ROBERTS, FRED S.

Birthdate: 19 June 1943

Education: A.B., Summa Cum Laude, Mathematics, Dartmouth College, 1964
M.S., Mathematics, Stanford University, 1967
Ph.D., Mathematics, Stanford University, 1968

Current Positions:

Distinguished Professor of Mathematics, Rutgers University, 1981 ...
Director Emeritus and Senior Advisor, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) (founded as an NSF Science and Technology Center and a Consortium of Princeton, Rutgers, AT&T Labs, Bell Labs, NEC Research Institute, Applied Communications Systems, and Cancer Institute of NJ), September 2011 ...
Director, Command, Control, and Interoperability Center for Advanced Data Analysis (CCICADA) (a DHS university center of excellence and a consortium of Rutgers University, Carnegie-Mellon University, City College of New York, Howard University, Morgan State University, Princeton University, Rensselaer Polytechnic Institute, Texas Southern University, Tuskegee University, University of Illinois-Urbana Champaign, U-MASS Lowell, University of Medicine and Dentistry of NJ, University of Southern California, Applied Communications Sciences, AT&T Labs, Bell Labs, TerraGo Technologies), April 2009 ...
Fellow (Member), Rutgers Center for Operations Research, 1982 ...
Member of Rutgers Graduate Faculties in Mathematics, Operations Research, Computer Science, Computational Molecular Biology, Quantitative Biomedicine, Industrial and Systems Engineering, and Education
Member, Cancer Institute of New Jersey, 2008 …

Past Positions:

Postdoctoral Fellow in Mathematical Psychology, Department of Psychology, University of Pennsylvania, 2/1968-6/1968
Professional Staff, Department of Mathematics, The RAND Corp., Santa Monica, CA, 6/1968-9/1971
Invited Fellow, Institute for Advanced Study, School of Social Science, Princeton, NJ, 9/1971-8/1972
Associate Professor of Mathematics, Rutgers University, 1972-1976
Professor of Mathematics, Rutgers University, 1976-1981
Visiting Professor, School of Operations Research & Industrial Engeering, Cornell University, Ithaca, NY, 1979-1980
Director, Rutgers Center for Operations Research, 1982-1983
Visitor, AT&T Bell Laboratories, Murray Hill, NJ 9/1986-1/1987 and 10/1987-2/1988
Associate Director, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), 7/1989-8/1992
Robert G. Stone Visiting Professor of Mathematics (part-time), Northeastern University, 1/1990-6/1995
Acting Director, Center for Discrete Mathematics and Theoretical Computer Science

(DIMACS), 1/1991-6/1991, 8/1992-8/1993
Director, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), 1/1996-8/2011
Director, Center for Dynamic Data Analysis (DyDAn) (a DHS university center of excellence and a consortium of Rutgers, Princeton, Rennselaer Polytechnic Institute, Texas Southern University, Texas State University-San Marcos, AT&T Labs, and Bell Labs), 2006-2009
Interim Director, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), 11/2018-12/2019

Major Research Interests:
Mathematical models in the social, behavioral, biological, epidemiological, and environmental sciences and of problems of communications and transportation; theory of measurement; homeland security and in particular stadium and large venue security, natural disasters, maritime cyber security, and homeland security aspects of global environmental change; utility, decision making and social choice; resilience; socially responsible algorithms; applications of graph theory; supply chains; mathematical psychology; precollege education.

Honors and Awards:
Daniel Webster National Scholar, 1961-1964
Woodrow Wilson Fellow, 1964-1965
Carl N. Jacobs Lecturer, University of Wisconsin, Stevens Point, 1975
Sigma Xi Lecturer, Swarthmore College, 1976
CBMS-NSF Research Conference Lecturer, Colby College, 1977
Nominated for President of SIAM (Society for Industrial and Applied Mathematics), 1981 (lost the election)
Outstanding Mathematician Lecturer, University of New Haven, 1983
Humboldt Fellowship (declined), 1984
Elected Vice President of SIAM, 1984, 1986
ACM/SIGACT Distinguished Service Prize, 1999
University Research Initiative Award, Air Force Office of Scientific Research, 1989-1993
Robert G. Stone Chair, Northeastern University, 1990-1995
NSF Science and Technology Centers Pioneer Award from National Science Foundation, 2001
Commemorative Medal of the Union of Czech Mathematicians and Physicists, Mathematics Research Section, 2003
Fellow, American Mathematical Society, 2012
Docteur Honoris Causa, University of Paris-Dauphine, June 2013
Fellow, Society for Industrial and Applied Mathematics, 2024

Grants:

NSF Grants, 1972-1979, 1983 ...
AFOSR Grants, 1979-1983, 1985-1996
ONR Grants, 1993-2003, 2005-2012
ARO Grants, 2011-2012
DHS Grants, 2006 ...
NCHGR Grants, 1995-1998
NSA Grants, 1995-2003, 2006, 2008
DARPA Grants, 1996-2001
Sloan Foundation Grants, 1999-2004
AT&T Foundation Grants, 2000-2004
Burroughs Wellcome Fund Grants, 2002-2004, 2006

Partial List of Grants (List prior to 1999 is incomplete):

"Signed Digraphs and their Applications to Problems of Society"
NSF (ENG)
July 1, 1972 – November 30, 1975

"Structure and Stability in Energy Demand Signed Digraphs"
NSF (DMS), $19,200
December 1, 1976 – May 31, 1978

