

Gwen Spencer
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CURRENT

TT Assistant Professor **Smith College,** **July 2014 - Ongoing**
Mathematics and Statistics

Regular tenure-track faculty in the Department of Mathematics and Statistics.
Courtesy appointment and Steering Committee for new Statistics and Data Science Program.

EDUCATION

Cornell University, Ithaca, NY.

- PhD, Operations Research, May 31, 2012. Dissertation: “Approximation algorithms for stochastic combinatorial optimization, with applications in sustainability.” Advisor: Prof. David Shmoys. **GPA: 3.988**. PhD minors: Computer Science and Applied Math.
- M.S. Operations Research, May 2010.
- Course work includes: Combinatorial Optimization, Linear Programming, Algorithms (incl. topics courses in Network Flow, Scheduling, and Approximation), Nonlinear Programming, Revenue Management via Dynamic Programming, Computational Sustainability, Game Theory, Algorithmic Game Theory, Stochastic Processes, Probability, Statistics.

Massachusetts Institute of Technology, Boston, MA.

- Visiting Graduate student, Fall 2010.

Harvey Mudd College, Claremont, CA.

- B.S. in Mathematics (Graduated with High Distinction), May 2005. **GPA: 3.869**.

RESEARCH EXPERIENCE

Research Member **Mathematical Sciences** **Fall 2017**
Research Institute, Berkeley

Research Member in semester program on Geometric and Topological Combinatorics.

Postdoctoral Fellow **Neukom Institute,** **Aug 2012-June 2014**
Dartmouth College

Joint in Computer Science and Environmental Studies. Developing interdisciplinary research projects with faculty from several departments. Projects included understanding spread of environmentally-conscious personal behavior in social networks, and a computational project on human-activity-borne invasive species.

Research Assistant **Prof. David Shmoys,** **Spring 2008-June 2012**
Cornell University

Worked on topics in combinatorial optimization including approximation algorithms for stochastic variants of NP-hard combinatorial optimization problems and applications in sustainability. Prepared several papers, presented work at international peer-reviewed conferences, etc.

Optimization Consultant **Registrar’s Office,** **June 2011-Nov 2011**
Cornell University

Developed integer-program optimization model in Ampl/CPLEX to restructure groupings of multi-section classes to minimize double-scheduling of final exams. Generalized existing scheduling optimization code to investigate calendar pattern alternatives for Finals Week schedule. Collaborated with Registrar’s office staff. Jointly developed new measures of exam-schedule intensity.

Watson Fellow

Watson Foundation

Aug 2005-Aug 2006

Conducted independent self-designed study for one year outside the United States: *Reinterpreting the Gender of Science and Technology in Emerging Economies*. Conducted 50+ personal interviews with scientists and engineers in Tanzania, Swaziland, South Africa, India and Ireland.

Research Assistant

**Prof. Francis Su,
Harvey Mudd College**

Summer 2004

Clarified relationships between fixed-point theorems in combinatorics and topology. Continued this line of work for undergraduate mathematics thesis. Delivered talk on this work at AMS/MAA Joint Math Meetings.

PUBLICATIONS

Note: The convention in mathematics and theoretical computer science is to list authors in alphabetical order. In economics, engineering, and the life sciences authors are ordered by level of contribution.

