


# Kevin J. Disotell, Ph.D.

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## Professional Preparation

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<b>NASA Langley Research Center</b> , Hampton, Virginia, USA Postdoctoral Fellow, Flow Physics and Control Branch	Jan 2016— July 2017
<b>The Ohio State University</b> , Columbus, Ohio, USA Doctor of Philosophy, Aeronautical & Astronautical Engineering Dissertation: <u><i>Low-Frequency Flow Oscillations on Stalled Wings Exhibiting Cellular Separation Topology</i></u> Advisor: Prof. James W. Gregory	2010—2015
<b>The Ohio State University</b> , Columbus, Ohio, USA Bachelor of Science, <i>summa cum laude</i> , with research distinction Aeronautical & Astronautical Engineering	2006—2010

## Professional Experience

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Research Scientist <b>The Ohio State University</b> , Columbus, Ohio, USA Computational Aerodynamics and Flow Physics Laboratory	June 2021— Present
Assistant Professor of Mechanical Engineering <b>Youngstown State University</b> , Youngstown, Ohio, USA Rayen School of Engineering	Aug 2017— May 2021
Summer Faculty Fellow <b>NASA Glenn Research Center</b> , Cleveland, Ohio, USA Thermal Systems and Transport Processes Branch	Summer 2019
Global Product Development Intern <b>Ford Motor Company</b> , Dearborn, Michigan, USA Thermal & Aerodynamic Systems Engineering Group Vehicle Energy Management Engineering Division	Summer 2010

## Honors and Awards

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NASA Group Achievement Award (2022), Joint CFD/Experimental Juncture Flow Validation Test Team

*“For outstanding collaboration in ground-breaking instrumentation development and measurements that have led to significantly improved predictions of turbulent separated juncture flows.”*

SAE International Ralph R. Teetor Educator Award (2021)

*In recognition of significant contributions to teaching, research and student development in preparing future engineers. Established in 1963, the SAE Ralph R. Teetor Educational Fund is focused on early-career engineering educators successfully carrying out this mission.*

NASA Engineering Safety Center (NESC) Group Achievement Award (2020), Commercial Crew Program Launch Vehicle Ground Wind Loads Assessment Team

*“In recognition of outstanding technical achievement in the evaluation of the Ground Wind Loads and Wind Induced Oscillation for Commercial Crew Program launch vehicles”*

Senior Member, American Institute of Aeronautics and Astronautics (AIAA) (2020)

*For successful professional practice in the aerospace sciences.*

Research Professorship, Youngstown State University Office of Research (AY 2019-20)

*One of 24 faculty selected for course release time.*

Selected for NASA Glenn Research Center Summer Faculty Fellowship (2019; 2021: declined)

*One of approximately dozen university faculty selected from across United States for residency program*

Presidential Fellowship, The Ohio State University Graduate School (2014)

*Highest honor bestowed upon student by the Graduate School.*

National Winner, NSF Innovation in Graduate Education Challenge (2013)

*Selected among 500+ entries from U.S. graduate students for proposal titled:*

*“Opening the Doors of STEM Graduate Education: A Collaborative, Web-Based Approach to Unlocking Student Pathways”*

NSF Graduate Research Fellowship (2010)

*Recognizes and supports outstanding graduate students in NSF-supported STEM disciplines*

National Defense Science and Engineering Graduate Fellowship, U.S. Dept. of Defense (2010)

*Given for demonstrated ability to undertake advanced training in science and engineering*

Co-Recipient, Outstanding Paper Award, AIAA Ground Testing Technical Committee (2011)

*Presented at AIAA Aerodynamic Measurement Technology and Ground Testing Conference*

Undergraduate Research Scholar, The Ohio State University College of Engineering (2009)

Honorable Mention, Barry M. Goldwater Scholarship and Excellence in Education Program (2008)

1<sup>st</sup> Place Graduate Presentation, AIAA Region III Student Conference (University of Dayton), for:

*Disotell, K. J. and J. W. Gregory, 2011, “Measurement of Transient Acoustic Fields Using a Single-Shot Pressure-Sensitive Paint Technique.”*

## Research Areas

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- Advanced Optical Flow Measurements (PSP/TSP, PIV, LDV)
- Aerodynamics and Flow Acoustics
- Turbulent Boundary-Layer Separation
- CFD Validation Experiments and Large-Scale Wind-Tunnel Characterization
- Design of Experiments (DOE; response surface, factorial, Taguchi designs)

## Publications

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### Peer-Reviewed Journal Articles

