - 2 sections (student evaluation: **4.73/5**)

Fluid Dynamics Laboratory (F13) - 2 sections (student evaluation: **4.62/5**)

ADVISING AND MENTORING

University of Delaware

Graduate students

David Yudin: *The role of passive/active flexibility on oscillating propulsors.*

Frank Tricouros: *Vortex pairs dynamics of maneuvering vehicles.*

Ongira Chowdhury: *Tip vortex pair mitigation and control [rotation only]*

Undergraduate students

Valerie Moore: *von Karman flow for NASA ISS mission applications*

Hannah Wiswell: *Active hydrofoils for bioinspired propulsion*

Galvin Stuart: *Simulations of wind on corn stalks and fields*

Elizabeth Caltabiano: *Platelet generation enhancement via turbulence.*

Irene Kocina Mesa: *Platelet generation enhancement via turbulence.*

Emily Suwala: *Platelet generation enhancement via turbulence.*

Taylor Key: *Design of a wind tunnel and water channel facility.*

Peter VanderKley: *Tip vortex pair mitigation and control.*

David Yudin: *Cyber-physical platform design for soft-robotic propulsors.*

Christopher McMahon: *Cyber-physical platform design for soft-robotic propulsors.*

Melody Cerro: *Cyber-physical platform design for soft-robotic propulsors.*

Derek Betancourt: *Wall-bounded line-vortex control.*

Louis Reyes: *Wall-bounded line-vortex control.*

Evan Battaglia: *Hot- and cold-wire anemometer design and analysis.*

Princeton University

Graduate students

Daniel Floryan: *Bio-inspired propulsion.*

Tristen Hohman: *Artificial atmospheric boundary layers.*

Owen Williams: *Stratified turbulent boundary layers.*

Anand Ashok: *Submarine wakes.*

Undergraduate students

Hoang Le: *Circuit design for Helmholtz energy harvesting.*

Lap Hei Lam: *Circuit design for Helmholtz energy harvesting.*

Bharat Govil: *Flap-edge vortex control.*

Raiden Evans: *Flap-edge vortex control*.
Anthony Barnett: *Improving SUV drag with active flow control*.
Jayson Badal: *Improving SUV drag with active flow control*.
Alex Preston: *Harvesting wind energy using a Helmholtz resonator*.
Leif Fredericks: *Harvesting wind energy using a Helmholtz resonator*.
Beni Snow: *End corrections for turbulent Taylor-Couette flows*.
Michael Rodriguez: *Harvesting wind energy with piezo and Helmholtz resonators*.
Nicholas Chen: *Torsional bending induced by fluid shedding past a street sign*.
David Wu: *Structured light measurements of flexible panels deforming in water*.
Lena Dubitsky: *Active conductivity measurements of flowing liquid*.
Fitsum Petros: *Active conductivity measurements of flowing liquid*.
Madelyn Baron: *Active conductivity measurements of flowing liquid*.
Nathaniel Wei: *Cyber-physical bio-inspired propulsion experiments*.
Emile Oshima: *Robotic swimmers & Alternative wind energy harvesting*.
Jason Mulderig: *Alternative wind energy harvesting*.
Devon Hartsough: *Robotic swimmers*.
Zachary McCourt: *Harvesting wind energy with piezoelectrics feasibility study*.
Lindsay Graff: *Harvesting wind energy with piezoelectrics feasibility study*.

Visiting scholars

Antonin Rocher: *Urban heat-island experiments*, École Normale Supérieure de Cachan.
Joshua Harris: *Medium-scale submarine model development*, Johns Hopkins University.
Rodrigo Lisazo: *Body-fin-fluid interaction in swimming*, Isae-Ensica Toulouse.
Gustavo de Menezes Geraldo: *Blood damage by conductivity*, PC Uni. of Rio de Janeiro.
Fernando Eugênio: *Blood damage by conductivity*, Inst. Tecnológico de Aeronáutica.
Davi Andrade: *Schlieren imaging for turbulent transport*, Federal Uni. of São Paulo.
Filipe Cunha: *Schlieren imaging for turbulent transport*, Uni. Federal de São João.
Milad Samie: *NSTAP custom anemometry development*, University of Melbourne.
Rio Baidya: *NSTAP custom anemometry development*, University of Melbourne.