- G. Spencer, S. Carrattini, R.B. Howarth. “Short-term Interventions for Long-term Change: Spreading Stable Green Norms in Networks.” To appear at *Review of Behavioral Economics*.
- D. Rolnick and G. Spencer. “On the Robust Hardness of Gröbner basis Computation.” *Journal of Pure and Applied Algebra (JPPA)*, Volume 223, Issue 5, May 2019, Pages 2080-2100.
- G. Clark and G. Spencer. “New bounds on the biplanar crossing number of low-dimensional hypercubes: How low can you go?” *Bulletin of the Institute of Combinatorics and its Applications (BICA)* 83(2018), 52-60.
- G. Spencer. “Clustered Networks Protect Cooperation Against Catastrophic Collapse.” *Network Science*, first available online May 15, 2018, issue and page numbers tba.
- + A peer-reviewed 3-page Extended Abstract on this work was also accepted to appear in the proceedings of *Complex Networks 2017*.
- Y. Wei*, G. Spencer. “Measuring the value of accurate link prediction for network seeding.” *Computational Social Networks*, 2017, 4:1. *Smith student.
- G. Spencer. “Sticky Seeding in Discrete-Time Reversible-Threshold Networks.” *Discrete Mathematics and Theoretical Computer Science (DMTCS)* vol. 18:3, 2016, 2.
- Jesús A. De Loera, Susan Margulies, Michael Pernpeintner, Eric Riedl, David Rolnick, Gwen Spencer, Despina Stasi, Jon Swenson “Gröbner Bases and Nullstellensätze for Graph-Coloring Ideals.” Proceedings of the *International Symposium on Symbolic and Algebraic Computation (ISSAC July 2015)*.
- D. Shmoys, G. Spencer. “Extended Journal Version: Approximation algorithms for fragmenting a graph against a stochastically-located threat.” *Theory of Computing Systems 01/2015*, 56(1). pp 96-134.
- G. Spencer. “Robust Cuts Over Time: Combatting the Spread of Invasive Species with Unreliable Biological Control.” *Proceedings of the 26th Conference on Artificial Intelligence (AAAI 2012)*.
- D. Shmoys, G. Spencer. “Approximation algorithms for fragmenting a graph against a stochastically-located threat.” *Proceedings of the 2011 Workshop on Approximation and Online Algorithms*. pp. 123-136.
- I. Gorodezsky, R. Kleinberg, D.B. Shmoys, G. Spencer. “Improved lower bounds for the universal and a priori TSP.” *APPROX-Random Proceedings 2010*, pp. 178-191.
- G. Spencer, F. Su. “The LSB Theorem Implies the KKM Lemma.” *The American Mathematical Monthly*, 114:2 (February 2007).

In Progress/Preparation:

- T. Liu.* G. Spencer. “Biased Edge-Weighting Schemes Can Boost Reproducibility of Centrality Measures in Brain Networks.” Submitted. *Smith student.
- + A Program-committee reviewed 2-page Extended Abstract on this work was accepted to appear as a poster at *SIAM Network Science, 2018* in Portland, Or.
- J. Asplund, E. Czabarka, G. Clark, G. Cochran, A. Hamm, G. Spencer, L. Szekely, L. Taylor, Z. Wang. “Using Block Designs in Crossing Number Bounds.” Under Revision at *Journal of Combinatorial Designs*.
- E. Mainou, G. Spencer, D. Shepardson, R. Dorit. “The wisdom of a crowd of near-best fits: Drug-Resistant Tuberculosis in the United States.” Submitted.
- R. Bland, D. Levchenkov, D. Shmoys, G. Spencer. Draft in Progress: “Optimizing Exam Scheduling at Cornell University.” In preparation.

Unpublished, available online:

- G.Spencer. “Combinatorial consequences of relatives of the Lusternik-Schnirelmann-Borsuk Theorem.” Undergraduate thesis, Harvey Mudd College.
Online at <http://www.math.hmc.edu/seniorthesis/archives/2005/gspencer/gspencer-2005-thesis.pdf>
- Available online, unfinished: G. Spencer, F. Su. “Using Topological Methods to Force Maximal Complete Bipartite Subgraphs Of Kneser Graphs.”
<http://www.math.hmc.edu/seniorthesis/archives/2005/gspencer/kneser.pdf>

Published Non-research Communication in Math Education:

- G. Spencer. “A Revise-and-Resubmit Proof Portfolio.” *MAA Focus: Newsmagazine of the Mathematical Association of America*, Vol 37, No. 2, April/May 2017, p.8-11.
- G. Spencer. “Interdisciplinary Class: A Welcoming Environment.” *MAA Focus: Newsmagazine of the Mathematical Association of America*, Vol 35, No. 4, August/September 2015, p.35-37.
- 15-minute video lecture. *Preparation for Industrial Careers in Mathematics Video Series (produced by the Mathematical Association of America)*. Available on the MAA Youtube Channel, and on the MAA Programs Webpage: <http://www.maa.org/programs/faculty-and-departments/pic-math/solving-real-world-problems>