"Meaningfulness of Conclusions from Subjective Judgements"
NSF (IIS), $150,988
June 1, 1983 – May 31, 1987

"Scales of Measurement and the Limitations They Place on Information Processing"
NSF (IIS), $149,659
July 15, 1986 – June 30, 1990

"Limitations on Problem Solving Imposed by Measurements"
NSF (IIS), $91,979
August 15, 1989 – July 31, 1992

"Science and Technology Center for Discrete Mathematics and Theoretical Computer Science" (note: This was for the final 8 years of DIMACS, not for the first 3 years)
NSF (CNS), $15,729,208
February 1, 1992 – July 31, 2000

"Applications of String Matching to Molecular Biology"
NSF (CCF), $74,678
June 1, 1992 – November 30, 1994

"Seminar Series in Computational Biology"
NSF (CCF), $10,928
August 1, 1992 – June 30, 1994

"Scales of Measurement in Decisionmaking"
NSF (SES), $180,000
August 15, 1992 – July 31, 1997

"Discrete, Stochastic, and Optimization Approaches to Problems of Networks and Scheduling"
Air Force Office of Scientific Research, $825,169
October 1, 1992 – September 31, 1995

"Combinatorial Computing Environments and Experimental Discrete Mathematics"
NSF (CCF), $352,898
August 1, 1993 – January 31, 1997
"DIMACS Fellowships in Research and Education"
NSF (DRL), $49,600
September 1, 1993 – February 28, 1995
"DIMACS 'Special Year' in Mathematical Support for Molecular Biology"
NSF (DBI), $585,000
August 15, 1994 – July 31, 1999
"Optimization in Artificial Intelligence"
Air Force Office of Scientific Research, $769,185
November 15, 1994 – November 14, 1997
"MDC: Simulations of Integrated Communications Systems"
NSF (CNS), $1,557,810
September 15, 1995 – August 31, 1999
"Mathematical Science: Workshop: Statistical Physics Methods in Discrete Probability, Combinatorics and Theoretical Computer Science"
NSF (DMS), $14,000
March 15, 1997 – August 31, 1997
"U.S.-Czech Research on Discrete Mathematics and Theoretical Computer Science"
NSF (OISE), $70,010
May 1, 1997 – April 30, 2001
"Modeling, Axiomatic, and Measurement-theoretic Issues in Decisionmaking"
NSF (SES), $221,034
September 15, 1997 – August 31, 2002
"Project to Reconnect Two and Four Year College Faculty to the Mathematical Sciences Enterprise"
NSF (DUE), $174,999
January 1, 1998 – December 31, 2000
"US-Czech Research Experiences for Undergraduates Program in Discrete Mathematics and Theoretical Computer Science"
NSF (OISE), $150,162
June 1, 1999 – May 31, 2002
"DIMACS Special Year on Computational Intractability"
NSF (CCF), $252,734
September 15, 1999 - August 31, 2001
"DIMACS Special Focus on Next Generation Network Technologies and Applications"
ONR, $150,000
January 1, 2000 – September 30, 2001
"Workshops in DIMACS Special Year in Computational Intractability"
NSA, $10,000
January 24, 2000 - January 23, 2001
"DIMACS Connect Institute"
AT&T Foundation, $90,000
June 1, 2000 - May 31, 2003
"DIMACS Connect Institute"

NSF (EHR), $766,292
June 1, 2000 - May 31, 2004
"DIMACS Special Year on Computational Molecular Biology"
NSF (DBI), $105,061
July 1, 2000 - June 30, 2004
"Wireless Technologies and Applications"
NSA, $39,998
August 7, 2000 - August 6, 2001
"DIMACS Special Focus on Mathematics and the Foundations of Computer and Information Science"
NSF (DMS), $120,000
September 1, 2000 - August 31, 2003
"Special Focus in Computational Molecular Biology"
Alfred P. Sloan Foundation, $361,778
September l, 2000-August 31, 2003
"Three Special Focus Programs at DIMACS"
NSF (CCR), $3,788,255
September 1, 2000 - August 31, 2008
"Ubiquitous Networking/Fine-Grained Networking"
DARPA, $60,000
October 1, 2000 - August 31, 2001
"Special Projects: DIMACS Workshop: Complexity in Biosystems: Innovative Approaches at the Interface of Experimental Modeling and Computational Simulation"
NSF (CNS), $30,000
August 1, 2001 - July 31, 2002
"ISI 2007"
NSF (EIA), $10,000
August 15, 2001 - June 30, 2008
"Travel Support for US Participation in Joint EU/NSF Strategic Workshops"
NSF (EIA), $344,052
August 15, 2001 - July 31, 2008
"World Science Forum"
NSF (EIA), $15,000
August 15, 2001 - December 31, 2008
"Three Special Focus Programs at DIMACS
NSF (IIS), $730,134
August 15, 2001 - December 31, 2008
"Working Groups in Data Analysis and Mining"
NSF (IIS), $80,000
September 15, 2001 - August 31, 2004
"Planning Workshop: Quantum Communications, Cryptography and Coding"
NSF (CCF), $24,795
January 15, 2002 - December 31, 2002
"Working Group on Analogies Between Computer Viruses and Immune Systems and Biological Viruses and Immune Systems"
ONR, $25,377

