

## J. Douglas Wright

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### Education

- PhD, Mathematics, Boston University, 2004 (Advisor: C. Eugene Wayne).
- BS, Mathematics, Pennsylvania State University, 1997 (with high distinction).
- BS, Physics, Pennsylvania State University, 1997 (with high distinction).

### Professional Experience

- Professor, Drexel University Department of Mathematics. 2018–present.
- Department Head, Drexel University Department of Mathematics. 2021–present.
- Associate Department Head, Drexel University Department of Mathematics. Fall 2015, 2016–2021.
- Associate Professor, Drexel University Department of Mathematics. 2012–2018.
- Visiting Associate Professor, Swarthmore College Department of Mathematics. 2014–2015.
- Assistant Professor, Drexel University Department of Mathematics. 2007–2012.
- Dunham Jackson Assistant Professor, University of Minnesota School of Mathematics. 2004–2007.
- Postdoctoral Fellow, McMaster University Department of Mathematics/Fields Institute. 2003–2004.

### Extramural Funding

- J. Wright (PI). “Singular and spatially heterogeneous perturbations of solitary waves.” NSF DMS-2006172. 2020–2024. \$165,000.
- D. Ambrose, S. Moskow, G. Simpson, X. Song & J. Wright. “Gene Golub summer school on stochastic differential equations and wave propagation.” SIAM. July–August 2016. \$95,000.
- J. Wright (PI). “Wave propagation in heterogeneous nonlinear dispersive systems.” NSF DMS-1511488. 2015–2019. \$340,000.
- J. Wright (PI). “Degenerate dispersive effects in partial and lattice differential equations.” NSF DMS-1105635. 2011–2015. \$203,000.
- R. Hicks (PI) & J. Wright (Co-PI). “Distributions for optical design.” NSF DMS-0908299. 2009–2012. \$264,000.
- J. Wright (PI). “Dynamics and interactions of free fluid interfaces.” NSF DMS-0807738. 2008–2012. \$111,000.

### PhD Students

- Kayode Oluwasegun. Drexel University, expected graduation 2026. (Co-advisor with D. Ambrose.)
- Udoh Akpan. Drexel University, expected graduation 2024.
- Emily Kelting. Drexel University, expected graduation 2024.
- Joshua McGinnis. Drexel University, 2023.
- Joshua Carmichael. Drexel University, 2020.
- Timothy Faver. Drexel University, 2018.
- Daniel Jordon. Drexel University, 2013.

## Editorial Boards

- *Communications in Analysis and Mechanics*, AIMS Press. 2023-present.

## Publications

- J. Wright. “Approximation of Caloger-Moser lattices by Benjamin-Ono equations.” Submitted to *SIAM Journal on Mathematical Analysis* in January 2024.
- J. McGinnis & J. Wright. “Approximation of (some) random FPUT lattices by KdV equations.” Submitted to *Physica D* in August 2023.
- J. Wright. “A simple model of radiating solitary waves.” *Wave Motion* (2022).
- J. McGinnis & J. Wright. “Using random walks to establish wavelike behavior in a linear FPUT system with random coefficients.” *Discrete & Continuous Dynamical Systems - Series S* (2021).
- D. Ambrose, F. Hadadifard & J. Wright. “Well-posedness and asymptotics of a coordinate-free model of flame fronts.” *SIAM Journal of Applied Dynamical Systems* (2021).
- T. Faver, R. Goodman & J. Wright. “Solitary waves in mass-in-mass lattices.” *Zeitschrift für Angewandte Mathematik und Physik* (2020).
- F. Hadadifard & J. Wright. “Mass-in-mass lattices with small internal resonators.” *Studies in Applied Mathematics* (2020).
- M. Johnson & J. Wright. “Generalized solitary waves in the gravity-capillary Whitham equation.” *Studies in Applied Mathematics* (2020).
- A. Stefanov & J. Wright. “Small amplitude traveling waves in the full-dispersion Whitham equation.” *Journal of Dynamics and Differential Equations* (2020).
- T. Akhunov, D. Ambrose & J. Wright. “Well-posedness of fully nonlinear KdV-type evolution equations.” *Nonlinearity* (2019).
- D. Ambrose & J. Wright. “Nonexistence of small, smooth, time-periodic, spatially periodic solutions for nonlinear Schrödinger equations.” *Quarterly of Applied Mathematics* (2019).
- N. Giardetti, A. Shapiro, S. Windle & J. Wright. “Metastability of solitary waves in diatomic FPUT lattices.” *Mathematics in Engineering* (2019).
- D. Ambrose, G. Simpson, J. Wright & G. Yang. “Existence theory for magma equations in dimension two and higher.” *Nonlinearity* (2018).
- T. Faver & J. Wright. “Exact diatomic Fermi-Pasta-Ulam-Tsingou solitary waves with optical band ripples at infinity.” *SIAM Journal on Mathematical Analysis* (2018).
- A. Hoffman & J. Wright. “Nanopteron solutions of diatomic Fermi-Pasta-Ulam-Tsingou lattices with small mass-ratio.” *Physica D* (2017).
- G. Medvedev & J. Wright. “Stability of twisted states in the continuum Kuramoto model.” *SIAM Journal of Applied Dynamical Systems* (2017).
- D. Ambrose & J. Wright. “Nonexistence of small doubly periodic solutions for dispersive equations.” *Analysis & PDE* (2016).
- B. Akers, D. Ambrose, K. Pond, & J. Wright. “Overturned internal capillary-gravity waves.” *European Journal of Mechanics-B/Fluids* (2016).
- A. Vainchtein, Y. Starosvetsky, J. Wright & R. Perline. “Solitary waves in diatomic chains.” *Physical Review E* (2016).
- D. Ambrose, W. Strauss & J. Wright. “Global bifurcation theory for periodic traveling interfacial gravity-capillary waves.” *Annales de l’Institut Henri Poincaré. Analyse Non Linéaire* (2016).
- D. Ambrose & J. Wright. “Non-existence of small-amplitude doubly periodic waves for dispersive equations.” *Comptes Rendus Mathématique. Académie des Sciences. Paris* (2014).