HONORS AND AWARDS

- **Research Member, MSRI, Berkeley**, Fall 2017.
- **Neukom Institute Postdoctoral Fellowship, Dartmouth College**, 2012-2014.
- **National Science Foundation Graduate Research Fellowship, NSF**, 2007-2010.
- **Watson Fellowship**, The Watson Foundation, 2005-2006.
- **Young Researcher Attendee: 1st Heidelberg Laureate Forum**, September 2013.
- **Sherri Koenig Stuewer Fellowship Award**, Cornell ORIE Department, May 2011.
- **Cornell Graduate Fellowship**, Cornell University, 2006-2007.
- **Shum Award**, Cornell University, 2006-2008.
- **Nova Scholar**, Harvey Mudd College, 2001-2005.
- **Radley Prize in Humanities and Social Sciences**, Harvey Mudd College, 2005.
- **James Prize in Mathematics**, Harvey Mudd College, 2002.
- **Jean and Joe Platt Freshman Prize**, Harvey Mudd College, 2002.
- **Freshman Writing Prize**, Harvey Mudd College, 2002.
- **Top 500: William Lowell Putnam Mathematical Competition**, 2004.
- **Recognized Undergraduate Poster**, AMS/MAA Joint Math Meetings, Jan. 2005.

- **Meritorious Recognition** (team of 3), COMAP Mathematical Contest for Modeling, 2003.
- **National Merit Scholarship**, 2001.

Recent Funded Workshops and Travel Awards:

ISMP '09, DIMACS '09, ADFOCS Summer School '09, IPAM '09, Women in Theory (IAS) '10, CompSust '10, PIMS Biological Invasions Summer School (with *Best Poster Award*) '13, Mathematics of the Planet Earth Travel Grant '13, AMS Mathematical Research Communities Participant (Algebraic and Geometric Methods in Applied Discrete Mathematics) '14, American Institute of Mathematics Workshop on Multi-scale Modelling of the Food System Participant '15, Mathematics of the Planet Earth Workshop on Management of Natural Resources (Howard/DIMACS) '15, Travel Support for teaching talk: Sherrerd Center for Teaching and Learning '16, AMS Mathematical Research Communities Participant (Beyond Planarity) '17, Anita Borg Grace Hopper Conference Faculty Scholarship '17, Invited member of a NIMBios-funded (National Institute for Mathematical and Biological Synthesis) Working Group on decision-making in bio-diversity conservation.

Funded Professional Development (Undergraduate Teaching and Research Mentoring):

- PIC Math Faculty Cohort 2016-2017 (an NSF-funded MAA/SIAM Program)
Preparation for Industrial Careers in Mathematics (Undergrad Research-Mentorship Training)
- Mathematical Association of America Project NExT Dolciani Fellow 2014-2015
- Computational and Visualization Consortium Workshop (Teaching with R), Summer 2014

TEACHING

Professional Development:

Smith Internal Program: Spring 2017 Teaching/Learning Seminar for Junior Faculty

Summer 2017: National Center for Faculty Development and Diversity Faculty Success Program.

Past:

Instructor, MATH 255 Smith College Spring 2018

(28 students) Graph Theory. Course builds from immediate implications of definitions and classic existence results to careful analysis of graph algorithms. Proof-based lectures paralleled by a series of MATLAB-based labs that develop key questions in modern network science (degree distribution, degrees of separation, etc). Supplementing traditional exams, students conduct team-based final project to extend a topic from class (mathematical or computational). Main project deliverable is a class presentation. Managing two graders.

Instructor, MATH 153 Smith College Spring 2018

(35 students) Discrete Mathematics. Survey of fundamental concepts in Combinatorics (including Discrete Probability), Number Theory, and Graph Theory. Course emphasizes mathematical themes that bridge/connect these areas, and builds familiarity reading and writing around foundational proof techniques: induction, contradiction, direct, combinatorial. Traditional lecture/exam format augmented by group "Proof Lab" days with peer-edit and revise-and-resubmit Proof Portfolio feature. Managing two graders.

Special Studies, MTH 400 Smith College Spring 2018

Literature review and manuscript preparation for stochastic simulation study conducted during summer research (Qiaomei Li and Emmely Rogers).