January 15, 2002 - January 14, 2003
"International Conference on Computational and Mathematical Epidemiology"
Alfred P. Sloan Foundation, $45,000
February 1, 2002 - September 30, 2002
"Special Projects: Mathematical Sciences Methods for the Study of Deliberate Releases of Biological Agents and their Consequences"
NSF (IIS), $39,988
March 1, 2002 - February 29, 2004
"DIMACS-DIMATIA International REU Program"
NSF (EIA), $654,305
May 15, 2002 - April 30, 2008
"DIMACS Workshop: Data Depth: Robust Multivariate Analysis, Computational Geometry and Applications"
NSF (DMS), $18,000
July 1, 2002 - September 30, 2003
"Computational Information Theory and Coding
NSF (CCF), $190,197
July 1, 2002 - June 30, 2005
"U.S.-Czech-Hungarian Collaboration on Discrete Mathematics and Theoretical Computer Science Involving DIMACS-DIMATIA-Renyi Center"
NSF (OISE), $155,949
July 1, 2002 - June 30, 2007
"Monitoring Message Streams"
NSF (CCR), $2,047,523
July 1, 2002 - August 31, 2008
"Author Identification"
NSF (CCR), $239,500
July 1, 2002 - August 31, 2008
"Mining Multilingual Resources Using Text Analysis"
NSF (CCR), $749,959
July 1, 2002 - August 31, 2008
"Workshop in Video Mining and Data Depth"
NSA, $20,000
July 3, 2002-July 2, 2003
"Special Project: Satellite Reconnect Project"
NSF (CNS), $636,376
July 15, 2002 - June 30, 2007
"Summer Tutorial on Epidemiology for Mathematical Sciences and the Workshop on Host-Pathogen Dynamics"
Burroughs Wellcome Fund, $35,000
August 1, 2002 - September 30, 2002
"ITR: Special Focus on Computer Science and Epidemiology
NSF (IIS), $3,065,000
September 1, 2002 - August 31, 2010
"DIMACS Workshop on Software Security"
NSF (CNS), $15,737

February 1, 2003 - January 31, 2005
"SGER: DIMACS Exploratory Postdoctoral Program in Computational Epidemiology"
NSF (IIS), $100,000
April 15, 2003 - March 31, 2005
"Workshop on Information Processing in the Biological Organism"
NSF (IIS), $56,609
May 1, 2003 - April 30, 2006
"Three Workshops in Data Analysis and Mining"
NSF (CCF), $45,000
July 1, 2003 - June 30, 2005
"DIMACS Workshop on Computational Geometry and Computer-Aided Design and Manufacturing"
NSF (CCF), $19,200
August 1, 2003 - July 31, 2004
"DIMACS Special Focus on Communication Security and Information Privacy"
NSF (CCR), $350,000
August 15, 2003 - July 31, 2009
"US-France Cooperative Research: Computer Science and Decision Theory Applications of Notions of Consensus"
NSF (OISE), $39,000
February 1, 2004 - January 31, 2007
"DIMACS Special Focus on Computation and the Socio-Economic Sciences"
NSF (SES), $225,000
April 1, 2004 - March 31, 2008
"SGER: Connections between Mathematics and Biology in the High Schools: An Experimental Program"
NSF (DRL), $175,430
August 1, 2004 - July 31, 2007
"Workshop on Computational Tumor Modeling"
NSF (CCF), $23,900
September 1, 2004 - August 31, 2008
"Special Focus on Information Processing in Biology"
NSF (CCF), $339,920
September 1, 2004 - August 31, 2011
"Linking Mathematics and Biology in the High Schools: A Conference to be Convened at the DIMACS Center at Rutgers University, Piscataway, NJ, October 1-2, 2004"
NSF (DRL), $20,000
September 15, 2004 - August 31, 2005
"Partnering Teachers in the Biological and Mathematical Sciences"
NSF (CCR), $86,976
March 15, 2005 - August 31, 2008
"Insightful Understanding of China's Higher Education and Research in Computer Science and Information Technology"
NSF (CNS), $125,000
June 1, 2005 - May 31, 2010
"D^3: New Directions, Dimensions, and Domains for Computer Science"

NSF (CNS), $936,271
June 1, 2005 - September 30, 2011
"Workshops Connecting Theoretical CS to Other Fields"
NSF (CCF), $314,950
June 15, 2005 - May 31, 2010
"A Decision Logic Approach to the Port-of-Entry Inspection Problem"
NSF (SES), $617,999
July 1, 2005 - August 31, 2010
"UMDNJ (EPA) Environmental Bioinformatics Research Center"
UMDNJ, $50,004
October 1, 2005 - September 30, 2011
"Facing the Challenge of Infectious Diseases in Africa: The Role of Mathematical Modeling in Designing Cost-effective Control Strategies and Policies"
Burroughs Wellcome Fund, $10,000
March 1, 2006-December 31, 2006
"US-Africa Workshop: The Role of Mathematical Modeling in Facing the Challenge of Infectious Disease in Africa; Johannesburg, South Africa; September 26-28, 2006"
NSF (OISE), $81,746
August 1, 2006 - July 31, 2007
"DIMACS/Georgia Tech Special Focus on Discrete Random Systems"
NSF (DMS), $191,500
August 1, 2006 - July 31, 2010
"DNA Barcode Data Analysis Initiative: Tools for a New Generation of Biodiversity Data"
NSF (DBI), $27,842
September 1, 2006 - August 31, 2008
"US-Africa Advanced Studies Institute on Mathematical Modeling of Infectious Diseases in Africa: A Shortcourse"
NSF (ISE), $122,048
September 1, 2006 - August 31, 2009
"University-Industry Postdoctoral Fellow in Telecom/Combinatorics and Optimization"
NSF (DMS), $71,000
September 1, 2006 - August 31, 2009
"The Bio-Math Connection"
NSF (ESI), $2,724,813
October 15, 2006 - September 30, 2012
"The Center for Dynamic Data Analysis for Homeland Security"
ONR, $3,000,000
October 16, 2006 - October 15, 2009
"Optimization Problems of Detection Systems"
ONR, $224,863
November 20, 2006 - January 31, 2010
"REU Site: DIMACS/DIMATIA U.S./Czech International REU Program"
NSF (CFF), $390,000
February 15, 2007 - January 31, 2011
"Workshop on Recent Advances in Mathematics and Information Sciences for Analysis and Understanding of Massive and Diverse Sources of Data"