Rensselaer Polytechnic Institute

Graduate students

Kevin Housley: *Synthetic jet actuator development*.
Lucia Chang Pikcilingis: *Synthetic jet actuator development*.

Undergraduate students

Alexander Benjamin: *Synthetic jet actuator development*.
Cody O'Sullivan: *Variable wall test section design project*.
Duane Baker: *Variable wall test section design project*.
Sean DeVarney: *Variable wall test section design project*.

PUBLICATIONS

Book chapters

1. Van Buren, T., Floryan, D., and Smits, A. (2019) “Bio-inspired underwater propulsion”, Chapter in *Bio-inspired design*, Daniel, L., and Soboyejo, W., Cambridge University Press (in press).

Refereed journal publications

1. Ding, L., Van Buren, T., Gunady, I.E., Smits, A. (2021) “Perspective on the response of turbulent pipe flows to strong perturbations”, *Fluids*, [10.3390/fluids6060208](https://doi.org/10.3390/fluids6060208).
2. Van Buren, T., and Smits, A. (2020) “A simple method to monitor hemolysis in real time”, *Scientific Reports*, [10.1038/s41598-020-62041-8](https://doi.org/10.1038/s41598-020-62041-8).
 - ▷ Commentary: K. B. Roberts (2020) “Measuring blood damage”, *UDaily*, [article link](#) (this article appears verbatim on multiple medical news sites)
 - ▷ Commentary: L. Wallenceus (2020) “UD research points to a new measure for dialysis safety”, *ActiveVoice*, [article link](#)
3. Van Buren, T., Floryan, D., Ding, L., Hellström, L., and Smits, A. (2020) “Turbulent pipe flow response to a step change in surface roughness”, *Journal of Fluid Mechanics*, [10.1017/jfm.2020.704](https://doi.org/10.1017/jfm.2020.704).
4. Floryan, D., Van Buren, T., and Smits, A. (2019) “Swimmers’ wake structures are not reliable indicators of swimming performance”, *Bioinspiration & Biomimetics*, [10.1088/1748-3190/ab6fb9](https://doi.org/10.1088/1748-3190/ab6fb9).
5. Floryan, D., Van Buren, T., and Smits, A. (2019) “Large-amplitude oscillations of foils for efficient propulsion”, *Physical Review Fluids*, [10.1103/PhysRevFluids.4.093102](https://doi.org/10.1103/PhysRevFluids.4.093102).
6. Hemmati, A., Van Buren, T., and Smits, A. (2019) “Effects of trailing edge shape on vortex formation by pitching panels of small aspect ratio”, *Physical Review Fluids*, [10.1103/PhysRevFluids.4.033101](https://doi.org/10.1103/PhysRevFluids.4.033101).
7. Van Buren, T., Floryan, D., Wei, N., and Smits, A. (2018), “Flow speed has little impact on propulsive characteristics of oscillating foils”, *Physical Review Fluids*, [10.1103/PhysRevFluids.3.013103](https://doi.org/10.1103/PhysRevFluids.3.013103).
8. Van Buren, T., Floryan, D., and Smits, A. (2018) “Scaling and performance of simultaneously heaving and pitching foils”, *AIAA Journal* (invited), [10.2514/1.J056635](https://doi.org/10.2514/1.J056635).
9. Floryan, D., Van Buren, T., and Smits, A. (2018) “Efficient cruising for swimming and flying animals is dictated by fluid drag”, *Proceedings of the National Academy of Sciences*, [10.1073/pnas.1805941115](https://doi.org/10.1073/pnas.1805941115).
 - ▷ Commentary: G. K. Taylor (2018) “Simple scaling law predicts peak efficiency in oscillatory propulsion”, *Proceedings of the National Academy of Sciences*, [10.1073/pnas.1809769115](https://doi.org/10.1073/pnas.1809769115).
10. Van Buren, T., and Smits, A. (2017), “Substantial turbulent drag reduction using liquid-infused surfaces”, *Journal of Fluid Mechanics*, [10.1017/jfm.2017.503](https://doi.org/10.1017/jfm.2017.503).