- J. Gaison, S. Moskow, J. Wright & Q. Zhang. “Approximation of polyatomic FPU lattices by KdV equations.” *Multiscale Modeling & Simulation* (2014).
- B. Akers, D. Ambrose & J. Wright. “Gravity perturbed Crapper waves.” *Proceedings of the Royal Society A* (2014).
- R. Hicks, S. Rody & J. Wright. “Bundle separation, obstructions to perfect imaging and other qualitative aspects of simultaneous multiple surface design.” *Optical Engineering* (2013).
- B. Akers, D. Ambrose & J. Wright. “Traveling waves from the arclength parameterization: vortex sheets with surface tension.” *Interfaces and Free Boundaries* (2013).
- D. Ambrose & J. Wright. “Dispersion vs. anti-diffusion: well-posedness in variable coefficient and quasilinear equations of KdV-type.” *Indiana University Mathematics Journal* (2013).
- D. Ambrose & J. Wright. “Traveling waves and weak solutions for an equation with degenerate dispersion.” *Proceedings of the American Mathematical Society* (2013).
- R. Chen, J. Marzuola, D. Spirn & J. Wright. “On the regularity of the flow map for the gravity-capillary equations.” *Journal of Functional Analysis* (2013).
- J. Wright. “On the spectrum of the superposition of separated potentials.” *Discrete and Continuous Dynamical Systems - Series B* (2013).
- D. Ambrose, G. Simpson, J. Wright & D. Yang. “Ill-posedness of degenerate dispersive equations.” *Nonlinearity* (2012).
- D. Spirn & J. Wright. “Linear dispersive decay estimates for the 3+1 dimensional water wave equation with surface tension.” *Canadian Mathematical Bulletin* (2012).
- A. Hoffman & J. Wright. “Exit manifolds for lattice differential equations.” *Proceedings A of The Royal Society of Edinburgh* (2011).
- J. Wright. “Interaction manifolds for reaction-diffusion equations in 2D.” *SIAM Journal of Applied Dynamical Systems* (2010).
- D. Ambrose & J. Wright. “Preservation of support and positivity for solutions of degenerate evolution equations.” *Nonlinearity* (2010).
- D. Spirn & J. Wright. “Linear dispersive decay estimates for vortex sheets with surface tension.” *Communications in Mathematical Sciences* (2009).
- J. Wright. “Separating dissipative pulses—the exit manifold.” *Journal of Dynamics and Differential Equations* (2009).
- A. Scheel & J. Wright. “Colliding dissipative pulses—the shooting manifold.” *Journal of Differential Equations* (2008).
- J. Wright & A. Scheel. “Solitary waves and their linear stability in weakly coupled KdV equations.” *Zeitschrift für Angewandte Mathematik und Physik* (2007).
- J. Wright. “Corrections to the KdV approximation for water waves.” *SIAM Journal on Mathematical Analysis* (2005).
- J. Colliander, S. Raynor, C. Sulem & J. Wright. “Ground state mass concentration in the  $L^2$ -critical nonlinear Schrödinger equation below  $H^1$ .” *Mathematical Research Letters* (2005).
- J. Wright. “Higher order corrections to the KdV approximation for water waves.” Ph.D. Thesis, Boston University, 2004.
- C. Wayne & J. Wright. “Higher order modulation equations for a Boussinesq equation.” *SIAM Journal of Applied Dynamical Systems* (2002).