ONR, $20,046
April 2, 2007 - April 2, 2008
"ARI-MA: Sensor Management Problems of Nuclear Detection"
NSF (CBET), $485,767
September 1, 2007 - August 31, 2008
"Second US-China Computer Science Leadership Summit"
NSF (CNS), $99,971
September 1, 2007 - August 31, 2010
"DyDAn Fellowship Program in Homeland Security at Rutgers University"
DHS, $499,950
September 1, 2007 - September 29, 2010
"DIMACS Special Focus on Algorithmic Foundations of the Internet"
NSF (CNS), $311,867
October 1, 2007 - September 30, 2014
"DIMACS Workshop on Streaming, Coding, and Comprehensive Sensing: Unifying Theory and Common Applications to Sparse Signal/Data Analysis and Processing"
ONR, $16,821
May 15, 2008 - May 14, 2009
"Sensor Management for Nuclear Detection"
DHS, $1,510,643
September 1, 2008 - August 30, 2012
"DyDAn Fellowship Program in Homeland Security at Rutgers University"
DHS, $400,000
September 1, 2008 - June 30, 2013
"African Biomathematics Initiative"
NSF (DMS), $940,000
September 15, 2008 - August 31, 2012
"DIMACS Workshop on Hardness of Approximation"
NSA, $10,000
October 1, 2008- September 30, 2009
"Center of Excellence for Command, Control, and Interoperability (CCICADA)"
DHS, $23,082,387
July 1, 2009 - June 30, 2017
"AF: Small: Computer Science and Decision Making"
NSF (CCF), $300,000
September 1, 2009 - August 31, 2013
"REU Site: DIMACS/DIMATIA U.S./Czech International REU Program"
NSF (CCF), $532,637
March 1, 2010 - February 28, 2014
"WTC Commerce and Security Project WTC-CASS"
DHS, $561,434
July 1, 2010 - June 30, 2011
"IRIS to ISI"
DHS, $150,000
September 1, 2010 - May 31, 2011
"CCICADA Fellowship Program in Homeland Security at Rutgers University"

DHS, $400,000
September 1, 2010 - August 31, 2013
"Miscellaneous Projects at CCICADA"
DHS, $250,000
September 15, 2010 – Sept. 14, 2011
"Workshop on Mathematical Challenges for Sustainability"
NSF (DMS), $111,249
September 15, 2010 - August 31, 2013
"The Challenge of Interdisciplinary Education: Math-Bio"
NSF (DRL), $1,634,808
September 15, 2010 - August 31, 2015
"CMISS: DIMACS Project on CS/Math in Service to Society"
NSF (CCF), $800,000
September 15, 2010 - August 31, 2014
"Genome Structure and Variation Workshop to be held in the summer 2011 at Rutgers Center for Discrete Mathematics and Theoretical Computer Science (DIMACS)"
NSF (MCB), $36,190
October 1, 2010 - September 30, 2011
"Workshops: Special Focus on Algorithmic Decision Theory"
NSF (SES), $70,000
October 1, 2010 - September 30, 2013
"Stadium Evacuation"
DHS, $404,000
December 9, 2010 - June 30, 2012
"Stadium Evacuation"
DHS, $120,729
Jan. 1, 2011 – Aug. 20, 2011
"Social Media Alerts and Warnings"
DHS, $425,000
January 7, 2011 - June 30, 2012
"Smart Phone Apps that Connect to the Incident Command Function of the Hippocrates Online System"
State of New Jersey, Department of Health and Senior Services, $249,540
March 1, 2011 - July 31, 2011
"Conference on Effects of Genome Structure"
Burroughs Welcome Fund, $8,000
July 1, 2011 - December 31, 2011
"Conference on Effects of Genome Structure"
International Union of Biological Sciences, $7,100
July 1, 2011 - December 31, 2011
"Fusion Center for Data Analysis"
DHS, $82,781
July 27, 2011 - July 26, 2012
"IRIS"
DHS, $129,200
September 1, 2011 – August 31, 2012

