

Tobias Schäfer

Department of Mathematics
College of Staten Island, CUNY
Staten Island, NY

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EDUCATION

Ph.D. Theoretical Physics, Heinrich-Heine University, Düsseldorf, Germany, 2001
M.Sc. Theoretical Physics, Heinrich-Heine University, Düsseldorf, Germany, 1998

ACADEMIC APPOINTMENTS

2015– College of Staten Island, CUNY, NY
Professor (Tenure), Department of Mathematics
2010–15 College of Staten Island, CUNY, NY
Associate Professor (Tenure), Department of Mathematics
2004–10 College of Staten Island, CUNY, NY
Assistant Professor (No Tenure), Department of Mathematics
2001–04 Brown University, RI
Postdoc, Division of Applied Mathematics

RESEARCH/TEACHING INTERESTS

Nonlinear Stochastic Systems, Stochastic Partial Differential Equations
Statistics of Rare Events, Large Deviation Theory, Uncertainty Quantification
Fluid Dynamics, Financial Mathematics, Fiber Optics
Computational Statistics, Machine Learning, Networks
Dynamical Systems, Integrability, Solitons

ACADEMIC AND PROFESSIONAL HONORS

2004– Appointed to the Doctoral Faculty of CUNY Graduate Center
(Ph.D. Program in Physics)
1992–1998 Member of the German Academic Scholarship Foundation
(Studienstiftung des deutschen Volkes)

GRANTS AND AWARDS

2016 Collaborative Research: Computation of Instantons in Complex Nonlinear Systems
(PI). NSF/DMS-1522737 (\$99,554).

- 2014 Collaborative Research Incentive Grant: Exceptional Points in Cavity Quantum Electrodynamics (Co-PI). CUNY (\$30,000)
- 2014 Rare events in complex stochastic systems (PI). CUNY/TRADB-45-269 (\$5,748)
- 2011 Collaborative Research: Mathematical and Computational Methods for Stochastic Systems in Nonlinear Optics (PI). NSF/DMS-1108780 (\$148,866)
- 2010 Improving Undergraduate Mathematics Learning (Co-PI). CUNY (\$86,124).
- 2010 Averaging methods for the noise-perturbed Ginzburg-Landau equation in optical systems (PI). CUNY/PSCREG-41-991 (\$2,751)
- 2009 II-EN: City University of New York - Computing Research Infrastructure (Co-PI). NSF/CNS-0855217 (\$452,410).
- 2009 Impact of microscopic noise on nonlinear optical transmission systems (PI). CUNY/PSCREG-40-818 (\$3,168)
- 2008 Collaborative Research Incentive Grant: Multi-dimensional quickest detection (Co-PI). CUNY (\$38,000)
- 2008 Impact of perturbations on ultra-short solitary waves in optical media (PI). NSF/DMS-0807396 (\$91,953)
- 2007 Student-Faculty Research Technology Grant (\$990)
- 2006 A path integral method to characterize the effect of fast-scale noise (PI). CUNY/ PSCREG-38-860 (\$3,900)
- 2005 Optimal Prediction for Nonlinear Optical Transmission Systems (PI). CUNY/ PSCREG-37-454 (\$3,155)
- 2005 Summer Research Grant (PI). CUNY (\$2,000)
- 2004 Approximating Maxwell's Equations in the Regime of Ultra-Short Pulses (PI). CUNY/ PSCOOC-36-176 (\$3,600)

PUBLICATIONS

Peer-Reviewed Articles

- 2018 G. Poppe and T.Schäfer: "Computation of minimum action paths of the stochastic nonlinear Schrödinger equation with dissipation." J. Phys. A: Math. Theor. 51 (2018) 335102.
- 2017 T. Grafke, T.Schäfer, and E. Vanden-Eijnden: "Long Term Effects of Small Random Perturbations on Dynamical Systems: Theoretical and Computational Tools", in "Recent Progress and Modern Challenges in Applied Mathematics, Modeling and Computational Science" (Fields Institute Communications 79), eds. R. Melnik, R. Makarov, J. Belair. Springer, New York (2017) 27-56.
- 2017 X. Gao, B. Wu, T.Schäfer: "Introducing an analytical solution and an improved one-factor gaussian copula model for the pricing of heterogeneous CDOs". International Journal of Financial Engineering 4 (2017) 1750038.
- 2016 J. Friedrich, H. Homann, T.Schäfer, R. Grauer: "Longitudinal and transverse