1. Fang, S., **Disotell, K.J.**, S.R. Long, J.W. Gregory, F.C. Semmelmayr, and R.W. Guyton, 2011, "Application of Fast-Responding Pressure-Sensitive Paint to a Hemispherical Dome in Unsteady Transonic Flow," *Experiments in Fluids* 50, 1495–1505. doi: [10.1007/s00348-010-1010-1](https://doi.org/10.1007/s00348-010-1010-1)
2. **Disotell, K.J.** and J.W. Gregory, 2011, "Unsteady Surface Signature of a Pulsed Vortex Generator Jet," *Journal of Visualization* 14, 121–127. doi: [10.1007/s12650-011-0080-3](https://doi.org/10.1007/s12650-011-0080-3)
3. **Disotell, K.J.** and J.W. Gregory, 2011, "Measurement of Transient Acoustic Fields Using a Single-Shot Pressure-Sensitive Paint System," *Review of Scientific Instruments* 82, 075112. doi: [10.1063/1.3609866](https://doi.org/10.1063/1.3609866)
4. Fang, S., S.R. Long, **K.J. Disotell**, J.W. Gregory, F.C. Semmelmayr, and R.W. Guyton, 2012, "Comparison of Unsteady Pressure-Sensitive Paint Measurement Techniques," *AIAA Journal* 50, 209– 222. doi: [10.2514/1.J051167](https://doi.org/10.2514/1.J051167)
5. Juliano, T.J., **K.J. Disotell**, J.W. Gregory, J.W. Crafton, and S. Fonov, 2012, "Motion-Deblurred, Fast-Response Pressure-Sensitive Paint on a Rotor in Forward Flight," *Measurement Science and Technology* 23, 045303. doi: [10.1088/0957-0233/23/4/045303](https://doi.org/10.1088/0957-0233/23/4/045303)
6. **Disotell, K.J.**, D. Peng, T.J. Juliano, J.W. Gregory, J.W. Crafton, and N.M. Komerath, 2014, "Single-Shot Temperature- and Pressure-Sensitive Paint Measurements on an Unsteady Helicopter Blade," *Experiments in Fluids* 55, 1671. doi: [10.1007/s00348-014-1671-2](https://doi.org/10.1007/s00348-014-1671-2)
7. Gregory, J.W., **K.J. Disotell**, D. Peng, T.J. Juliano, J.W. Crafton, and N.M. Komerath, 2014, "Inverse Methods for Deblurring PSP Images of Rotating Surfaces," *AIAA Journal* 52, 2045-2061. doi: [10.2514/1.J052793](https://doi.org/10.2514/1.J052793)
8. **Disotell, K.J.**, P. Nikoueeyan, J.W. Naughton, and J.W. Gregory, 2016, "Global Surface Pressure Measurements of Static and Dynamic Stall on a Wind Turbine Airfoil at Low Reynolds Number," *Experiments in Fluids* 57, 82. doi: [10.1007/s00348-016-2175-z](https://doi.org/10.1007/s00348-016-2175-z)
9. Aultman, M.T., Auza-Gutierrez, R., **Disotell, K.J.**, and Duan L., 2021, "Effects of Wheel Rotation on Long-Period Wake Dynamics of the DrivAer Fastback Model," *Fluids* 7(1):19. doi: [10.3390/fluids7010019](https://doi.org/10.3390/fluids7010019)

### Peer-Reviewed Technical Reports

10. **Disotell, K.J.**, and C.L. Rumsey, 2017, "Development of an Axisymmetric Afterbody Test Case for Turbulent Flow Separation Validation," National Aeronautics and Space Administration, NASA TM 2017-219680. Available from [NASA Technical Reports Server](https://ntrs.nasa.gov/).

**Peer-Reviewed Conference Papers** (\* = student advisee, presenter underlined)

11. **Disotell, K.J.**, \*Chamberlain, T.J., and \*Castma, J.C., 2021, "Multi-Modal Conversion of a Boundary-Layer Wind Tunnel to Open-Jet Test Cell," SAE Technical Paper 2021-01-0018 (AeroTech 2021, March 9–11). doi:[10.4271/2021-01-0018](https://doi.org/10.4271/2021-01-0018)