"Three New DIMACS Special Focus Programs"
NSF (CCF), $699,044
September 1, 2011 - August 31, 2017
"A Targeted Risk-based Approach to Fisheries Law Enforcement in the First CG District"
US Coast Guard, $78,840
September 16, 2011 – February 28, 2013
"Algorithmic Decision Theory Workshop: The Science of Expert Opinion, October 2011"
DOD/ARO, $10,000
October 1, 2011 - March 31, 2012
"Urban Commerce and Security Study UCASS"
DHS, $77,000
February 1, 2012 – June 30, 2012
"ARMOR Wall System"
DHS, $400,000
August 1, 2012 - June 30, 2013
"ARMOR Wall System"
DHS, $14,000
August 16, 2012 - June 30, 2013
"Safety Act: Best Practices for Stadium Security"
DHS, $500,000
August 16, 2012 - June 30, 2013
"Cybersecurity"
DHS, $50,000
September 13, 2012 - June 30, 2013
"CCICADA Fellowship Program in Homeland Security at Rutgers University"
DHS, $500,000
September 1, 2012 - August 31, 2015
"Mathematics of Planet Earth beyond 2013 (MPE 2013+)"
NSF (DMS), $467,549
September 1, 2012 - August 31, 2016
"Mathematical and Computational Methods for Planning a Sustainable Future"
NSF (DRL), $425,773
October 1, 2012 - September 30, 2015
"Decision Analysis and Experimental Design: Phase 1 – Evaluation of Rad/Nuc Algorithms"
(DHS – DNDO), $250,000 (subcontract from University of Southern California)
February 1, 2013 – January 31, 2014
"High Efficiency Evaluative Design (HEED)"
(DNDO), $83,000 (subcontract from Battelle – PNNL)
December 1, 2014 – April 30, 2015
"Development of a Crowd Management Simulation Tool and Facility Data Platform in Support of the Redesign of the Port Authority Bus Terminal"
(Port Authority of New York and New Jersey), $481,509
January 1, 2015 – July 31, 2016
"Stadium Security"
(DHS), $135,000
July 1, 2015 – June 30, 2016

"Stadium Security, Phase 2"
(DHS), $100,000
July 1, 2015 – June 30, 2016
"Cargo Transport"
(DHS), $271,000
July 1, 2015 – June 30, 2016
"Cyber Economic Incentives"
(DHS), $326,060
July 1, 2015 – June 30, 2017
"APEX Engines"
(DHS), $900,000
July 1, 2015 – June 30, 2017
"ISE Interoperability"
(DHS), $975,000
July 1, 2015 – June 30, 2017
"Workshop: Modeling of Infectious Diseases with a Focus on Ebola"
(NSF), $99,639
January 16, 2016 – January 15, 2017
"Development of a Crowd Management Simulation Tool and Facility Data Platform in Support of the Redesign of the Port Authority Bus Terminal: Enhancements"
(Port Authority of New York and New Jersey), $37,708
January 6, 2016 – July 31, 2016
"Economics of Security"
(DHS), $450,000
July 1, 2016 – June 30, 2017
"Interoperability Tools and Information Sharing Environment"
(DHS), $1,995,000
September 26, 2016 – September 25, 2017
"Identity and Access Management (IDAM) APEX Engine"
(DHS), $1,200,000
September 27, 2016 – August 26, 2019
"i-Group Learning for Dynamic Real Time Anomaly Detection with Applications in Maritime Threat Detection"
(NSF), $299,967
July 15, 2017 – July 30, 2020
"Identity and Access Management (IDAM) APEX Engine"
(DHS), $118,000
August 10, 2017 – July 30, 2020
"Economics of Security for Large Venues"
(DHS), $143,000
August 10, 2017 – March 9, 2018
"SHERLOCK: A Tailored Web Scraper for Government Use"
(DHS), $370,000
August 11, 2017 – June 10, 2018
"Data Analytics to Enhance Prevention Risk Based Allocation for Vessel Safety and Environmental Compliance Inspections and Examinations"

(US Coast Guard), $250,000
September 12, 2017 – September 11, 2018
"Missed Detections: From Data to Actionable Estimates"
(DHS), $170,811 (subcontract from University of Houston)
September 15, 2017 – June 30, 2018
"Best Practices for Sharing and Analyzing Digital Evidence"
(DHS), $461,867 (subcontract from George Mason University)
November 1, 2017 – June 30, 2020
"Enhanced Adjudication Support (Criminal Background Checks)"
(TSA), $536,255
August 1, 2018 – May 30, 2019
"Development of an Algorithm for Enhanced Adjudication for Aviation Security Programs"
(TSA), $200,514.65
August 27, 2018 – April 15, 2020
"HDR TRIPODS: Data Science Principles of the Human-Machine Convergence"
(NSF), $1,553,999
September 1, 2019 - August 31, 2023
"Three Decades of DIMACS: The Journey Continues"
(NSF), $49,875
October 1, 2019 - September 30, 2020
"DIMACS Special Focus on Mechanisms and Algorithms to Augment Human Decision Making" (NSF), $99,635
November 11, 2019 – October 31, 2024
"Threat Assessment for the ICT Supply Chain + COE Initiative on COVID-19 Supply Chain"
(DHS), $303,756 (subcontract from Arizona State University)
July 1, 2020 – December 31, 2021
"Detecting Criminal Disruptions of Supply Chains"
George Mason University (DHS), $470,566
September 1, 2021 – September 30, 2023
"EAGER: SAI: Cognitive Models of Human Social Wayfinding for the Redesign of Public Spaces"
(NSF), $299,938
September 1, 2021 – August 31, 2024
"Modeling the Impact of Complex, Multi-Vector Disruptions to the Marine Transportation System (MCAT)"
DHS S&T Center for Accelerating Operational Efficiency (CAOE) – Partner, $517,338
October 1, 2021 – June 30, 2025
"SENTRY – Soft Target Engineering to Neutralize the Threat Reality"
Northeastern University (DHS), $2,451,869
July 1, 2021 – June 30, 2025
"Modeling Equitable and Accessible Spaces for Everyone (Modeling EASE)"
NSF, $749,955
September 1, 2023 – August 31, 2026
"Streamlining USCIS Document Validation Using Artificial Intelligence"
DHS S&T Center for Accelerating Operational Efficiency (CAOE) – Partner, $250,000