11. Van Buren, T., Floryan, D., Quinn, D., and Smits, A. (2017) “Non-sinusoidal gaits for unsteady propulsion”, *Physical Review Fluids*, [10.1103/PhysRevFluids.2.053101](https://doi.org/10.1103/PhysRevFluids.2.053101).
12. Van Buren, T., Smits, A., and Amitay, M. (2017), “Boundary layer suction through rectangular orifices: effects of aspect ratio and orientation”, *Experiments in Fluids*, [10.1007/s00348-017-2359-1](https://doi.org/10.1007/s00348-017-2359-1).
13. Van Buren, T., Williams, O., and Smits, A. (2017), “Turbulent boundary layer response to an abrupt change in stable stratification”, *Journal of Fluid Mechanics*, [10.1017/jfm.2016.775](https://doi.org/10.1017/jfm.2016.775).
14. Van Buren, T., Floryan, D., Brunner, D., Senturk, U., and Smits, A. (2017) “Impact of trailing edge shape on the wake and propulsive performance of pitching panels”, *Physical Review Fluids*, [10.1103/PhysRevFluids.2.014702](https://doi.org/10.1103/PhysRevFluids.2.014702).
15. Floryan, D., Van Buren, T., Rowley, C., and Smits, A. (2017) “Scaling the propulsive performance of heaving and pitching foils”, *Journal of Fluid Mechanics*, [10.1017/jfm.2017.302](https://doi.org/10.1017/jfm.2017.302).
16. Floryan, D., Van Buren, T., and Smits, A. (2017) “Forces and energetics of intermittent swimming”, *Acta Mechanica Sinica* (invited), [10.1007/s10409-017-0694-3](https://doi.org/10.1007/s10409-017-0694-3).
17. Williams, O., Hohman, T., Van Buren, T., and Smits, A. (2017), “The effect of stable thermal stratification on turbulent boundary layer statistics”, *Journal of Fluid Mechanics*, [10.1017/jfm.2016.781](https://doi.org/10.1017/jfm.2016.781).
18. Samie, M., Watmuff, J., Van Buren, T., Hutchins, N., Marusic, I., Hultmark, M., and Smits, A. (2016), “Modelling and operation of sub-miniature constant temperature hot-wire anemometry”, *Measurement Science and Technology*, [10.1088/0957-0233/27/12/125301](https://doi.org/10.1088/0957-0233/27/12/125301).
19. Van Buren, T., Beyar, M., Leong, C., and Amitay, M. (2016), “Three-dimensional interaction of a finite-span synthetic jet in a cross flow”, *Physics of Fluids*, [10.1063/1.4943493](https://doi.org/10.1063/1.4943493).
20. Van Buren, T., Leong, C., Whalen, E., and Amitay, M. (2016), “Impact of orifice orientation on a finite-span synthetic jet interaction with a cross flow”, *Physics of Fluids*, [10.1063/1.4943520](https://doi.org/10.1063/1.4943520).
21. Van Buren, T., and Amitay, M. (2016), “Comparison of finite-span steady and synthetic jets in free air”, *Experimental Thermal and Fluid Science*, [10.1016/j.expthermflusci.2016.01.014](https://doi.org/10.1016/j.expthermflusci.2016.01.014).
22. Rosenberg, B. J., Van Buren, T., Fu, M. K., and Smits, A. (2016), “Turbulent drag reduction over air- and liquid-impregnated surfaces”, *Physics of Fluids*, [10.1063/1.4939272](https://doi.org/10.1063/1.4939272).
23. Van Buren, T., Whalen, E., and Amitay, M. (2015), “Interaction between a vortex generator and a synthetic jet in a crossflow”, *Physics of Fluids*, [10.1063/1.4932359](https://doi.org/10.1063/1.4932359).
24. Van Buren, T., Whalen, E., and Amitay, M. (2015), “Synthetic jet actuator cavity acoustics: Helmholtz vs. quarter-wave resonance”, *Journal of Vibration and Acoustics*, [10.1115/1.4030216](https://doi.org/10.1115/1.4030216).
25. Van Buren, T., Whalen, E., and Amitay, M. (2015), “On achieving a high speed and momentum synthetic jet actuator”, *Journal of Aerospace Engineering*, [10.1061/\(ASCE\)AS.1943-5525.0000530](https://doi.org/10.1061/(ASCE)AS.1943-5525.0000530).
26. Ashok, A., Van Buren, T., and Smits, A. (2015), “Asymmetries in the wake of a submarine model in pitch”, *Journal of Fluid Mechanics*, [10.1017/jfm.2015.277](https://doi.org/10.1017/jfm.2015.277).