**Abstract-Reviewed Conference Papers** (\* denotes student advisee, presenter underlined)

1. Fang, S., **K.J. Disotell**, J.W. Gregory, F.C. Semmelmayr, and R.W. Guyton, 2009, "Unsteady Surface Pressure Measurements on a Hemispherical Dome with Pressure-Sensitive Paint," *10th International Conference on Fluid Control, Measurements, and Visualization* (Moscow, Russia), Paper No. 266, Aug. 17–21.
2. Fang, S., S.R. Long, **K.J. Disotell**, J.W. Gregory, F.C. Semmelmayr, and R.W. Guyton, 2010, "Comparison of Unsteady Pressure-Sensitive Paint Measurement Techniques," *27th AIAA Aerodynamic Measurement and Ground Testing Conference* (Chicago, Illinois), AIAA Paper 2010-4919, June 28–July 1. (**Outstanding Paper Award.**) doi: [10.2514/6.2010-4919](https://doi.org/10.2514/6.2010-4919)
3. **Disotell, K.J.**, T.J. Juliano, D. Peng, J.W. Gregory, J.W. Crafton, and N.M. Komerath, 2012, "Unsteady Pressure-Sensitive Paint Measurements on an Articulated Model Helicopter in Forward Flight," *29th AIAA Aerodynamic Measurement and Ground Testing Conference* (New Orleans, Louisiana), AIAA Paper 2012-2757, June 25–28. doi: [10.2514/6.2012-2757](https://doi.org/10.2514/6.2012-2757)
4. Gregory, J.W., **K.J. Disotell**, D. Peng, T.J. Juliano, J.W. Crafton, and N.M. Komerath, 2014, "Deconvolution-Based Algorithms for Deblurring PSP Images of Rotating Surfaces," *51st AIAA Aerospace Sciences Meeting* (Grapevine, Texas), AIAA Paper 2013-0484, Jan. 7–10. doi: [10.2514/6.2013-484](https://doi.org/10.2514/6.2013-484)
5. **Disotell, K.J.**, and J. W. Gregory, 2015, "Time-Resolved Measurements of Cellular Separation on a Stalling Airfoil," *53rd AIAA Aerospace Sciences Meeting* (Kissimmee, Florida), AIAA Paper 2015-1501, Jan. 5–9. doi: [10.2514/6.2015-1501](https://doi.org/10.2514/6.2015-1501)
6. **Disotell, K.J.**, P. Nikoueeyan, J.W. Naughton, and J.W. Gregory, 2015, "Single-Shot Pressure-Sensitive Paint Measurements of Static and Dynamic Stall on a Wind Turbine Airfoil," *American Helicopter Society 71st Annual Forum* (Virginia Beach, Virginia), Paper No. 38, May 5–7.
7. **Disotell, K.J.**, and C.L. Rumsey, 2017, "Design of an Axisymmetric Afterbody Test Case for CFD Validation," *23rd AIAA Computational Fluid Dynamics Conference, AIAA Aviation and Aeronautics Forum and Exposition* (Denver, Colorado), AIAA Paper 2017-3792, June 5–9. doi: [10.2514/6.2017-3792](https://doi.org/10.2514/6.2017-3792)
8. Ivanco, T.G., Keller, D.F., Pinkerton, J.L., **Disotell, K.J.**, Collins, J.G., and Seliquini, S.L., 2018, "Development of an Atmospheric-Boundary-Layer Profile at the NASA Langley Transonic Dynamics Tunnel," *AIAA SPACE and Astronautics Forum and Exposition* (Orlando, Florida), AIAA Paper 2018-5184, Sept. 17–19. doi: [10.2514/6.2018-5184](https://doi.org/10.2514/6.2018-5184)
9. \*Lucarelli, N.M., \*Eckman, E.M., and **Disotell, K.J.**, 2019, "CFD Analysis of Cyclone Separator Flow Field in Advance of Experiment," *AIAA Applied Aerodynamics Conference, AIAA Aviation and Aeronautics Forum and Exposition* (Dallas, Texas), AIAA Paper 2019-3496, June 17–21. doi: [10.2514/6.2019-3496](https://doi.org/10.2514/6.2019-3496)
10. \*Blanco, M.R., \*Battiato, J.A., and **Disotell, K.J.**, 2019, "Sensitivity Study of Contraction Flow for Boundary-Layer Validation Wind Tunnel," *AIAA Ground Testing Conference, AIAA Aviation and Aeronautics Forum and Exposition* (Dallas, Texas), AIAA Paper 2019-3095, June 17–21. doi: [10.2514/6.2019-3095](https://doi.org/10.2514/6.2019-3095)
11. Aultman, M.T., **Disotell, K.J.**, and Duan, L., 2022, "The Effect of Particle Lag on Statistics of Hypersonic Turbulent Boundary Layers Subject to Pressure Gradients," AIAA SCITECH 2022. AIAA Paper 2022-1062, January 3-7, 2022. doi: [10.2514/6.2022-1062](https://doi.org/10.2514/6.2022-1062)