Special Studies, MTH 400 Smith College Spring 2018

Literature review and computational study on the role of unsupervised machine learning for automated fraud detection (Risa Yamada).

Honors Project, MTH 430D Smith College Fall 2017-Spring 2018

Primary advisor for the Computer Science Honors Thesis of Ted McCulloch. Thesis explores the efficacy of genetic algorithms in finding optimized strategies for playing Ramsey Games (an alternating triangle-coloring game from Graph Theory). Key issues of interest are defining a rich chromosome, training against a variety of opponents, and varying the structure of the underlying network. Computing in Python. Second reader: Nick Howe, CS.

Honors Project, MTH 430D Smith College Spring 2018

Second reader/advisor for the Computer Science Honors Thesis of Ji Won Chung. Thesis proposes structural graph-theoretic measurements for improving word spotting (an automated classification task) in hand-written documents. Primary Advisor: Nick Howe, CS.

Instructor, MATH 353 Smith College Spring 2017

(22 students enrolled) Senior-level course in Mathematical Optimization. Includes computational lab and modeling component (AMPL with CPLEX/Gurobi). Similar to course at Dartmouth described below.

Instructor, MATH/CSC 205 Smith College Spring 2017

(20 students enrolled) Modeling in the Sciences. A low-prerequisite seminar-style course that develops several key modeling techniques (Compartment models, Markov models, Integer Programming, Dynamic Programming) from introduction to research-level literature review. Themes of convergence, predictability, sensitivity analysis, processes that evolve randomly over time are showcased for a suite of sustainability-related applications. MATLAB-based extended computational labs.

Research Project, MTH 301 Smith College Spring 2017

Advising industrial research project for 4 students to analyze Third-Next-Available data from Cooley-Dickinson Hospital. Goals: optimize/customize weekly scheduling templates to minimize appointment-demand censoring, provide quantitative estimates of access improvements resulting from new hires and demand sharing over matched practices. Statistics and simulations in R.

Honors Project, MTH 430D Smith College Fall 2016-Spring 2017

Research advising for E. Mainou senior honors thesis on mathematical modeling of vaccine-immune Tuberculosis strains. Includes topics in DE-based compartment models, parameter fitting based on real data in R programming language, implementing genetic algorithms, interpreting clustering in a high-dimensional parameter space, sensitivity analysis, etc.

Special Studies, MTH 400 Smith College Spring 2017

Guided literature review on graph-theoretic models and methods for neuroscience (Tingshan Liu).

Instructor, MATH 153 Smith College Fall 2016

(64 students over 2 sections) Discrete Mathematics. See full description under current teaching above.

Instructor, MATH 255 Smith College Spring 2016

(22 students) Graph Theory. See full description under current teaching above.

Instructor, MATH 153 Smith College Spring 2016

(39 students) Discrete Mathematics. See full description under current teaching above.

Special Studies, MTH 400 Smith College Spring 2016

Ongoing research-based independent study for Y. Wei on network seeding under uncertainty.

Special Studies, MTH 400 **Smith College** **Spring 2016**

Advising research-based independent study for Q. Li on graphical near-matroids.

Instructor, MATH 153 **Smith College** **Fall 2015**

(63 students over 2 sections.) Discrete Mathematics. See full description under current teaching above.

Special Studies, MTH 400 **Smith College** **Fall 2015**

Advising research-based independent study for Y. Wei on network seeding under uncertainty.

Instructor, MATH 353 **Smith College** **Spring 2015**

(14 students) Senior-level course in Mathematical Optimization. Includes computational lab and modeling component. Similar to course at Dartmouth below.

Instructor, MATH 153 **Smith College** **Spring 2015**

(35 students) Discrete Mathematics. See full description under current teaching above.

Instructor, MATH 153 **Smith College** **Fall 2015**

(67 students, over 2 sections) Discrete Mathematics. See full description under current teaching above.