27. Ashok, A., Van Buren, T., and Smits, A. (2015), “The structure of the wake generated by a submarine model in yaw”, *Experiments in Fluids*, [10.1007/s00348-015-1997-4](https://doi.org/10.1007/s00348-015-1997-4).
28. Fan, Y., Arwatz, G, Van Buren, T., and Hultmark, M. (2015), “Nano-scale sensing devices for turbulence measurements”, *Experiments in Fluids*, [10.1007/s00348-015-2000-0](https://doi.org/10.1007/s00348-015-2000-0).
29. Williams, O., Van Buren, T., and Smits, A. (2015), “A new method for measuring turbulent heat fluxes using PIV and fast response cold-wires”, *Experiments in Fluids*, [10.1007/s00348-015-2008-5](https://doi.org/10.1007/s00348-015-2008-5).
30. Hohman, T., Van Buren, T., Martinelli, L., and Smits, A. (2015), “Generating an artificially thickened boundary layer to simulate the atmospheric boundary layer”, *Journal of Wind Engineering and Industrial Aerodynamics*, [10.1016/j.jweia.2015.05.012](https://doi.org/10.1016/j.jweia.2015.05.012).
31. Van Buren, T., Whalen, E., and Amitay, M. (2014), “Vortex evolution of a finite-span synthetic jet: effect of rectangular orifice geometry”, *Journal of Fluid Mechanics*, [10.1017/jfm.2014.77](https://doi.org/10.1017/jfm.2014.77).
32. Van Buren, T., Whalen, E., and Amitay, M. (2014), “Vortex evolution of a finite-span synthetic jet: high Reynolds numbers”, *Physics of Fluids*, [10.1063/1.4859895](https://doi.org/10.1063/1.4859895).
33. Van Buren, T., and Amitay, M. (2012), “Control of laminar boundary layers using electroactive polymers”, *International Journal of Flow Control*, [10.1260/1756-8250.4.3-4.133](https://doi.org/10.1260/1756-8250.4.3-4.133).

Unrefereed conference publications

33. Van Buren, T., Hellström, L., and Smits, A. (2019), “Turbulent Pipe Flow Response To Rough-To-Smooth Step Change In Roughness”, 11th Turbulent Shear Flow Phenomena.
34. Floryan, D., Van Buren, T., and Smits, A. (2019), “Performance and Scaling of Flexible Inertial Swimmers”, 11th Turbulent Shear Flow Phenomena.
35. Smits, A., Ding, L., and Van Buren, T. (2019), “Flow Over A Square Bar Roughness”, 11th Turbulent Shear Flow Phenomena.
36. Van Buren, T., Floryan, D., Han, P., Bode-Oke, A., Dong, H., and Smits, A. (2019), “Optimizing foil shape for efficient unsteady propulsion”, AIAA SciTech Forum.
37. Van Buren, T., Hellström, L., Marusic, I., and Smits, A. (2017), “Turbulent pipe flow response to wall changes targeting specific azimuthal modes”, 10th Turbulent Shear Flow Phenomena.
38. Hellström, L., Van Buren, T., Vaccaro, J., and Smits, A. (2017), “On the existence of self-similar structures in turbulent pipe flow”, 10th Turbulent Shear Flow Phenomena.
39. Floryan, D., Van Buren, T., Rowley, C., and Smits, A. (2017), “Scaling laws for the performance of rigid propulsors intended for underwater locomotion”, 10th Turbulent Shear Flow Phenomena.
40. Smits, A., Hemmati, A., Senturk, U., and Van Buren, T. (2017), “The performance of a new immersed boundary method on simulating underwater locomotion and swimming”, 10th Turbulent Shear Flow Phenomena.
41. Fu, M.K., Liu, Y., Mohammadi, A., Van Buren, T., Wexler, J., Jacobi, I., Arenas, I., Leonardi, S., Stone, H.A., Smits, A.J., and Hultmark, M. (2016) “Understanding the effects of finite

viscosity in super-hydrophobic and liquid-infused surface drag reduction”, 31st Symposium on Naval Hydrodynamics.