## Invited Talks

- AMS Spring Sectional at the University of Cincinnati. April 15, 2023.
- Second Drexel Waves Workshop. March 31, 2023.
- George Mason University Applied and Computational Mathematics Seminar. March 3, 2023.
- Leiden University Lorentz Center Workshop on Coherent Structures: Current Developments and Future Challenges. July 6, 2022.
- Workshop on Nonlinear Waves in Discrete and Continuum Systems at the University of Pittsburgh. June 18, 2022.
- IMACS Conference on Nonlinear Evolution Equations in Athens, GA. March 30, 2022.
- SIAM Annual Meeting (online). July 23rd, 2021.
- Macquarie University Mathematics Colloquium. March 11th, 2021.
- Minisymposium on Hamiltonian Lattice Dynamics (online in lieu of SIAM NWCS). July 29, 2020.
- University of Washington Applied PDE Seminar. January 16, 2020.
- University of Michigan Applied Interdisciplinary Mathematics Seminar. November 15, 2019.
- University of Pittsburgh Mathematics Colloquium. October 11, 2019.
- IMACS Conference on Nonlinear Evolution Equations in Athens, GA. April 18, 2019.
- University of Houston PDE Seminar. February 22, 2019.
- AMS Fall Eastern Sectional at the University of Delaware. September 29, 2018.
- AIMS Conference on Dynamical Systems, Taipei. July 9, 2018.
- University of Kansas Analysis Seminar. February 7, 2018.
- Casa Matematica Oaxaca Workshop. June 25, 2017.
- IMACS Conference on Nonlinear Evolution Equations in Athens, GA. March 29, 2017.
- NJIT Mathematics Colloquium. February 3, 2017.
- University of Massachusetts Analysis Seminar. December 7, 2016.
- SIAM Conference on Nonlinear Waves and Coherent Structures in Philadelphia, PA. August 11, 2016.
- Joint Mathematical Meetings in Seattle, WA. January 8, 2016.
- SIAM Conference on Analysis of Partial Differential Equations in Phoenix, AZ. December 7, 2015.
- Defense Contract Management Agency at Boeing in Philadelphia, PA. June 11, 2015.
- Boston University Dynamics Seminar. November 17, 2014.
- University of Rochester Analysis Seminar. September 26, 2014.
- Temple University Analysis Seminar. April 28, 2014.
- University of Pittsburgh PDE and Analysis Seminar. April 14, 2014.
- University of Pennsylvania Analysis Seminar. March 25, 2014.
- University of Delaware Numerical Analysis and PDE Seminar. February 20, 2014.
- SIAM Conference on Analysis of Partial Differential Equations in Orlando, FL. December 7, 2013.
- Concordia Astronomy and Science Club. August 15, 2013.
- Science on Saturday Lecture at the Princeton Plasma Physics Laboratory. January 26, 2013.
- Swarthmore College Mathematics and Statistics Colloquium. November 6, 2012.
- AMS Fall Eastern Sectional at Rochester Institute of Technology. September 23, 2012.
- AMS Spring Central Sectional at the University of Kansas. April 1, 2012.
- AMS Spring Eastern Sectional at George Washington University. March 17, 2012.

