Clayton Byers, Ph.D.
Department of Engineering
Trinity College
Hartford, CT 06106

Citizenship: USA
Phone: (860) 297-5239
Email: clayton.byers@trincoll.edu

EDUCATION

Princeton University — Princeton, NJ
Doctor of Philosophy, Mechanical & Aerospace Engineering — 2013-2018

Thesis: *Theoretical and Experimental Investigations of Similarity Solutions in Turbulent Flows.*
Adviser: Prof. Marcus Hultmark

Washington State University — Pullman, WA
Bachelors of Science (summa cum laude), Mechanical Engineering — 2004 – 2009

PROFESSIONAL EXPERIENCE

Consultant, Tendo Technologies — Hartford,CT
Provide expertise in fluid flow and measurement techniques for development of new products. — 2021 – Present

Assistant Professor, Trinity College — Hartford, CT
Perform research in fundamental fluid dynamics and turbulence studies. Teach core and elective engineering courses. Responsible for academic advising of students, directing student research, and senior design project guidance. — 2018 – Present

Faculty, Bard College — Annandale-On-Hudson, NY
Faculty for Citizen Science program, a three week, 72hr course introducing freshman students to the scientific method, promoting scientific literacy, and community engagement. — 2017 – 2018

Co-Founder & Adviser, Tendo Technologies — Princeton, NJ
Provide technical advice, guidance, and feedback for sensor and system development. — 2017 – Present

Vice President, Tendo Technologies — Princeton, NJ
Founded technology startup focused on development of novel sensing devices for measurements of fluid flows. Primary responsibilities include sensor and electronic system testing and external fund-raising. — 2017 – 2018

Graduate Coordinator, McGraw Teaching and Learning Center — Princeton, NJ
Responsible for overseeing and assisting in the management of the university tutoring program, including designing and running training, interviewing and hiring, staffing and scheduling, and providing mentoring and feedback for 140+ tutors. — 2016 – 2018

Project Manager, United States Air Force — Vandenberg AFB, CA
Managed multiple multi-million dollar projects dealing with modernization and sustainment of the Western Range at Vandenberg AFB. Primary fields of project involvement include backup power systems and communications equipment. — 2009 – 2013

AWARDS, GRANTS, AND HONORS

RDNJ Thomas Edison Patent Award Winner (Enabling Technology)	2021
Presenter Fellowship for 25th ICTAM	2021
Trinity College Center for Teaching and Learning Fellow	2020-2021
Trinity College Center for Teaching and Learning Fellow	2019-2020
NASA Connecticut Space Grant Consortium - $\$10,000$	2018-2019
1^{st} place presentation - MAE Research Day	2017
Honorable mention - Ford Foundation Dissertation Fellowship	2017

Princeton University Engineering Council's Excellence in Teaching Award	2017
The Luigi Crocco Award for Teaching Excellence	2015
Distinguished Graduate, Air Force ROTC	2009
WSU President's Honor Roll (all 10 semesters)	2009
WSU Outstanding Junior in Mechanical Engineering	2008
WSU Outstanding Sophomore in Mechanical Engineering	2007
WSU President's award	2007

TEACHING EXPERIENCE

Trinity College Hartford, CT

ENGR 483: Senior Capstone Design I	F22
ENGR 337: Engineering Thermodynamics	F18,19,S21,22
ENGR 232: Engineering Materials	S19,20,21,22
ENGR 226: Mechanics II (Dynamics)	S19,20,21,22
ENGR 225: Mechanics I (Statics)	F18,19,20,22
FYSM 135: Why Trust Science	F20

Bard College Annandale-On-Hudson, NY

Citizen Science Program	W18

Princeton University Princeton, NJ
Assistant in Instruction

MAE 553: Turbulence (guest lectures)	F16,17
MAE 305: Differential Equations	F16,17
MAE 224: Integrated Engineering Science Laboratory	S15
MAE 222: Mechanics of fluids	S16

The W.E.B. Du Bois Scholars Institute Princeton, NJ

Intro to Engineering	S16

SERVICE

NSF Fluid Dynamics Review Panelist

Information on panel specifics are held confidential by NSF regulations. 2022

Panelist at American Physical Society Division of Fluid Dynamics Meeting

Member of expert panel of 5 to discuss new techniques and lessons learned in engineering and fluid dynamics education from the pandemic and beyond. Nov 2021

Global Conference on Engineering Education – Challenges and Opportunities

Collaborated, organized, and facilitated 3 hour panel discussion between 2 international organizations (CAETS & ASEE) on the future of engineering education. Jul 2021

Trinity College Campus Director

NASA Connecticut Space Grant Consortium Jul 2021 – *present*

Faculty Mentor

American Society of Mechanical Engineers Faculty Co-Advisor 2018 – *present*

Trinity Faculty Committee Member

Curriculum Committee	2021 – *present*
Jury Pool	2021 – *present*
Task force on the Status of Women	2021 – *present*