### Conference Abstracts

1. Fang, S., K.J. Disotell, J.W. Gregory, F.C. Semmelmayr, and R.W. Guyton, 2009, "Unsteady Surface Pressure Measurements on a Hemispherical Dome with Porous Pressure-Sensitive Paint," *34th AIAA Dayton-Cincinnati Aerospace Sciences Symposium* (Dayton, Ohio), March 3.
2. Disotell, K.J. and J.W. Gregory, 2009, "Visualization of Pulsed Vortex Generator Jets with Porous Pressure-Sensitive Paint," *34th AIAA Dayton-Cincinnati Aerospace Sciences Symposium* (Dayton, Ohio), March 3.
3. Disotell, K.J., and J.W. Gregory, 2013, "Unsteady Structure of Three-Dimensional Stall Cells," *66th Annual Meeting of the APS Division of Fluid Dynamics* (Pittsburgh, Pennsylvania), Nov. 24–26. [BAPS.2013.DFD.G4.3](#)
4. Disotell, K.J., P. Nikoueeyan, J.W. Naughton, and J.W. Gregory, 2015, "Application of Fast Pressure-Sensitive Paint to an Oscillating Wind Turbine Airfoil," *North American Wind Energy Academy 2015 Symposium* (Virginia Polytechnic Institute and State University, Blacksburg, Virginia), June 9–11. <http://hdl.handle.net/10919/54702>
5. Disotell, K.J., and C.L. Rumsey, 2016, "Axisymmetric Afterbody Test Case for CFD Validation," *69th Annual Meeting of the APS Division of Fluid Dynamics* (Portland, Oregon), Nov. 20–22. [BAPS.2016.DFD.G34.4](#)
6. Disotell, K.J., and C.L. Rumsey, 2017, "Modern CFD Validation of Turbulent Flow Separation on an Axisymmetric Afterbody," *University of Michigan / NASA Symposium on Advances in Turbulence Modeling* (Ann Arbor, Michigan), July 11–13.

### Invited Talks

1. Council of Graduate Schools Workshop, Understanding Ph.D. Career Pathways for Program Improvement: A Feasibility Study (Warrenton, Virginia), 2014.
2. University of Dayton, Department of Mechanical and Aerospace Engineering, "Aerodynamics of Cellular Flow Separation on Post-Stall Wings," March 11, 2015.
3. Youngstown State University, Department of Mechanical and Industrial Engineering, "Progress Toward NASA's CFD Vision 2030: Turbulence Modeling Validation," March 2, 2017.
4. Case Western Reserve University, Department of Mechanical and Aerospace Engineering, "Progress Toward NASA's CFD Vision 2030: Turbulence Modeling Validation," April 6, 2017.
5. University of Pittsburgh, Department of Mechanical & Materials Science, "Understanding 3-D Instabilities in Turbulent Shear Flows: Experiments and Computations," Nov. 14, 2017.
6. American Society of Mechanical Engineers, Youngstown Chapter, "Recent Perspectives in Turbulence Modeling for Fluid Flows," Sept. 26, 2017.
7. Youngstown State University Office of Research, "Ohio Space Grant Consortium: Overview of Faculty Funding Opportunities," Jan. 29, 2020.

## Outreach and Service

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### ***Service to Discipline***

Ad Hoc Reviewer: *Aerospace Science and Technology, Journal of Aircraft, AIAA Journal, Experiments in Fluids, Journal of Propulsion and Power, Microfluidics and Nanofluidics, Sensors, Sensors & Actuators: A. Physical, Experimental Thermal and Fluid Science.*

Conference Abstract Reviewer:

AIAA Aviation and Aeronautics Forum and Exposition (2019, 2020, 2021)

Technical Session Co-Chair: Fundamental Fluid Flows, 2018 AIAA Fluid Dynamics Conference

Member, AIAA Turbulence Model Benchmarking Working Group (2016–Present)

Ohio Space Grant Consortium, Executive Committee (Fall 2018–May 2021)

Invited panel reviewer for NASA Early Stage Innovations NRA: Topic 2–Modeling of Lunar Dust Behavior and Mitigation Techniques (Sept. 15–17, 2020)

Experienced Resource Person, National Science Foundation Graduate Research Fellowship Program

Continuing Professional Development Seminar Presenter, American Society of Mechanical Engineers, Youngstown Chapter: “Recent Perspectives in Turbulence Modeling for Fluid Flows” (3 hours; Sept. 26, 2017)