Instructor, ENVS 80.4 **Dartmouth College** **Winter 2014**

(9 students + 2 auditors) Original Course: "Computational Toolbox for Environmental Sustainability." Prerequisite-free quantitative/computational tools course for junior/seniors in Environmental Studies, Ecology, Econ and Engineering. Introduces Markov Models, Integer Programming, and Dynamic Programming. Each unit includes: lecture-based mathematical introduction, technical concepts worksheet, extended team take-home computational lab, week-long literature survey/group discussion on classic + recent research articles. Lit-review applications include: natural resource management (forestry, fisheries), conservation, biodiversity, invasive species, also topics in design of efficient systems (public transportation, greener energy/infrastructure, water resources etc). Final computational group modeling project emphasizes primary sources, robustness, sensitivity analysis.

Instructor, CS 84/184 **Dartmouth College** **Winter 2013**

(23 students) Junior/Senior/Masters-level course in Mathematical Optimization. Develops geometric and algebraic views of linear programming in parallel. Proof-based treatment of Simplex Algorithm and Duality. Introduction to classical models in combinatorial optimization. Also: integer programming for NP-hard problems, branch-and-bound, specialized methods, approximation, notions of efficiency. Course includes lectures, weekly homework, computational lab sessions, midterm, final, and project presentation component. Managed a PhD student TA/grader.

Instructor, ENGR 1101 **Cornell University** **Spring 2011**

(28 students) Freshman lecture course introduces classical topics and algorithms in combinatorial optimization, including Linear Programming. Course includes lectures, weekly homework, a weekly computational lab, two midterms and a final exam. Managed two half-time student TAs.

Guest Instructor, INFO 2950 **Cornell University** **Spring 2012**

Substituted for David Williamson: three 75 minute lectures covering approximation algorithms for Traveling Salesman, deterministic finite automata and regular languages, and non-deterministic finite automata.

Peer Writing Tutor **Harvey Mudd College** **Fall 2002-Spring 2005**
Consulted on technical and humanities writing assignments. Also: personal statements, fellowships.

Teaching Assistant, HUM 2 **Harvey Mudd College** **Spring 2005**
under Prof. Marianne de Laet
Jointly developed literature/anthropology course reading list and curriculum during an independent study. During the course: formulated discussion questions, led discussions, met with students.

Teaching Assistant **Summer Institute for** **Summer 2003**
Mathematics, U. Washington
T.A. on topics in Number Theory, Cryptography, Probability, Combinatorics and Ray-tracing Software. Also wrote, administered, and graded a challenge-problem competition, and coordinated activities for students after class hours.

SERVICE AT SMITH COLLEGE

Statistical and Data Sciences Program Steering Committee (invited Spring 2015 - Ongoing).
Co-organized departmental graduation event for undergrads and postbacs, May 2018.
Advising: 2 Liberal-Arts Advisees, 20 Math-Major Advisees, 1 Math-Minor Advisee (2017-2018).
Judge, Consulting Club Case Competition, Smith College, April 2018.
Admission Events: Math Representative at Lunch and Discovery Weekend Dinner (Spring 2018).
Co-organized New mini-Presentation of the Mathematics Major, March 2018.
Advising: 2 Liberal-Arts Advisees, 27 Math-Major Advisees, 1 Math-Minor Advisee (2016-2017).
Faculty organizer for Analytics Career Talk at Smith (28+ students attend). April 2017.
Faculty organizer for Actuarial Career Talk at Smith (25+ students attend). Feb. 2017.
Faculty advisor (Mathematical Contest for Modeling: 12 students participated), Jan 2017.
Tenure-Track Search Committee, Statistics and Data Science (Fall/Spring 2016-2017).
Admission Events: Two Fall Preview Lunches, Women of Distinction Dinner (Fall 2016).
Lunch-time talk for students at Smith: "Math and Stats for Healthcare Logistics." Nov. 2016.
Letters of Recommendation for 24 Smithies: Grad school, REUS, Study Abroad, etc (2015-2016).
Math Forum TAs Co-Organizer, Spring 2016.
Advising: 8 Liberal-Arts Advisees, 19 Math-Major Advisees, 1 Math-Minor Advisee (2015-2016).
Admission Weekend: Discovery Weekend Dinner, Open Campus Lunch (Spring 2016).
Lecturer Search Committee, Mathematics and Statistics (Fall 2015-Spring 2016).
Faculty co-advisor (Mathematical Modeling Club), (invited Spring 2015-Ongoing).
Science Center Fellowship Committee (Goldwater Application Review Committee) Fall 2015.
Admission Fall Preview: Science-Center tour stop, opened classroom to visitors (Fall 2015).
Admission Weekend: Open Campus Lunch, Discovery Weekend Dinner, Spring Preview (2015).
Search Committee, Mass Mutual Fellows, Statistics and Data Science (Spring-Summer 2015).
Mathematics and Statistics Departmental Study-abroad Advisor (2014-2015).
Tenure-track Search Committee, Mathematics and Statistics (Fall/Spring 2014-2015).
Lecturer Search Committee, Mathematics and Statistics (Fall/Spring 2014-2015).
Science Center Fellowship Committee (Goldwater Application Review Committee) Fall 2014.
Statistics and Data Science Task Force (Summer and Fall, 2014).
Invited Faculty Panelist (Wurtele Center: Confidence Panel), November 2014.