Referee/Reviewer

American Institute of Aeronautics and Astronautics	2022 – *present*
American Society of Mechanical Engineers	2021 – *present*
Journal of Fluid Mechanics	2021 – *present*
Experiments in Fluids	2019 – *present*
Chemical Engineering Science	2019 – *present*
Physics of Fluids	2017 – *present*
Physical Review Fluids	2017 – *present*

PUBLICATIONS

Articles In Preparation

C. P. **Byers**, J. F. MacArt, M. E. Mueller, and M. Hultmark, "Similarity constraints and triple-correlations in decaying isotropic turbulence", 2022.

K. Y. Huang, M. K. Fu, C. P. **Byers**, A. D. Bragg, and G. G. Katul, "Logarithmic scaling of higher-order temperature moments in the atmospheric surface layer", 2022.

Peer-Reviewed Articles

C. P. **Byers**, M. Hultmark, I. Marusic, and M. K. Fu, "Examining the inertial subrange with nanoscale cross-wire measurements of turbulent pipe flow at high Reynolds number near the centreline", *J. Fluid Mech.*, 2021.

C. P. **Byers**, M. K. Fu, Y. Fan, and M. Hultmark, "Development of instrumentation for measurements of two components of velocity with a single sensing element.", *Meas. Sci. Technol.*, 2018.

C. P. **Byers**, M. Hultmark, and W. K. George, "Two-space, two-time similarity solution for decaying homogeneous turbulence.", *Phys. Fluids*, 2017.

M. K. Fu, Y. Fan, C. P. **Byers**, T.- H. Chen, C. B. Arnold, and M. Hultmark, "Elastic Filament Velocimetry (EFV).", *Meas. Sci. Technol.*, 2016.

Peer-Reviewed Conference Proceedings

K. Y. Huang, M. K. Fu, C. P. **Byers**, and G. G. Katul, "Logarithmic scaling of higher-order temperature moments in the atmospheric surface layer", *12th Int. Symp. on Turbulence and Shear Flow Phenomena* Osaka, Japan, 2022.

H. Zukowski*, M. Rupp*, W. Mollel*, T. Ning, and C. P. **Byers**, "A Model Experiment of Aortic Valve Stenosis to Correlate Narrowness with the Acoustic Spectrum", *International Mechanical Engineering Congress and Exposition*, Virtual, Online, 2021.

C. P. **Byers**, M. K. Fu, I. Marusic, and M. Hultmark, "Exploring Isotropic Turbulence Relations with Centerline Turbulence", *25th Int. Congress of Theoretical and Applied Mechanics*, Milan, IT, 2021

C. P. **Byers**, A. M. Sinson*, C.M. Scheffers*, and T. Ning, "Non-Invasive Measure of Stenosis Severity Through Spectral Analysis", *15th IEEE Int. Conference on Signal Processing*, Beijing, CH, 2020.

C. P. **Byers**, J. F. MacArt, M. E. Mueller, and M. Hultmark, "Similarity Constraints in Decaying Isotropic Turbulence", *11th Int. Symp. on Turbulence and Shear Flow Phenomena*, Southampton, UK, 2019.

C. P. **Byers**, M. K. Fu, Y. Fan, K. Kokmanian, and M. Hultmark, "Advancements in measuring the wall-normal velocity fluctuations in a turbulent boundary layer", *10th Int. Symp. on Turbulence and Shear Flow Phenomena*, Chicago, Illinois, 2017.

*Denotes Trinity Undergraduate Student.

Patents

US 11,351,313 B2 *System and method for monitoring injection site pressure*	June 2022
CN 110,392,586 B *System and method for monitoring pressure at an injection site*	May 2022
US 11,187,715 B2 *Multi-component fast-response velocity sensor*	Nov 2021
US 11,054,290 B2 *Elastic filament velocity sensor*	Jul 2021
US 10,539,443 B2 *Elastic filament velocity sensor*	Jan 2020

PRESENTATIONS

K. Y. Huang, M. K. Fu, C. P. **Byers**, and G. G. Katul, "Logarithmic scaling of higher-order temperature moments in the atmospheric surface layer", *12th Int. Symp. on Turbulence and Shear Flow Phenomena*, Jul 2022.

M. Spaulding*, A. Barbosa Gonzalez*, and C. P. **Byers**, "Investigation of the acoustic spectrum in a simplified model of aortic valve stenosis", *APS Division of Fluid Dynamics Meeting*, (74), Nov 2021.

- 2^{nd} place winner for the student poster award

H. Zukowski*, M. Rupp*, W. Mollel*, T. Ning, and C. P. **Byers**, "A Model Experiment of Aortic Valve Stenosis to Correlate Narrowness with the Acoustic Spectrum", *International Mechanical Engineering Congress and Exposition*, Nov 2021.