Daniel Guggenheim Medal Board of Award, SAE International Representative (Term: 2021-2024)

Pen Pal, Letters to a Pre-Scientist (2021-Present)

*The mission of Letters to a Pre-Scientist is to facilitate one-on-one connections to humanize STEM professionals, demystify STEM career pathways, and inspire all students to explore a future in STEM.*

Participant, Road Vehicle Aerodynamics Forum Committee, SAE International (2021-Present)

### ***University Service***

Campus Representative for Youngstown State Univ., NASA/Ohio Space Grant Consortium (Fall 2018–May 2021)

Founding Faculty Advisor, AIAA Student Branch at Youngstown State University (2017–2021)

Judge, 2021 Denman Undergraduate Research Forum, The Ohio State University

## Continuing Professional Development

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Inclusive Excellence Certificate (College of Engineering, The Ohio State University, May 2022)

Build cultural competency skills, develop greater self-awareness, gain a deeper understanding of the university's core values, and emphasize importance of diversity, equity, and inclusive excellence.

*Design of Experiments: Improved Experimental Methods in Aerospace Testing* (Feb. 26—April 16, 2021; Instructor: Dr. Drew Landman, Old Dominion University), AIAA Short Course; 1.6 CEU/PDH.

NSF New Frontiers of Thermal Transport Workshop (Dec. 14-16, 2020 and Jan. 4-6, 2021)

Write Winning Grant Proposals: Virtual Seminar (Grant Writers' Seminars and Workshops; Sept. 17–18, 2020). Grantsmanship for NSF proposals.

NASA CFD Prediction Error Assessment Workshop (Suffolk, VA; March 2018). Review of recent turbulence, transition, and numerical method technologies for achieving 40% reduction in predictive error against standard test cases for turbulent separated flows, evolution of free shear flows, and shock-boundary layer interactions on state-of-the-art high performance computing hardware.

Spring Fluid Mechanics Workshop (TSI, Inc.; Shoreview, Minnesota; April 2017). Four-day training workshop with classroom and hands-on experience for advanced optical measurement techniques covering PIV, LDV, and PDPA.

Technology Commercialization: From Invention to Market (The Ohio State University, Spring 2014, 2 credit hours).

Commercialization of university discoveries including invention reporting and assessment, intellectual property, project development, sponsored research (including industry collaboration), market analysis, licensing, start-up businesses, and conflicts of interest.

## Professional Memberships

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American Institute of Aeronautics and Astronautics (AIAA), Senior Member

Society of Automotive Engineers (SAE) International

American Society for Engineering Education (ASEE)

Sigma Gamma Tau (aerospace engineering honor society)

Tau Beta Pi (engineering honor society)

Sigma Xi (scientific research society)

Phi Kappa Phi (academic honor society)

## Media Recognition

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- National Science Foundation Press Release 13-105, "STEM Graduate Education Challenge Prompts Hundreds to Offer Ideas for Improvements," as national winner of 2013 NSF Innovation in Graduate Education Challenge.
- *Inside Higher Ed* (June 14, 2013): "NSF Grants Reward Student Ideas for Improving Graduate Education," as national winner of 2013 NSF Innovation in Graduate Education Challenge.
- *Science Careers* (June 19, 2013): "NSF Rewards Grad Students for Innovation Ideas," as national winner of 2013 NSF Innovation in Graduate Education Challenge.
- Featured in White House Office of Science and Technology Policy blog (August 14, 2013): "Students Propose Innovative Ideas to Change Graduate Education," as national winner of 2013 NSF Innovation in Graduate Education Challenge.
- *AIAA Daily Launch* (Feb. 3, 2020): "Gliders Fly at YSU Facility," (*The Vindicator*, Feb. 2, 2020), quoted as faculty advisor for AIAA-YSU Student Branch's 3D-Printed Glider Competition.
- *Tribune Chronicle* (Sept. 13, 2020; Youngstown-Warren Ohio): "YSU Engineering Student Receives NASA Fellowship," quoted as campus representative for NASA/Ohio Space Grant Consortium.
- Department of Mechanical and Aerospace Engineering, The Ohio State University (August 24, 2021): "MAE research scientist recognized by NASA Engineering and Safety Center"
- The Ohio State University Aerospace Research Center (April 21, 2022): "Premier Honda wind tunnel advances key Ohio State aerodynamics research"
- Department of Mechanical and Aerospace Engineering, The Ohio State University (May 9, 2022): "MAE research scientist receives Ralph R. Teetor Educational Award"