42. Van Buren, T., Leong, C., and Amitay, M. (2014), “Interaction of a finite-span synthetic jet with a laminar boundary layer: the effect of jet geometry and orientation”, AIAA Paper 2014-1141.
43. Van Buren, T., Whalen, E., and Amitay, M. (2012), “Vortex formation of finite-span synthetic jets”, AIAA Paper 2012-1245.

PRESENTATIONS

Invited seminars

1. Van Buren, T. and Schroeder, S. (2020) “High Reynolds number stratified wakes”, *Invited seminar*, Naval Surface Warfare Center - Carderock Division, Jul. 29th.
2. Van Buren, T. (2019) “Improving performance of unsteady propulsors through biological inspiration”, *Invited seminar: hydrocolloquium series*, Naval Surface Warfare Center - Carderock Division, Nov. 5th.
3. Van Buren, T. (2019) “Improving performance of unsteady propulsors through biological inspiration”, *Invited seminar*, Brown University, Feb. 15th.
4. Van Buren, T. (2019) “Improving performance of unsteady propulsors through biological inspiration”, *Invited seminar*, University of Delaware, Jan. 23rd.
5. Van Buren, T. (2018) “Improving performance of unsteady propulsors through biological inspiration and flow control”, *Invited seminar*, Stanford University, Nov. 15th.
6. Van Buren, T. (2017) “Flow control devices and strategies”, *Invited presentation*, Office of Naval Research Code 35, Oct. 20th.
7. Van Buren, T. (2016) “Harvesting energy using piezoelectrics excited by Helmholtz resonance”, *Invited presentation*, Princeton E-affiliates Partnership Annual Meeting, Nov. 11th.
8. Van Buren, T. (2015) “A future in flow control”, *Invited seminar*, Naval Surface Warfare Center - Carderock Division, April 8th.
9. Van Buren, T. (2015) “A future in flow control”, *Invited seminar*, Auburn University, April 2nd.
10. Van Buren, T. (2014), “From Ocean to Atmosphere”, *Invited seminar*, Hofstra University, November 12th.
11. Van Buren, T. (2014), “Synthetic jets, a future in flow control”, *Invited seminar*, Rutgers University, February 20th.
12. Van Buren, T. (2013), “An experimental study of synthetic jet performance characteristics”, *Invited presentation*, AFC Internal Technical Review Meeting, The Boeing Company.

Conference presentations

13. Van Buren, T., Hellström, L., Marusic, I., and Smits, A. (2019), “Streamwise development of targeted coherent structures in turbulent pipe flow”, 72nd Annual Meeting of the APS Division of Fluid Dynamics.