October 1, 2024 – September 30, 2025

Talks:

Noteworthy Talks:

SIAM National Meeting invited address, Cal. Tech., 1974
Sigma Xi lecture, Swarthmore, 1976
CBMS-NSF Research Conference lecturer, Colby College, 1977
Mathematical Association of America National Meeting, invited address, Biloxi, 1979
International Congress on Mathematics Education, Berkeley, 1980
Outstanding Mathematician Lectures, University of New Haven, 1983
International Symposium on Operations Research, Osnabruck, W. Germany, 1984
Beijing Mathematical Society, 1985
Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, FL, 1987
First International Symposium on Combinatorics, Seoul, S. Korea, 1995 (series of two plenary lectures)
Royal Nepal Academy of Science and Technology, Kathmandu, Nepal, 1998
Distinguished Computer Science Lecture Program, New York Academy of Sciences, 2001
Rota Lecture at Conference on Interconnections among Codes, Designs, Graphs and Molecular Biology, Hsinchu, Taiwan, 2002
American Mathematical Society Congressional Briefing: "Homeland Security: What Can Mathematicians Do?" Washington, DC, 2004
EUROXXI (21st European Conference on Operations Research sponsored by the Association of European Operational Research Societies, EURO), Rekjavik, Iceland, July 2006
40th Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, Florida, March 2009
First International Conference on Algorithmic Decision Theory, Venice, October 2009
Mathematique de la planete Terre, lecture at University of Paris Dauphine on occasion of being awarded Docteur Honoris Causa, June 2013
Plenary Talk at National Football League Security Summit, Carlsbad, CA, June 2014
Willie B. Rajanna Memorial Lecture, Morgan State University, April 2015
Plenary talk at International Conference on Data Intensive Systems Analysis for Geohazard Studies, Sochi, Russia, July 2016
Keynote talk at International Conference on Global Challenges and Data-driven Science, Saint Petersburg, Russia, October 2017
Keynote talk at NATO Maritime Cyber Security Conference, Crete, April 2019
Plenary talk at International Conference on Matrix Theory with Applications to Combinatorics, Optimization and Data Science, Cheju Island, Korea, December 2022 (virtual)

Special Lecture Series:

Cornell University (10 lectures on Mathematical Models in Environmental Science), 1973
Colby College (10 lectures on Graph Theory and its Applications to Problems of Society), 1977
The Citadel (10 lectures on Discrete Mathematical Models in the Social, Biological and Environmental Sciences), 1978
Allegheny College (4 lectures on Graph-theoretical Models of Problems of Society), 1979

Western Maryland College (4 lectures on Applications of Graph Theory), 1981
Associated Colleges of Central Kansas (4 lectures on Applications of Discrete Mathematics), 1985
ORSA National Meeting, Boston (6 lectures on Applications of Graph Theory), 1985
Academia Sinica, Beijing (4 lectures), 1985
Jilin University of Technology, Changchun, China (8 lectures), 1985
Claremont Graduate School (6 lectures on Applications of Discrete Mathematics), 1986
Florida Atlantic University (4 lectures), 1987
Le Troisieme Cycle Romand in Operations Research, Grimentz, Switzerland (14 lectures), 1988
Jackson State University (3 lectures on Graph Theory and its Applications), 1990
William Paterson College (4 lectures on Graph Theory and its Applications), 1992
DIMACS Working Group Meeting on Order-theoretic Aspects of Epidemiology, (6 hours of lectures on The Theory of Measurement and its Applications), 2005
MAA Mathfest, Knoxville, TN (2 hours of lectures on Measurement of Pollution at Short Course in Environmental Modeling), 2006
INFORMS National Meeting, Austin, TX (tutorial series on Meaningless Statements in Epidemiology), 2010
Two Lectures on Data Analysis and Homeland Security at Visual Analytics Summer School, Middlesex University, London, UK, 2010

Invited Addresses:

Bay Area Colloquium in the Philosophy and Methodology of Science, Berkeley, 1967
NSF Workshop on Perceptual Geometries, Miami, 1970
Mathematics Association of Two-Year Colleges of NJ, Fall Meeting, Camden County College, 1972
SIMS (SIAM Institute for Mathematics and Society) Mtg., Sterling Forest, NY, 1973
Organization for Economic Cooperation & Development Seminar on Structural Analysis, Paris, 1973
SIAM National Meeting, Cal Tech, 1974
New York Academy of Sciences, 1974
National Association of Independent Schools Convention, Atlantic City, New Jersey, 1975
Association of Mathematics Teachers of NJ, Caldwell College, 1975
SIMS Research Applications Conference on Energy, Alta, Utah, 1975
National Council of Teachers of Mathematics, New York, 1975
Indiana University Workshop on Applied Mathematics, 1975
Mathematical Association of America, Philadelphia Section, Gettysburg College, 1976
International Conference on Graph Theory and its Applications, Western Michigan University, 1976
Mathematical Association of America, Ohio Section, Marshall University, 1976
New York Academy of Sciences, 1977
NY Academy of Sciences, International Conference on Combinatorial Mathematics, 1978
Mathematical Association of America, National Meeting, Biloxi, MS, 1979
Mathematical Association of America, Texas Section, Texas Tech University, 1979
Mathematical Association of America, Allegheny Mountain Section, Westminster College, 1979