- structure functions in high Reynolds-number magneto-hydrodynamic turbulence”. *New Journal of Physics* 18 (2016) 125008.
- 2015 J. Vukadinovic, E.Dedits, A.C. Poje, T.Schäfer: “Averaging and spectral properties for the 2D advection-diffusion equation in the semi-classical limit for vanishing diffusivity”. *Physica D* 310 (2015) 1-18.
- 2015 T. Grafke, R. Grauer and T.Schäfer: “The instanton method and its numerical implementation in fluid mechanics”. *J. Phys. A: Math. Theor.* 48 (2015) 333001.
- 2015 T. Grafke, R. Grauer, T.Schäfer, and E. Vanden-Eijnden: Relevance of instantons in Burgers turbulence. *Eurphysics Letters* 109 (2015) 34003.
- 2014 H. Zhang, O. Hadjiliadis, T.Schäfer, and H. V. Poor: “Quickest Detection in Coupled Systems”. *SIAM J. Control Optim.* 52(3) (2014) 1567-1596.
- 2014 T. Grafke, R. Grauer, T.Schäfer, and E. Vanden-Eijnden: “Arclength Parametrized Hamilton’s Equations for the Calculation of Instantons”. *SIAM Multiscale Model. Simul.* 12(2) (2014) 566-580.
- 2014 R. Stern, F. Effenberger, H. Fichtner, T.Schäfer: “The space-fractional diffusion-advection equation: Analytical solutions and critical assessment of numerical solutions”. *Fractional Calculus and Applied Analysis* 17 (2014) 171-190.
- 2014 L. Kurt and T.Schäfer: “Propagation of ultra-short solitons in stochastic Maxwell’s equations”. *Journal of Mathematical Physics* (2014) 011503 (11pp).
- 2013 L. Kurt, Y. Chung, T.Schäfer: “Higher-order corrections to the short-pulse equation”. *J. Phys. A: Math. Theor.* 46 (2013) 285305 (13pp).
- 2013 T. Grafke, R. Grauer, T.Schäfer: “Instanton filtering for the stochastic Burgers equation”. *J. Phys. A: Math. Theor.* 46 (2013) 062002 (7pp) Fast Track Communication
- 2011 T. Schäfer and R. O. Moore: “A path integral method for coarse-graining noise in stochastic differential equations with multiple time scales”. *Physica D* 240 (2011), 89-97.
- 2009 T. Schäfer, A. C. Poje, J. Vukadinovic: “Averaged dynamics of time-periodic advection diffusion equations in the limit of small diffusivity”. *Physica D* 238 (2009)
- 2008 R. L. Horne, C. K. R. T. Jones, T. Schäfer: “The suppression of Four-Wave Mixing by Random Dispersion”. *SIAM J. Appl. Math.* 69 (2008) 690-703.
- 2007 Y. Chung and T. Schäfer: “Stabilization of ultra-short pulses in cubic nonlinear media”. *Phys. Lett. A* 361 (2007) 63-69.
- 2005 R. O. Moore, T.Schäfer, and C. K. R. T. Jones: “Soliton broadening under random dispersion fluctuations: Importance sampling based on low-dimensional reductions”. *Opt. Comm.* 256 (2005) 439-450.
- 2005 J. A. Posth, E. W. Laedke, T.Schäfer, K. H. Spatschek: “Quasi-particle approach for interacting optical multiple pulses”, *Opt. Comm.* 246 (2005) 529-544.
- 2005 Rudy L. Horne, C. K. R. T. Jones, T. Schäfer: “The effects of weak randomness on pulse interactions and four-wave mixing products”, *Physica D* 205 (2005) 70-79.