- SIAM Conference on Analysis of Partial Differential Equations in San Diego, CA. November 14, 2011.
- AMS Fall Southeastern Sectional at Wake Forest University. September 10, 2011.
- Conference on Frontiers in Applied and Computational Mathematics at NJIT. June 11, 2011.
- NC State Differential Equations Seminar. February 23, 2011.
- SIAM Conference on Nonlinear Waves and Coherent Structures in Philadelphia, PA. August 18, 2010.
- SIAM Conference on Nonlinear Waves and Coherent Structures in Philadelphia, PA. August 17, 2010.
- SIAM Conference on Nonlinear Waves and Coherent Structures in Philadelphia, PA. August 16, 2010.
- Project NExT Workshop Panel Discussion in Pittsburgh, PA. August 4, 2010.
- DSPDE's 2010-Emerging Topics in Dynamical Systems and PDE in Barcelona, Spain. May 31, 2010.
- AIMS International Conference on Dynamical Systems in Dresden, Germany. May 27, 2010.
- NJIT Waves Seminar. March 24, 2010.
- Brown University PDE Seminar. February 19, 2010.
- Bryn Mawr Mathematics Biology Colloquium. January 28, 2010.
- University of Pennsylvania Analysis Seminar. October 6, 2009.
- SIAM Conference on Applications of Dynamical Systems, in Snowbird, UT. May 19, 2009.
- Wake Forest University Mathematics Colloquium. April 16, 2009.
- IMACS Conference on Nonlinear Evolution Equations in Athens, GA. March 25, 2009.
- Workshop on Dynamics of Patterns at MFO, Oberwolfach, Germany. December 16, 2008.
- University of Kansas Mathematics CAM Seminar. October 1, 2008.
- SIAM Conference on Nonlinear Waves and Coherent Structures in Rome, Italy. July 24, 2008.
- SIAM Conference on Nonlinear Waves and Coherent Structures in Rome, Italy. July 22, 2008.
- NSF/CBMS Regional Conference on Water Waves at Howard University. May 13, 2008.
- Boston University Dynamical Systems Seminar. April 28, 2008.
- Drexel University CoAS Dean's Seminar. April 9, 2008.
- AMS Spring Eastern Sectional at the Courant Institute. March 15, 2008.
- SIAM Conference on Analysis of Partial Differential Equations in Phoenix, AZ. December 10, 2007.
- University of Delaware, Department of Mathematics Applied Math Seminar. September 18, 2007.
- Dynamics Days Europe in Loughborough, UK. July 9, 2007.
- SIAM Conference on Applied Dynamical Systems in Snowbird, UT. May 28, 2007.
- Clemson University Analysis Seminar. April 12, 2007.
- SIAM Conference on Nonlinear Waves and Coherent Structures, in Seattle, WA. September 10, 2006.
- Conference on Mathematical Hydrodynamics at the Steklov Institute, Moscow. June 14, 2006.
- AMS Spring Central Sectional at the University of Notre Dame. April 9, 2006.
- University of Minnesota, School of Mathematics Dynamical Systems Seminar. October 10, 2005.
- Conference on Nonlinear Dispersive Wave Phenomena in Anogia, Crete. July 11, 2005.
- SIAM Conference on Applied Dynamical Systems in Snowbird, UT. May 23, 2005.
- Brown University PDE Seminar. March 18, 2005.
- University of Washington, Department of Applied Mathematics Seminar. November 9, 2004.
- University of Minnesota, School of Mathematics PDE Seminar. October 13, 2004.
- Fields Institute Workshop on Free Surface Water Waves. June 14, 2004.
- University of Minnesota, School of Mathematics Dynamical Systems Seminar. March 22, 2004.

- Fields Institute Workshop on Nonlinear Wave Equations. March 15, 2004.
- Joint Cal Tech and UCLA Analysis Seminar. March 5, 2004.
- McMaster University, Department of Mathematics and Statistics PDE Seminar. October 3, 2003.
- SIAM Conference on Applied Dynamical Systems in Snowbird, UT. May 29, 2003.
- AMS Eastern Sectional at Northeastern University. October 5, 2002.
- VIGRE Applied Math and Analysis Workshop at Brown University. May 11, 2002.

### **Conference/Summer School Organization**

- J. Wright (and many others). Member of Scientific Committee for the 1st Annual Meeting of the New York-New Jersey-Pennsylvania Section of SIAM (a.k.a SIAM-NNP). Held at NJIT. October 21-22, 2023.
- D. Ambrose & J. Wright. Second Drexel Waves Workshop. Held at Drexel University. March 30-31, 2023.
- D. Ambrose & J. Wright. First Drexel Waves Workshop. Held at Drexel University. May 18-20, 2018.
- D. Ambrose, S. Moskow, G. Simpson, X. Song & J. Wright. Gene Golub SIAM Summer School on Stochastic Differential Equations and Wave Propagation. Held at Drexel University. July 25-August 5, 2016.
- M. Beck, T. Gallay & J. Wright. Conference on the Analysis of Partial Differential Equations using Dynamical Systems Techniques, a.k.a Gene Wayne's 60th Birthday Conference. Held at Boston University. June 1-3, 2016.

