

Christopher J Crowley

- Website: christophercrowley.com
- Google Scholar: scholar.christophercrowley.com
- Curriculum Vitae: cv.christophercrowley.com
- cjcrowley@gmail.com
- (240) 672-6004
- Citizenship: USA

Summary: Experimental physicist who takes hard measurement problems from idea to working prototype — working out the theory, inventing a clever (often low-cost) approach, then building and testing the instrument. 15+ years in precision metrology and instrumentation; PI/Co-PI on \$1M+ in research funding, published and patented.

Experience

[6/2023 - present] **Physicist**, Fluid Metrology Group, National Institute of Standards and Technology.

Drive development of airspeed and low-flow calibration standards; PI/Co-PI on \$700k+ in competitive project funding since 2024. Developed a new ultra-low-speed airspeed primary standard and an optical-chopper method for calibrating laser Doppler anemometers.

[2/2025 - present] **Adjunct Assistant Professor**, Whiting School of Engineering, Johns Hopkins University.

Developed a novel time-of-flight image-velocimetry system for oceanic turbulence measurements.

[9/2022 - 6/2023] **Postdoctoral Fellow**, Fluid Transport Lab, Johns Hopkins University.

Designed and built a custom high-speed scanning dual stereo PIV–PLIF system for variable-density flow experiments. *Advisor:* Rui Ni

[4/2014 - 8/2022] **Graduate Research Assistant**, Pattern Formation and Control Lab, Georgia Institute of Technology.

Built a novel Taylor–Couette apparatus with complete optical access and an in-house time-resolved volumetric velocimetry system; first experimental evidence that turbulence tracks recurrent solutions (*PNAS*). *Advisors:* Mike Schatz and Roman Grigoriev

[3/2007 - 7/2013] **Researcher**, Fluid Metrology Group, National Institute of Standards and Technology.

Developed physical models and uncertainty analysis for primary flow standards; ran wind-tunnel experiments and performed calibrations of transfer standards.

Education

[2022] **Ph.D. in Physics**, Georgia Institute of Technology (Minor in Mechanical Engineering)

[2015] **M.S. in Physics**, Georgia Institute of Technology

[2013] **B.S. in Physics**, University of Maryland (Minor in Philosophy)

Skills

Measurement & metrology	Precision measurement, calibration & SI traceability, measurement uncertainty (GUM), experimental design
Instrumentation & hardware	Instrument design & build, embedded systems (ESP32 / Teensy / Arduino), rapid prototyping & 3D printing, CAD, CNC & manual machining, DAQ
Diagnostics & sensing	Velocimetry — 2D–4D PIV/PTV, tomographic, STB; PLIF & fluorescence imaging (incl. biological); laser Doppler anemometry; acoustic & microwave resonance
Modeling & analysis	Signal & image-processing algorithm development, Fourier analysis, reduced-order & uncertainty-driven modeling, nonlinear dynamics, data analysis & visualization
Programming	MATLAB, Python, C++, embedded/low-level C, $\text{\LaTeX}$
Leadership	R&D project leadership (PI), technical proposal writing, mentoring

Selected research funding

- NOAA – resolve issue with NOAA NDBC airspeed readings (PI) (\$41,000) 2026
- NIST Greenhouse Gas Measurements – landfill methane (PI) (\$330,000, 2024–25) 2025
- NIST On A Chip – gas flow meter & acoustic density development (Co-PI) (\$248,000) 2025
- NIST Cal Service Development – Ultra Low Wind Tunnel & airspeed standards (PI) (\$174,000) 2024
- Georgia Tech VentureLab startup funding for inventors (\$10,000 + \$50,000) 2022

Patents

- P1. Uzelac I & Crowley C, (2025). “A wearable device for regaining simultaneous eyelid closure for victims of partial facial paralysis via direct stimulation”, U.S. application number 18/997,930, January 23, 2025.

Selected Publications

(10 journal articles, 18 conference papers, 3 NIST publications, 20+ conference & invited talks; full list at [Google Scholar](#))

- J1. **Christopher J. Crowley**, Iosif I. Shinder, Michael R. Moldover, *et al.* “*Calibrating Laser Doppler Anemometers Utilizing an Optical Chopper*”. *Metrologia* 62, 025001, 2025.
- J2. **Christopher J. Crowley**, Joshua Pughe-Sanford, Wesley Toler, *et al.* “*Turbulence Tracks Recurrent Solutions*”. *Proceedings of the National Academy of Sciences* 119 (34), August 2022.
- J3. Ilija Uzelac, **Christopher J. Crowley**, Shahriar Iravanian, *et al.* “*Methodology for cross-talk elimination in simultaneous voltage and calcium optical mapping measurements with semasbestic wavelengths*”. *Frontiers in Physiology* 13, February 2022.
- J4. **Christopher J. Crowley**, Michael C. Krygier, Daniel Borrero-Echeverry, *et al.* “*A novel subcritical transition to turbulence in Taylor-Couette flow with counter-rotating cylinders*.” *Journal of Fluid Mechanics* 892, April 2020, A12.
- J5. Daniel Borrero-Echeverry, **Christopher J. Crowley**, Tyler P. Riddick. “*Rheoscopic fluids in a post-Kalliroscope world*”. *Physics of Fluids* 30, 087103, August 2018. **(Editor’s Pick)**

Service & Mentoring

Mentoring: Co-mentored 1 postdoc; mentored 1 SURF fellow, 6+ PhD/undergraduate researchers, and high-school interns (2013–present).

Teaching: Teaching Assistant, Georgia Tech (Nonlinear Dynamics & Chaos, Intro Physics) — **TA of the Year, 2020**. Workshop instructor, ICTP Trieste (2015).

Leadership: Founding President, Graduate Association of Physicists at Georgia Tech (2014–2017); Lead organizer, Science of Beer outreach (2015–2017).

Memberships: American Physical Society; AAAS; American Society of Mechanical Engineers.