- 2005 Y. Chung, C. K. R. T. Jones, T. Schäfer, C. E. Wayne: "Ultra-short pulses in linear and nonlinear media", *Nonlinearity* 18 (2005) 1351-1374.
- 2004 T. Schäfer and C. E. Wayne, Propagation of ultra-short optical pulses in cubic nonlinear media, *Physica D* 196 (2004) 90-105.
- 2004 M. Chertkov, I. Gabitov, I. Kolokolov, T. Schäfer: "Periodic Compensation of Polarization Mode Dispersion", *JOSA B* 21 (2004) 486-498.
- 2003 J. A. Posth, T. Schäfer, E. W. Laedke, K. H. Spatschek: "Fast optimization procedures for third-order dispersion management", *Optics Communications* 219 (2003) 241-249.
- 2002 T. Schäfer, R. O. Moore, C. K. R. T. Jones: "Pulse propagation in media with deterministic and random dispersion variations", *Optics Communications* 214 (2002) 353-362 .
- 2002 Fiorenzo G. Omenetto, Yojin Chung, Dzmitry Yarotski, Tobias Schaefer, Ildar Gabitov, Antoinette J. Taylor: "Phase analysis of nonlinear femtosecond pulse propagation and self-frequency shift in optical fibers" , *Optics Communications* 208 (2002) 191-196.
- 2002 T. Schäfer, E. W. Laedke, M. Gunkel, C. Karle, A. Posth, K. H. Spatschek, and S. K. Turitsyn: "Optimization of dispersion-managed optical fiber lines", *IEEE J-LT*, Vol 20, No. 9, 2002, 946-952.
- 2001 T. Schäfer, V. Mezentsev, K. H. Spatschek and S. K. Turitsyn: "Dispersion-managed soliton as a ground state of a macroscopic nonlinear quantum oscillator", *Proc. R. Soc. Lond. A* (2001) 273-282.
- 2000 Ildar Gabitov, Tobias Schäfer, Sergei K. Turitsyn: "Lie-transform averaging in nonlinear optical transmission systems with strong and rapid periodic dispersion variations", *Physics Letters A* 265 (2000) 274-281.
- 1999 S. K. Turitsyn, N.J. Doran, J. H. B. Nijhof, V. K. Mezentsev, T. Schäfer: "Dispersion- Managed Solitons" , in: "Optical solitons: Theoretical challenges and industrial perspectives" eds. V. E. Zakharov and S. Wabnitz. Springer Verlag, Berlin, 1999, pp. 91.
- 1999 E. W. Laedke, N. Goder, T. Schaefer, K. H. Spatschek, S. Turitsyn: "Improvement of optical fibre systems performance by optimisation of receiver filter bandwidth and use of numerical methods to evaluate Q-factor.", *Electronics Letters* , Vol. 35, No. 24, 1999, 2131-2133.
- 1999 S. K. Turitsyn, T. Schäfer, K. H. Spatschek, V. K. Mezentsev: "Path-averaged chirped optical soliton in dispersion-managed fiber communication lines", *Optics Communications* 163 (1999) 122-158.
- 1999 Turitsyn, S. K., Schafer, T., Mezentsev, V. K.: "Generalized root-mean-square momentum method to describe chirped return-to-zero signal propagation in dispersion- managed fiber links", *IEEE Photonics Technology Letters*, 11, 2 (1999) 203-205.
- 1998 Turitsyn, S. K., Schafer, T., Mezentsev, V. K.: "Self-similar core and oscillatory

- tails of a path-averaged chirped dispersion-managed optical pulse”, *Optics Letters* 23, 17 (1998) 1351-1353.
- 1998 Sergei K. Turitsyn, Tobias Schaefer, Vladimir K. Mezentsev: “Generalized momentum method to describe high-frequency solitary wave propagation in systems with varying dispersion”, *Physical Review E*, Vol. 58, No. 5, 1998, R5264-R5267.
- 1998 S. K. Turitsyn, I. Gabitov, E. W. Laedke, V. K. Mezentsev, S. L. Musher, E. G. Shapiro, T. Schäfer, K. H. Spatschek: “Variational approach to optical pulse propagation in dispersion compensated transmission systems”, *Optics Communications* 151 (1998) 117-135.