14. Spencer, F., Van Buren, T., Smits, A., and Williams, O. (2019), "Examination of temperature spectra in stably stratified boundary layers measured using nano-scale probe", 72nd Annual Meeting of the APS Division of Fluid Dynamics.
15. Van Buren, T., Hellström, L., and Smits, A. (2019), "Turbulent Pipe Flow Response To Rough-To-Smooth Step Change In Roughness", 11th Turbulent Shear Flow Phenomena.
16. Floryan, D., Van Buren, T., and Smits, A. (2019), "Performance and Scaling of Flexible Inertial Swimmers", 11th Turbulent Shear Flow Phenomena.
17. Smits, A., Ding, L., and Van Buren, T. (2019), "Flow Over A Square Bar Roughness", 11th Turbulent Shear Flow Phenomena.
18. Van Buren, T., Floryan, D., Han, P., Bode-Oke, A., Dong, H., and Smits, A. (2019), "Optimizing foil shape for efficient unsteady propulsion", AIAA SciTech Forum.
19. Van Buren, T., Floryan, D., Bode-Oke, A., Han, P., Dong, H., and Smits, A. (2018), "Optimizing foil shape for fish-like propulsion Part I: experimental performance", 71st Annual Meeting of the APS Division of Fluid Dynamics.
20. Han, P., Bode-Oke, A., Dong, H., Van Buren, T., Floryan, D., and Smits, A. (2018), "Optimizing foil shape for fish-like propulsion Part II: computational optimization and hydrodynamics", 71st Annual Meeting of the APS Division of Fluid Dynamics.
21. Floryan, D., Van Buren, T., Rowley, C., and Smits, A. (2018), "Big and slow: large-amplitude motions for highly efficient swimming", 71st Annual Meeting of the APS Division of Fluid Dynamics.
22. Van Buren, T., Floryan, D., Smits, A., Zhu, R., and Bart-Smith, H. (2017), "Unsteady propulsion using flexible flapping propulsors", 17th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery.
23. Van Buren, T., Hellström, L., Marusic I., and Smits, A. (2017), "Targeting specific azimuthal modes using wall changes in turbulent pipe flow", 70th Annual Meeting of the APS Division of Fluid Dynamics.
24. Smits, A., Van Buren, T., and Hellström, L. (2017), "Response of turbulent pipe flow experiencing a rough-to-smooth step change", 70th Annual Meeting of the APS Division of Fluid Dynamics.
25. Hellström, L., Van Buren, T., Vaccaro J., and Smits, A. (2017), "On the existence of self-similar structures in turbulent pipe flow", 70th Annual Meeting of the APS Division of Fluid Dynamics.
26. Van Buren, T., Hellström, L., Marusic, I., and Smits, A. (2017), "The effects of sudden perturbations on turbulent pipe flow", 10th Turbulent Shear Flow Phenomena.
27. Hellström, L., Van Buren, T., Vaccaro, J., and Smits, A. (2017), "On the existence of self-similar structures in turbulent pipe flow", 10th Turbulent Shear Flow Phenomena.
28. Floryan, D., Van Buren, T., Rowley, C., and Smits, A. (2017), "Scaling laws for the performance of rigid propulsors intended for underwater locomotion", 10th Turbulent Shear Flow Phenomena.

29. Smits, A., Hemmati, A., Senturk, U., and Van Buren, T. (2017), "The performance of a new immersed boundary method on simulating underwater locomotion and swimming", 10th Turbulent Shear Flow Phenomena.
30. Floryan, D., Van Buren, T., and Smits, A. (2017), "Effects of combining heave, pitch, and flexibility on swimming performance", 47th AIAA Fluid Dynamics Conference.
31. Van Buren, T., Floryan, D., Brunner, D., Senturk, U., and Smits, A. (2016), "Effect of trailing edge shape on the wake and propulsive performance of pitching panels", 69th Annual Meeting of the APS Division of Fluid Dynamics.
32. Smits, A. and Van Buren, T. (2016), "Turbulent drag reduction with liquid-infused surfaces", 69th Annual Meeting of the APS Division of Fluid Dynamics.
33. Wei, N., Floryan, D., Van Buren, T., and Smits, A. (2016), "Cyber-physical experiments on the efficiency of swimming protocols", 69th Annual Meeting of the APS Division of Fluid Dynamics.
34. Smits, A. and Van Buren, T. (2016), "Turbulent drag reduction using liquid-infused surfaces", XXIV ICTAM, 21-26 August, Montreal, Canada
35. Van Buren, T., Rosenberg, B., and Smits, A. (2015), "Drag reduction over liquid-infused surfaces in turbulent Taylor-Couette flow", 68th Annual Meeting of the APS Division of Fluid Dynamics.
36. Lisazo R., Van Buren, T., Floryan, D., Hartsough, D., Oshima, E., Rowley, C.W., and Smits, A. (2015), "Performance of an unsteady plate with a two-dimensional body attached upstream", 68th Annual Meeting of the APS Division of Fluid Dynamics.
37. Floryan, D., Van Buren, T., Rowley, C.W., and Smits, A. (2015), "Effects of actuation wave-form shape on the performance of pitching and heaving panels", 68th Annual Meeting of the APS Division of Fluid Dynamics.
38. Saadat, M., Van Buren, T., Floryan, D., Smits, A., and Haj-Hariri, H. (2015), "Strouhal number for free swimming", 68th Annual Meeting of the APS Division of Fluid Dynamics.
39. Schleicher, W., Floryan, D., Van Buren, T., Smits, A., and Moored, K. (2015), "Bio-inspired Propulsion with Functionally Graded Materials", 68th Annual Meeting of the APS Division of Fluid Dynamics.
40. Van Buren, T., Williams, O., and Smits, A. (2014), "Laboratory investigation of a thermally stable boundary layer subject to a step change in wall temperature", 67th Annual Meeting of the APS Division of Fluid Dynamics.
41. Williams, O., Van Buren, T., and Smits, A. (2014), "Turbulent heat flux measurements in thermally stable boundary layers", 67th Annual Meeting of the APS Division of Fluid Dynamics.
42. Ashok, A., Van Buren, T., Smits, A. (2014), "Asymmetries in the high Reynolds number wake of a submarine model in pitch", 67th Annual Meeting of the APS Division of Fluid Dynamics.
43. Hohman, T., Van Buren, T., Martinelli, L., and Smits, A. (2014), "Wind tunnel simulation of the atmospheric boundary layer", 67th Annual Meeting of the APS Division of Fluid Dynamics.