ACTIVITIES/OUTREACH

Program Committee Member, SIAM Network Science Meeting, Spring 2018.
Panelist, Connections for Women Workshop, Mathematical Sciences Research Institute, Aug 2017.
Invited "Prime-time Theorem," Hampshire College Summer Session in Mathematics, July 2017.
Invited Writer, NSF-Funded "Planning for a Sustainable Future" Curric. Workshop, (2015-2016).

Invited “Prime-time Theorem,” Hampshire College Summer Session in Mathematics, 2015.
 Invited talk for summer-research undergrads at Mt. Holyoke College, July 2015.
 Invited Plenary Lecturer, MathPath Summer Camp, July 2014.
 Invited Course and Plenary Lecturer (Applied Math), Canada/USA Math Camp, July 2013.
 Association Treasurer, Gamma Alpha Graduate Scientific Association (2010-July 2012).
 Participant, DIMACS Sustainable Planet Curriculum Development Workshop, Oct 2011.
 Field Representative, Cornell Graduate and Professional Student Assoc. (2008-2009, 2009-2010).
 Book Reviewer, *American Women in Mathematics Newsletter*, July 2010, Nov 2012.
 Student Editor, book reviewer, and writer, *Math Horizons Magazine* (2004-2005).

SELECTED RECENT PRESENTATIONS

- **Title TBA.** Seattle University, March 7, 2019.
- Invited Talk at Amazon, “**Uncertainty in Networks: Optimization and the Brain.**” Seattle, WA, June 20, 2018.
- Invited Talk at Williams College, “**Influence Maximization in Networks: Spread Models and Optimization Methods.**” Williamstown, MA, April 27, 2018.
- Invited Talk at CCNY, “**Influence Maximization in Networks: Spread Models and Optimization Methods.**” New York City, April 19, 2018.
- “**Influence Maximization in Networks: Spread Models and Optimization Methods.**” Invited Tutorial at “Advancing Women’s Impact in Mathematics Symposium, New England (AWIMS)” Worcester Polytechnic Institute (WPI), April 7, 2018.
- “**On the Robust Hardness of Grobner Basis Computation.**” Talk at Mathematics Research Communities Reunion, University of South Carolina, Feb 2018.
- “**How Low Can You Go? On the Biplanar Crossing Number of the Hypercube.**” Invited Talk in “Beyond Planarity: Crossing Numbers of Graphs” (a Mathematics Research Communities Session), Joint Mathematics Meeting, Jan 2018.
- “**Too big is better than too small: In pursuit of just right.**” Invited Talk in “Open and Accessible Problems for Undergraduate Research” Session hosted by Council on Undergraduate Research (CUR) and the Center for Undergraduate Research in Mathematics (CURM), Joint Mathematics Meetings, Jan 2018.
- Poster Presentation of peer-reviewed Extended Abstract, “**High Clustering Protects Against Catastrophic Collapse,**” at *Complex Networks 2017*, Lyon, France, November 2017.
- “**Economic spread in networks: theorems, measurements, and uncertainty.**” AMS Sectional Meeting. Special Session on Numerical Analysis and Modeling, Hunter College. May 7, 2017.
- “**A Journey from Very Hard to Close Approximations.**” Focus in Math speaker series. BYU (Brigham Young University). Feb 23, 2017.
- “**Delaying Invasive Spread: Is Effective Control Possible Without Effective Prediction?**” Energy, Natural Resources and the Environment Sponsored Session, INFORMS 2016.
- “**On the Robust Hardness of Grobner Basis Computation.**” Valley Geometry Seminar, UMass Amherst, Sept 2016.
- **Teaching Talk: “A Zero-Prerequisite Sustainability-Focused Computational Modeling Course for Senior Non-Majors.”** SIAM (Society of Industrial and Applied Mathematics) Annual Meeting, July 2016.
- “**On the Robust Hardness of Grobner Basis Computation.**” Trends in Optimization Interdepartmental Seminar, University of Washington, May 2016.
- “**On the Robust Hardness of Grobner Basis Computation.**” Joint Math Meetings, AMS Session on Computer Science, Information, Control Theory, and Economics, II. Jan 2016.