Working Papers

- 2015 D. Lesnik, T. Schäfer: “A state vector algebra for algorithmic implementation of second-order logic”, Preprint, arXiv:1312.2551v3 [cs.AI]
- 2012 E. Dedits, A. C. Poje, T. Schäfer, J. Vukadinovic, “Symmetrization of advection-diffusion operators”, Preprint, arXiv:1002.3847v2 [physics.flu-dyn]

CONFERENCES AND TALKS

- 2017 Talk at the CUNY Graduate Center (Mathematical Physics, Fourier Analysis, and Applications Seminar): “Role of instantons in complex stochastic systems”.
- 2016 Talk at Warwick, UK: “Computation of instantons and the stochastic Burgers equation”.
- 2016 Talk at Fordham University, NY: “A Large Deviations approach to Burgers turbulence”.
- 2016 Talk at the Fields Institute, Canada: “Instantons and Burgers Turbulence: Recent Progress”.
- 2014 Talk at the University of California, Santa-Barbara: “Path-integrals, instantons, and the stochastically driven Burgers equation”.
- 2014 Talk at the University of Bochum: “Efficient Computation of Instantons”
- 2012 Talk at the CUNY Graduate Center: “Rare events, instantons, and Burgers’ turbulence”.
- 2012 Talk at the Watson Institute (IBM): “Computation of rare events in complex systems”.
- 2011 Talk at the workshop on wave breaking and global solutions in the short-pulse dispersive equations at the Fields Institute, Toronto: Title: “The NLSE and SPE as approximations of a nonlinear wave equation”.
- 2010 Talk at the CUNY Graduate Center: “Two exit time problems”.
- 2010 Talk at the SIAM conference on nonlinear waves and coherent structures: Title: “A Lie-transform based idea to treat weakly stochastic Hamiltonian systems”.
- 2010 Talk at the University of Bochum, Germany: “Symmetrization of advection-diffusion operators”.

- 2010 Talk at the conference: “Frontiers in applied and computational mathematics”, NJIT, NJ. Title: “A Lie transform method for stochastic dynamical systems”.
- 2009 Talk at the SIAM Annual Meeting (AN09) in Denver, CO. Title: “Impact of random variations on ultra-short solitons in cubic nonlinear media”.
- 2009 Talk at the CUNY Graduate Center (Stochastic PDE Reading Seminar). Title: “Brownian Motion: Examples”.
- 2008 Talk at the AIMS International Conference, Arlington, TX. Title: “Coarse-graining noise in nonlinear systems with scale-separation.”
- 2008 Talk at the CUNY Graduate Center (Mini-Lecture Series in Financial Mathematics). Title: “Continuous time models, risk-neutral measures and deriving the Black-Scholes formula using the Girsanov Theorem.”
- 2008 Talk at the Seminar of the Department of Mathematical Sciences, Montclair State University, Montclair, NJ. Title: “Coarse-graining of noise in nonlinear systems with scale-separation.”
- 2008 Talk at the AMS regional meeting at New York University, New York, NY. Title: “Impact of stochastic perturbations on ultra-short solitons in cubic nonlinear media.”
- 2008 Talk at the CUNY Graduate Center (Mini-Lecture Series in Financial Mathematics). Title: “The Black-Scholes Formula for European Call Options.”
- 2008 Talk at the CUNY Graduate Center (Mini-Lecture Series in Financial Mathematics). Title: “Option Pricing on Binomial Trees.”
- 2007 Talk at the Applied Mathematics Seminar of the CUNY Graduate Center, New York, NY. Title: “Propagation of ultra-short optical pulses in nonlinear and random media.”
- 2007 Talk at the University of Bochum, Germany. Title: “Coarse-Graining Noise in Stochastic Ordinary Differential Equations with Multiple Time Scales.”
- 2007 Talk at the AMS regional meeting at Stevens Institute of Technology, Hoboken, NJ. Title: “Influence of microscopic noise on large-scale evolution of dispersion-managed solitons.”
- 2007 Talk at the 5th IMACS conference on Nonlinear Evolution Equations and Wave Phenomena, Athens, GA. Title: “Averaged Dynamics of Stochastic Maxwell’s Equations in the Short-Pulse Regime.”
- 2007 Talk at the conference FACM ’07 (Frontiers in applied and computational mathematics), Newark, NJ. Title: “Coarse-Graining Noise in Stochastic Ordinary Differential Equations with Multiple Time Scales.”
- 2006 Talk at the SIAM Conference on Nonlinear Waves and Coherent Structures, Seattle. Title: “Ultra-Short Solitary Waves in Cubic Nonlinear Media.”
- 2006 Talk at the SIAM Annual Meeting 2006, Boston. Title: “Nonlocal stabilization of ultra-short pulses in cubic nonlinear media.”
- 2006 Talk at the conference “Nonlinearity and Randomness in Complex Systems”, State University of New York at Buffalo. Title: “Stabilization of ultra-short pulses in