SIAM, Southeastern Atlantic Section, University of Alabama, Birmingham, 1980
International Conference on Graph Theory and its Applications, Western Michigan University, 1980
International Congress on Mathematics Education, Berkeley, 1980
Mathematics Association of Two-Year Colleges of NJ, Fall Meeting, Trenton State College, 1980
Workshop on Fundamental Logical Concepts of Measurement, Turin, Italy, 1983
International Conference on Mathematical Psychology, Brussels, 1983
International Conference on Graph Theory and its Applications, Western Michigan University, 1984
NATO Conference on Graphs and Orders, Banff, 1984
International Symposium on Operations Research, Osnabruck, West Germany, 1984
Mathematical Association of America, Northeastern Section, Springfield, MA, 1984
NY Academy of Sciences, International Conference on Combinatorial Mathematics, 1985
Beijing Mathematical Society, 1985
Mathematical Association of America, NJ Section, Hoboken, 1986
Advanced Research Institute in Discrete Applied Mathematics, New Brunswick, New Jersey, 1986
Eric F. Gardner Conference (NY/Ontario Measurement and Statistics Conference), Rochester, NY, 1986
Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, FL, 1987
Mathematical Association of America, Florida Section, Boca Raton, FL, 1987
Mathematical Association of America, Allegheny Mountain Section, Erie, PA, 1987
First International Colloquium on Pseudo-Boolean Optimization and Related Areas, Chexbres, Switzerland, 1987
Workshop on Applications of Combinatorics and Graph Theory in the Biological and Social Sciences, Institute for Mathematics and its Applications, University of Minnesota l988 (2 lectures)
International Conference on Graph Theory and its Applications, Western Michigan University, 1988
Graph Theory Day, New York Academy of Sciences, New York, 1988
Workshop on Measurement Theory, Center for Advanced Study in the Behavioral Sciences, Palo Alto, California, 1988 (2 lectures)
Conference on Applications of Graph Theory to Computer Science and Other Fields, New Mexico State University, Las Cruces, 1989
Hartford Conference on the First Two Years: Teaching the Mathematical Core, University of Hartford, 1989
Sixth Annual Rose-Hulman Conference on Undergraduate Mathematics, Rose-Hulman Institute of Technology, Terre Haute, Indiana, 1989, (2 lectures)
AFOSR Day, Air Force Office of Scientific Research, DC, 1989
Spring Meeting, Mathematical Association of America, New Jersey Section, and American Mathematical Association of Two Year Colleges of New Jersey, Princeton University, 1990
First Alaska Graph Theory Conference: Quo Vadis Graph Theory, Fairbanks, Alaska, 1990
Workshop on Graph Labellings, Northeastern University, Boston, 1991

DIMACS/RUTCOR Workshop on Combinatorial Optimization in Science and Technology, New Brunswick, NJ, 1991
Mathematical Association of America, Eastern Pennsylvania/Delaware Section, LaSalle College, Philadelphia, 1991
SIAM, Southeast Atlantic Section Spring Meeting, Western Carolina University, Cullowhee, NC, 1991
Sixth Clemson Miniconference on Discrete Mathematics, Clemson University, Clemson, SC, 1991
International Conference on Graph Theory and its Applications, Western Michigan University, 1992
European Mathematical Psychology Group, Brussels, Belgium, 1992
Mathematical Association of America, Seaway Section, Ithaca, New York, 1992
Conference on Graphs and Matrices, Boulder, Colorado, 1993
International Conference on Ordinal Data Analysis, University of Massachusetts, Amherst, 1993
New York Academy of Sciences Graph Theory Day, Bard College, Annandale-on-Hudson, New York, 1993
First International Symposium on Combinatorics, Seoul, S. Korea, 1995 (series of two plenary lectures)
Mathematical Association of America, NJ Section, Cranford, NJ, 1996
International Conference on Graph Theory, Combinatorics, Algorithms, and Applications, Kalamazoo, MI, 1996
European Special Interest Group in Multicriteria Analysis (ESIGMA), annual meeting, Brussels, Belgium, 1996
International Conference on Ordinal and Symbolic Data Sets, Darmstadt, Germany, 1997
International Conference on the Future of Discrete Mathematics, Stirin Castle, Czech Republic, 1997
International Workshop on Graph Colouring and Applications, Montreal, May 1997
Cumberland Conference on Combinatorics, Graph Theory, and Computing, Johnson City, Tennessee, 1998
Royal Nepal Academy of Science and Technology, Kathmandu, Nepal, 1998
International Conference on Ordinal and Symbolic Data Analysis, Amherst, MA, 1998
DIMACS Miniworkshop on Mathematical and Computational Approaches to Elections, 1999
DIMACS Research and Education Institute, 1999
International Conference on Combinatorial and Computational Mathematics, Pohang, Korea, 2000
International Conference on Graph Theory, Combinatorics, Algorithms, and Applications, Kalamazoo, MI, 2000
DIMACS Connect Institute, 2000
International Conference 2000 -- The Year of Mathematics (on the occasion of the 50th anniversary of the Mathematical Institute of the Hungarian Academy of Sciences and the 150th Anniversary of the Academy), Budapest, 2000
DIMACS Workshop on Bioconsensus, 2000
Clemson Miniconference on Discrete Mathematics, Clemson, SC, 2000
DIMACS Connect Institute, 2001
DIMACS Workshop on Bioconsensus II, 2001