- **“Leveraging Moral-Motivation for Green Behavior Change in Networks.”** International Symposium on Mathematical Programming (invited track on Computational Sustainability), July 2015.
- **“Missing Constraints: Local Incentives May Sabotage Landscape-Scale Coordinated Management.”** AMS Special Session on Natural Resources, Joint Mathematical Meetings, Jan. 12, 2015.
- **“Influence Beyond Exposure: Tackling an Economic Variant of Seeding Viral Spread.”** Mathematics Department Colloquium, Worcester Polytechnic Institute (WPI), Nov. 7, 2014.
- **“Influence Beyond Exposure: Tackling an Economic Variant of Seeding Viral Spread.”** Computer Science Seminar, Dartmouth College, Nov. 6, 2013.
- **“Marketing Green Behavior Change: Seeding Norm-driven Moral-Motivation in Social Networks.”** INFORMS 2013, Oct 8, 2013.
- **“Spatial Propagule Pressure in Networks of Lakes: Is Effective Control Possible Without Effective Prediction?”** Ecology and Evolutionary Biology Lunch Seminar, Dartmouth College, Sept 17, 2013.
- **“Spread in Networks: Containing the Harmful, Encouraging the Virtuous.”** Environment and Society Seminar, Dartmouth College, Oct 18, 2012.
- **“Fragmenting and Vaccinating Graphs Over Time and Subject to Uncertainty: Wildfire and Invasive Species Containment.”** International Symposium on Mathematical Programming, Stochastic Optimization Track, Aug 21, 2012. Similar talk delivered at Institute for Computational Sustainability Seminar, Cornell Universtiy, April 6, 2012.
- **“Optimally Fragmenting Graphs Against Stochastically-located Threats: Containing Wildfire, Invasive Species, and Epidemics.”** Applied Math Department at Johns Hopkins, Feb 23, 2012. Similar talks at The College of William and Mary, Feb 17, 2012, Olin College of Engineering, Feb 9, 2012, and AMS Special Session on Mathematics in Natural Resource Modeling, Joint Math Meetings January 5, 2012.
- **“The Traveling Salesman Problem: Usually very hard, but sometimes trivial....”** US Coast Guard Academy, Feb 23, 2012. Similar talk at Smith College, Feb 7.
- **“Optimally Fragmenting Graphs Against Stochastically-located Threats: Balancing Preventative and Real-time Actions in Wildfire Containment.”** Neukom Institute, Dartmouth College, Jan. 30, 2012.
- **“Approximation Algorithms for Landscape Fragmentation Against Stochastic Wildfire Ignition.”** Computational Sustainability Session, INFORMS Annual Meeting, Nov 15, 2011.
- **“Fragmenting a Landscape Against the Spread of a Stochastically-located Wildfire Outbreak.”** Symposium for Systems Analysis in Forest Resources, March 2011.

PROFESSIONAL SOCIETIES

- AMS: American Mathematical Society.
- INFORMS: Institute for Operations Research and the Management Sciences.
- AWM: American Women in Mathematics.
- MOS: Mathematical Optimization Society.

REFERENCES

David B. Shmoys

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