- cubic nonlinear media.”
- 2005 Visit to Ruhr-Universitaet Bochum, Germany. Talk: “Ultra-short pulses in nonlinear media.”
- 2005 Conference: “Frontiers in Applied and Computational Mathematics”, Newark, NJ. Poster: “Impact of microstructures on macroscopic observables in nonlinear systems.”
- 2005 Visit to NJIT, NJ. Talk: “Approximating nonlinear Maxwell’s Equations.”
- 2005 Conference: “Computational Fuel Cell Dynamics III”, Banff Research Center, Canada. Talk: “Mathematical Modeling of Membrane Swelling.”
- 2005 Visit to Ruhr-Universitaet Bochum, Germany. Talk: “Introduction to Optimal Prediction.”
- 2004 Conference: SIAM Annual Meeting, Portland. Talk: “Ultra-Short Pulses in Cubic Nonlinear Media.”
- 2004 Visit to the University of Twente, Netherlands. Talk: “Nonlinear Pulses In Optical Fibers.”
- 2004 Visit to Ruhr-Universitaet Bochum, Germany. Talk: “Nonlinear propagation of short pulses in optical media.”
- 2003 Visit to FESTA (Femtosecond Technology Research Association), Tsukuba, Japan. Talk: “Pulse propagation in nonlinear optical media.”
- 2003 Conference: SIAM conference on applications of dynamical systems, Snowbird, UT. Talk: “Short Pulses in Optical Fibers: A new equation.”
- 2003 Conference: IMACS: Nonlinear evolution equations and wave phenomena, Athens, GA. Talk: “A new model for short pulses in optical fibers.”
- 2003 Visit to CNLS, Los Alamos, NM. Talk: “Modeling nonlinear pulse propagation in optical fibers.”
- 2002 Visit to Boston University, MA. Talk: “A finite-dimensional model describing pulse propagation in optical fibers.”
- 2002 Summer school: “Applied Analysis”, University of Twente, Holland. Lectures: “Derivation of the Nonlinear Schroedinger Equation” and “Random Dispersion and Gauss-Hermite Expansion.”
- 2002 Workshop: “Applied Mathematics and Analysis”, Brown University, RI. Talk: “Polarization Mode Dispersion in Optical Fiber Links.”
- 2002 Visit to RPI, New York. Talk: “Dispersion-managed solitons and optical communications.”
- 2001 Visit to Universität Essen, Germany. Talk: “Impact of dispersion compensation on solitons in optical transmission lines.”
- 2001 Workshop: “Statistical and Nonlinear Physics of Fiber Communications” at Los Alamos, NM. Talk: “Polarization mode dispersion in a medium with random birefringence.”