44. Van Buren, T. and Amitay, M. (2013), “Vortex formation of a finite-span synthetic jet”, Annual Thousand Islands Fluid Mechanics Meeting.
45. Leong, C., Van Buren, T., Whalen, E., Amitay, M. (2013), “Interactions of a finite-span synthetic jet with a crossflow”, 66th Annual Meeting of the APS Division of Fluid Dynamics.
46. Ashok, A., Van Buren, T., Smits, A. (2013), “The turbulent wake of a submarine in pitch and yaw”, 66th Annual Meeting of the APS Division of Fluid Dynamics.
47. Smits, A., Williams, O., Hohman, T., Van Buren, T. (2013), “Experimental investigation of thermally stable turbulent boundary layers”, 66th Annual Meeting of the APS Division of Fluid Dynamics.
48. Van Buren, T., Leong, C., and Amitay, M. (2013), “Interaction of a finite-span synthetic jet with a laminar boundary layer: the effect of jet geometry and orientation”, 52nd AIAA Aerospace Sciences Meeting.
49. Van Buren, T., Whalen, E., and Amitay, M. (2012), “Vortex formation of finite-span synthetic jets”, 50th AIAA Aerospace Sciences Meeting.
50. Van Buren, T., Whalen, E., and Amitay, M. (2010), “Three-dimensional formation of a finite-span synthetic jet”, 63rd Annual Meeting of the APS Division of Fluid Dynamics.

PATENTS

Van Buren, T., Amitay, M., “Piezo-Electric Driven Oscillating Surface (PDOS)”, publication number WO2014123615 A2.

OUTREACH

Early Learning Center - Window Science [Mar. 2021]

- Lead event organizer and creator of Window Science, a COVID-safe science demonstration and activity with pre-k aged students learning about the science of liquids, solids, and slimes. The Early Learning Center is a pre-school affiliated with the University of Delaware.

Princeton MAE Committee on Climate and Inclusion [Nov. 2015 - Jun. 2019]

- Founding member of a committee organized to assess the Department’s climate for underrepresented groups and make recommendations in the spirit of finding best practices that ensure all members of the department feel respected, included and supported by the community.

Princeton Engineering Labs Demonstration [Nov. 2015 - Aug. 2019]

- Lead event organizer for annual trips for middle- and high-school aged students to participate in tours highlighting exciting fluid dynamics demonstrations to promote excitement for STEM at a young age.

MEMBERSHIPS AND SERVICE

Member: American Inst. of Aeronautics and Astronautics (AIAA), American Physical Soc. (APS), American Soc. of Mechanical Engineers (ASME), Soc. of Engineering Science (SES).

Advisory Committee: Turbulence and Shear Flow Phenomena, 2017; Turbulence and Shear Flow Phenomena, 2019.

Chair: APS Division of Fluid Dynamics, 2016; Turbulence and Shear Flow Phenomena, 2017.

Reviewer: Journal of Fluid Mechanics, Physical Review Fluids, Physics of Fluids, Journal of Fluids and Structures, Experiments in Fluids, Experimental Thermal and Fluid Science, AIAA Journal, AIAA Conference Proceedings, Wind Energy, Soft Matter, ASEE Conference Proceedings.

HONORS

- Office of Naval Research Summer Faculty Fellow for 2020
- Research led to the Boeing Supplier of the Year Award for 2011
- Boeing Performance Excellence Award for both 2010 and 2011
- The Rensselaer Medal 2004-2008