### **Seminar Organization**

- Drexel University PDE/Applied Math Seminar. October 2008 to present. (Jointly with Drexel Mathematics Faculty)
- The Fields Institute Library Seminar. September 2003 through May 2004. (Jointly with S. Raynor)

### **Minisymposium/Special Session Organization**

- J. McGinnis & J. Wright. Minisymposia on Advances in Analysis of Partial and Lattice Differential Equations at SIAM-NNP Annual Meeting, in Newark, NJ. October 21, 2023.
- D. Ambrose & J. Wright. Special Session on Water Waves and Other Dispersive Phenomena at AIMS Conference on Dynamical Systems, in Taipei, Taiwan. July 9, 2018.
- W. Düll & J. Wright. Special Session on Water Waves at Mathematics of Wave Phenomena Conference, in Karlsruhe, Germany. July 23-27, 2018.
- D. Pelinovsky & J. Wright. Minisymposium on Lattice Dynamics: Wave Propagation and Continuum Approximation at SIAM Conference on Nonlinear Waves and Coherent Structures in Philadelphia, PA. August 8-9, 2016.
- N. Mavinga & J. Wright. Special Session on Nonlinear Elliptic and Wave Equations and Applications at the AMS Eastern Section Meeting, in Philadelphia, PA. October 12, 2013.
- D. Ambrose & J. Wright. Session on Quasilinear and Dispersive Partial Differential Equations at IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena in Athens, GA. March 25, 2013.
- T. Harkin & J. Wright. Special Session on Nonlinear Partial Differential Equations in the Physical and Biological Sciences at AMS Fall Eastern Sectional in Rochester, NY. September 22-23, 2012.
- D. Ambrose & J. Wright. Minisymposium on Effects of Degeneracy in Dispersive LDE and PDE at SIAM Conference on Nonlinear Waves and Coherent Structures in Seattle, WA. June 16, 2012.

- D. Ambrose & J. Wright. Minisymposium on Degenerate Dispersive PDE and Compactly Supported Coherent Structures at SIAM Conference on Nonlinear Waves and Coherent Structures in Philadelphia, PA. August 18, 2010.
- D. Ambrose, B. Deconinck, D. Henderson & J. Wright. Special Session on Nonlinear Water Waves at the AMS Eastern Sectional, in State College, PA. October 24-25, 2009.
- R. Hicks & J. Wright. Minisymposium on PDE and Optical Design at the SIAM Annual Meeting, in Denver, CO. July 9, 2009.
- A. Hoffman & J. Wright. Minisymposium on Dynamics and Interaction of Coherent Structures in Lattice Models at the SIAM Conference on Applications of Dynamical Systems in Snowbird, UT. May 19, 2009.
- D. Ambrose & J. Wright. Session on Interfacial Fluid Flows with Applications at the IMACS Conference on Nonlinear Evolution Equations and Wave Phenomena in Athens, GA. March 25, 2009.
- G. van Baalen & J. Wright. Minisymposium on Long-Time Behaviour in Damped Conservation Laws and Dispersive Equations at the SIAM Conference on Analysis of Partial Differential Equations in Phoenix, AZ. December 10, 2007.
- A. Scheel & J. Wright. Minisymposium on Collisions of Dissipative and Dispersive Solitons at the SIAM Conference on Nonlinear Waves and Coherent Structures in Seattle, WA. September 9, 2006.

### **Professional Service**

- Grant reviewer for the Czech Science Foundation (2018).
- Vice Chair of the SIAM Activity Group on Nonlinear Waves and Coherent Structures (2017-2018).
- External reviewer for NSF Division of Mathematical Sciences (2013).
- Panel review member for the NSF Division of Mathematical Sciences (2013, 2016, 2021, 2022).
- Grant reviewer for the Netherlands Organisation for Scientific Research (2011).

### **Other Related Experience**

- Graduate Assistant, Boston University Differential Equations Project. Summer, 2001.
- Research Assistant, Pennsylvania State University Applied Research Laboratory. 1996-1998.
- Physics Research Intern, Naval Surface Warfare Center, Dahlgren VA. 1995.

### **Honors/Awards**

- Louis and Bessie Stein Family Fellow (jointly with D. Ambrose), 2009-2010. (\$12,000)
- Drexel University Antelo Devereux Award for Young Faculty, 2009. (\$15,000)
- Boston University Teaching Fellow Award in Mathematics, 2000.
- Standard Bearer (Top Graduate) for Penn State Physics, 1997.