TEACHING EXPERIENCE

College of Staten Island, CUNY

Spring 2018	MTH 415 Mathematical Biology
Fall 2018	MTH 231 Calculus I, MTH 233 Calculus III
Spring 2017	MTH 231 Calculus I, MTH 214 Statistics
Fall 2016	MTH 233 Calculus III, MTH 416 Mathematics of Finance
Fall 2015	MTH 231 Calculus I, MTH 229 Calculus Computer Lab
Spring 2015	MTH 231 Calculus I
Fall 2014	MTH 416 Mathematics of Finance
Spring 2014	MTH 214 Statistics
Fall 2013	MTH 416 Mathematics of Finance, MTH 229 Calculus Computer Lab
Spring 2013	MTH 437 Mathematical Modeling, MTH 594 Independent Study (Supervision of Honors Thesis)
Fall 2012	MTH 113 Introduction to Probability and Statistics, MTH 232 Calculus II
Spring 2011	MTH 113 Introduction to Probability and Statistics, MTH 594 Independent Study (Supervision of Honors Thesis)
Fall 2010	MTH 416 Mathematics of Finance
Spring 2010	MTH 113 Introduction to Probability and Statistics
Fall 2009	MTH 113 Introduction to Probability and Statistics (Discovery Institute)
Spring 2009	MTH 416 Mathematics of Finance
Fall 2008	MTH 113 Introduction to Probability and Statistics (Discovery Institute)
Spring 2008	MTH 335 Numerical Analysis, MTH 123 College Algebra, MTH 416 Mathematics of Finance (Independent Study), MTH 415 Mathematical Biology (Independent Study)
Fall 2007	MTH 311 Probability Theory and Statistics, MTH 113 Introduction to Probability and Statistics (Discovery Institute)
Spring 2007	MTH 516 Mathematics of Finance, MTH 113 Introduction to Probability and Statistics (Discovery Institute), MTH 594 Independent Study (Supervision of Honors Thesis), MTH 592 Independent Study (Supervision of Honors Thesis)
Fall 2006	MTH 330 Applied Mathematical Analysis I, MTH 594 Independent Study (Supervision of Honors Thesis)
Spring 2006	MTH 516 Mathematics of Finance, MTH 130 Pre-Calculus Mathematics (Discovery Institute)
Fall 2005	MTH 231 Calculus I
Spring 2005	MTH 231 Calculus I, MTH 123 College Algebra
Fall 2004	MTH 331 Applied Mathematical Analysis II,

MTH 130 Pre-Calculus Mathematics

CUNY Graduate Center

Spring 2018	Finance for Scientists (Physics Program)
Fall 2016	Mathematical Methods (Physics Program)
Spring 2016	Finance for Scientists (Physics Program)
Fall 2015	Mathematical Methods (Physics Program)
Fall 2014	Mathematical Methods (Physics Program)
Fall 2013	Mathematical Methods (Physics Program)
Fall 2012	Analytical Dynamics (Physics Program)
Fall 2010	Analytical Dynamics (Physics Program)
Fall 2009	Analytical Dynamics (Physics Program)
Fall 2008	Analytical Dynamics (Physics Program)
Fall 2007	Analytical Dynamics (Physics Program)
Fall 2006	Analytical Dynamics (Physics Program)
Fall 2005	Analytical Dynamics (Physics Program)

University of Bochum, Germany

Spring 2012	Turbulence
Fall 2011	Extreme Events

University of North Carolina, Chapel Hill

Fall 2003 M128 Mathematical Methods for the Physical Sciences I

Brown University, Rhode Island

Fall 2001 AMS 281 Mathematics of Optical Communications

STUDENTS

PhD students

2018	PhD thesis advisor of George Poppe (Physics) Thesis: "Physical Applications of the Geometric Minimum Action Method"
2016	PhD thesis advisor of Nicholas Spizzirri (Mathematics) Thesis: "An Averaging Method for Advection-Diffusion Equations"
2012	PhD thesis advisor of Yauheni Dzedzits (Physics) Thesis: "Averaged dynamics of the advection-diffusion equation and applications to ocean flows."
2011	PhD thesis co-advisor of Xin Gao (Physics) Thesis: "Mathematical and physical analysis of pricing models for structured financial securities"

2011 PhD thesis co-advisor of Levent Kurt (Physics)
Thesis: “Modeling of Ultra-Short Soliton Propagation in Deterministic and Stochastic Nonlinear Cubic Media”

Undergraduate students

2018 Honors thesis advisor of Serena DiLeonardo
Thesis: “Stochastic Population Dynamics”

2016 Honors thesis advisor of Ariana Zuberovic
Thesis: “Modeling the Value of Project Labor Agreements: the No-Strike Clause Option”