C. P. **Byers**, M. K. Fu, I. Marusic, and M. Hultmark, "Exploring Isotropic Turbulence Relations with Centerline Turbulence", *25th Int. Congress of Theoretical and Applied Mechanics*, Aug 2021

C. P. **Byers**, "Lessons Learned From a Hybrid Classroom", *Global Conference on Engineering Education at the 2021 ASEE Annual Conference*, 26 Jul 2021.

C. P. **Byers**, "Engaging From a Distance", *Future Perspectives of Engineering Education and the Impact of the Pandemic, Global Conference on Engineering Education*, 15 Jun 2021.

C. P. **Byers**, A. M. Sinson*, C.M. Scheffers*, and T. Ning, "Non-Invasive Measure of Stenosis Severity Through Spectral Analysis", *15th IEEE Int. Conference on Signal Processing*, Dec 2020.

C. P. **Byers**, M.K. Fu, I. Marusic, and M. Hultmark, "Isotropy and Inertial Range Behavior at Pipe Centerline", *APS Division of Fluid Dynamics Meeting*, (73), Nov 2020.

W. Mollel*, A. M. Sinson*, C. M. Scheffers*, T. Ning, and C. P. **Byers**, "Non-Invasive Measure of Stenosis Severity Through Spectral Analysis", *APS Division of Fluid Dynamics Meeting*, (73), Nov 2020.

C. P. **Byers**, "Engaging From a Distance", *ASEE Webinar on Emerging Insights: Navigating Remote Instruction*, 8 Jul 2020.

C. P. **Byers**, J.F. MacArt, M.E. Mueller, and M. Hultmark, "Triple-Correlations in Decaying Isotropic Turbulence", *APS Division of Fluid Dynamics Meeting*, (72), Nov 2019.

C. P. **Byers**, "Turbulence – Extracting Order from Chaos", *Invited Lecture for Wesleyan University Physics Colloquium*, Sep 2019.

C. P. **Byers**, J.F. MacArt, M.E. Mueller, and M. Hultmark, "Similarity Constraints in Decaying Isotropic Turbulence", *11th Int. Symp. on Turbulence and Shear Flow Phenomena*, Jul 2019.

C. P. **Byers**, J.F. MacArt, M.E. Mueller, and M. Hultmark, "Similarity in decaying isotropic turbulence: functional forms, constraints in single-and two-time evolution, and DNS results.", *APS Division of Fluid Dynamics Meeting*, (71), Nov 2018.

M. K. Fu, C. P. **Byers**, Y.F. Fan, and M. Hultmark, "Just my two 'sense': A novel sensor design for two-component velocity measurements.", *APS Division of Fluid Dynamics Meeting*, (71), Nov 2018.

C. P. **Byers**, "An intersection of biology and fluid dynamics.", *Conference on Why Science Matters*, Bard College, Jan 2018.

C. P. **Byers** and M. Hultmark, "Multi-component velocity and temperature measurements in wall bounded turbulent flow utilizing a novel sensor.", *APS Division of Fluid Dynamics Meeting*, (70), Nov 2017.

C. P. **Byers**, M. K. Fu, Y. Fan, and M. Hultmark, "Multi-component velocity measurements in wall bounded turbulent flow utilizing a novel sensor.", *Princeton MAE Research Day*, Sep 2017.

C. P. **Byers**, M. K. Fu, Y. Fan, and M. Hultmark, "Multi-component velocity measurements in wall bounded turbulent flow utilizing a novel sensor.", *16^{th} European Turbulence Conference*, Aug 2017.

C. P. **Byers**, M. K. Fu, Y. Fan, K.A. Kokmanian, and M. Hultmark, "Advancements in measuring the wall-normal velocity fluctuations in a turbulent boundary layer", *10th Int. Symp. on Turbulence and Shear Flow Phenomena*, Jul 2017.

C. P. **Byers**, and M. Hultmark, "Scaling analysis of the mean and variance of temperature in a developing thermal boundary layer.", *APS Division of Fluid Dynamics Meeting*, (69), Nov 2016.

C. P. **Byers**, M. K. Fu, Y. Fan, and M. Hultmark, "Turbulent temperature measurements in water.", *24^{th} International Congress of Theoretical and Applied Mechanics* , Aug 2016.

C. P. **Byers**, M. K. Fu, Y. Fan, T.- H. Chen, and M. Hultmark, "Velocity measurements from a strain-based nano-scale sensor.", *1000 Islands Fluid Mechanics Meeting*, Apr 2016.

C. P. **Byers**, and M. Hultmark, "Investigation of the temperature field in a turbulent boundary layer.", *APS Division of Fluid Dynamics Meeting*, (68), Nov 2015.