2016 Honors thesis advisor of Bassem Nawar
Thesis: “Stochastic Differential Equations, Monte-Carlo Simulations, and the Statistics of Randomly Advected Triangles”

2016 Honors thesis advisor of Keith Thompson
Thesis: “Option Pricing: Foreign Exchange and Quantos”

2013 Honors thesis advisor of Andrea Cella
Thesis: “Gaussian and Non-Gaussian Statistics of Financial Markets”

2011 Honors thesis advisor of Vadim Savenkov
Thesis: “Closed-Form Solutions to Diffusive Partial Differential Equations”

2010 Honors thesis advisor of Diana Abadi
Thesis: “The Method of Multiple Scales for Ordinary Differential Equations”

2010 Honors thesis advisor of Bernard Adamitey
Thesis: “Numerical Solution of Partial Differential Equations Using Fast Fourier Transform”

2008 Honors thesis advisor of Eric Lehrer
Thesis: “Protein Folding as a Random Walk in a Rough Potential”

2007 Honors thesis advisor of Linda Dolan
Thesis: “Performance of Mr. Bayes on an MPI Research Cluster”

2007 Honors thesis advisor of Sandrine Tchatie
Thesis: “Discrete and Continuous Models of Option Pricing”

SERVICE

Associate Editor

International Journal of Nonlinear Sciences and Numerical Simulation

Referee

Advances in Nonlinear Optics

Chaos, Solitons & Fractals

Entropy

Journal of Computational and Applied Mathematics

Journal of Physics A: Mathematical and General
 Journal of Physics B: Quantum and Semiclassical Optics
 Journal of Lightwave Technology
 Journal of Optics A
 Journal of the Optical Society of America B
 Mathematical Methods in the Applied Sciences
 Mathematics and Computers in Simulation
 Mathematische Nachrichten
 Nonlinear Differential Equations and Applications
 Optics Communications
 Physica D: Nonlinear Phenomena
 Physical Review A
 Physical Review E
 Physical Review Letters
 PLOS One
 SIAM Journal on Numerical Analysis
 SIAM Journal on Applied Mathematics

Service to Community

2009 Outreach to the high schools by participation in the Teacher Academy Replication Grant
 2005 Math Olympics

Service to CUNY

2016– Physics Program Credentials Committee
 2014–2018 Qualifying Exam Committee for PhD candidates in Physics (chair)
 2006–2014 Qualifying Exam Committee for PhD candidates in Physics
 2013–2016 Physics PhD Candidates Admissions Committee
 2013–2015 Organizer of the Applied Mathematics Seminar (CUNY Graduate Center)
 2013 Co-organizer of the ITS focus program on Euler equations

Service to College

2014–2017 Member of Faculty Senate (Delegate-at-Large)
 2016 Search Committee for the Dean of the Division of Science and Technology
 2015 Physics Search Committee
 2010 Member of Middle States Accreditation Working Group
 2010 Search Committee for the Computing Systems Manager (High Performance Computing Center)

2010	Search Committee for the Director of the “College Now” program.
2009	Search Committee for the VP of Student Affairs
2008	Chemistry Search Committee
2008	STEAM Executive Committee
2007–2008	General Education Committee

Service to Department

2013	Data Science Search Committee (chair)
2012	Probability Math Search Committee (chair)
2009	Statistics Math Search Committee
2008–2009	Faculty Advisor of the “Math Club”
2007	Pure Math Search Committee
2007	Applied Math Search Committee
2006	Applied Math Search Committee
2005	Applied Math Search Committee

CONSULTING ENGAGEMENTS

2017–	Consulting for Stratyfy. Development of algorithms for complex data analytics.
2006	Consulting for ADI Soft. Development of algorithms for the analysis of atomic force microscopy (AFM) measurements.

SKILLS AND METHODS

Statistical and Computational Methods

Computational statistics and machine learning, data mining, python (including numpy, scipy, pandas, matplotlib, and scikit-learn), R, Java, C/C++, Matlab, HTML, high-performance computing (MPI, CUDA)

Languages

German, English, French, Spanish, Polish

Updated March 2019