Conference on Interconnections among Codes, Designs, Graphs, and Molecular Biology, Hsinchu, Taiwan, 2002
DIMACS Workshop on Labelings and Numberings of Graphs, 2002
DIMACS Connect Institute, 2002
West Point Conference on Discrete Mathematics, 2002
DIMACS Connect Institute, 2003
International Conference on Ordinal and Symbolic Data Analysis, Irvine, California, 2003
DIMACS-DIMATIA-Renyi Working Group Meeting on Graph Colorings and their Generalizations, 2003
Conference on Good Ideas in Teaching Precalculus and ..., Rutgers University, 2004
Mathematical Association of America, NJ Chapter, 2004
DIMACS-DIMATIA-Renyi Working Group Meeting on Algebraic and Geometric Methods in Combinatorics, Budapest, 2004
Society for Mathematical Psychology Annual Meeting (Falmagne Festschrift), Ann Arbor, MI, 2004
Workshop on Computer Science and Decision Theory, Paris, 2004
DIMACS Bio-Math Connect Institute, 2004
Workshop on Graph Colorings and their Generalizations, Renyi Institute, Budapest, Hungary, 2005
DIMACS Bio-Math Connect Institute, 2005
Conference on Mathematical Methods in Counter-terrorism, Columbia, SC, 2005
Conference on Probabilistic Combinatorics and Algorithms: A Conference in Honor of Joel Spencer's 60th Birthday, 2006
DIMACS/DIMATIA/Renyi Combinatorial Challenges Conference, 2006
Combinatorial Challenges 2006 (A Meeting in Celebration of Pavol Hell's 60th Birthday), Victoria, BC, Canada, 2006
EUROXXI (21st European Conference on Operations Research sponsored by the Association of European Operational Research Societies, EURO), Rekjavik, Iceland, July 2006
DIMACS Bio-Math Connect Institute, Broomfield, CO, July 2006
Workshop on on Facing the Challenge of Infectious Diseases in Africa: The Role of Mathematical Modeling, Johannesburg, South Africa, September 2006
Workshop on Voting Theory and Preference Modeling, University of Paris - Dauphine, October 2006
Plenary talk at Mathematical Association of America, Allegheny Mountain Section, April 2007
Workshop on Mathematical Modeling of Infectious Diseases in Africa, Stellenbosch, South Africa, June 2007
DIMACS BioMath Connection Field Testers Workshop, July 2007
Plenary talk at European Mathematical Psychology Group meeting, Luxembourg, September 2007
Minisymposium on Discrete Sciences Applications in Homeland Security, Rutgers University, September 2007
Math Awareness Month Workshop on Mathematics and Voting Theory, New Jersey City University, April 2008
Charles Franke Memorial Lecture, Seton Hall University, April 2008
Conference in Honor of F.R. “Buck” McMorris, Illinois Institute of Technology, May 2008

Plenary talk at European Commission Measuring the Impossible Network Training Course, Gena, Italy, June 2008
DIMACS BioMath Connection Field Testers Workshop, July 2008
Plenary talk at 40th Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, FL, March 2009
Plenary talk at Conference on Mathematics and Biology: The New Educational Synergy SUNY Farmingdale, April 2009
DIMACS BioMath Connect Institute, July 2009
Advanced Study Institute in Economic Epidemiology, Makerere University, Kampala, Uganda, July 2009
National Association of Mathematicians, Mathfest, Washington, DC, November 2009
Plenary talk at meeting of NYC Section of the Mathematical Association of America, May 2010.
Math for America, New York University, January 2010
Workshop on Conservation Biology, Southern African Wildlife College, Hoedspruit, Limpopo, South Africa, August 2010
Workshop on Evidence-based Policy Making, University of Paris-Dauphine, December 2010
Workshop on Algorithmic Decision Theory for the Smart Grid, Rutgers, October 2010
DIMACS/CCICADA/DHS Student Conference on Discrete Mathematics: One Way to Exciting Careers in Homeland Security, Rutgers, July 2011
Workshop "Toward the Smart Grid," Lehigh University, Bethlehem, PA, January 2012
Workshop on Quantitative Ecology and Sustainable Environments, University of Kwazulu Natal, Durban, South Africa, July 2012
Workshop on Algorithmic Aspects of Information Fusion, Rutgers, November 2012
International Workshop on Clusters, Orders, Trees: Methods and Applications, in Honor of Professor Boris Mirkin, Moscow, Russia, December 2012
Plenary talk at Conference on Tools for Group Decision (OPDE)/Optimization Days, Montreal, May 2013
Invited talk at Workshop on Workshop on Conception Innovante des Politiques Publiques, University of Paris-Dauphine, June 2013
Invited talk at Workshop on Algorithmic Information Fusion and Data Mining (WAIFDM), DIMACS, September 2013
Invited talk at Workshop on Urban Planning for Climate Events, DIMACS, September 2013
Invited talk at Conference on Meaningfulness and Learning Spaces: A Tribute to the Work of Jean-Claude Falmagne, UC Irvine, February 2014
Plenary talk at New York Area Graph Theory Day, Rutgers University, April 2014
Invited talk at MPE2013+ Workshop on Sustainable Human Environments, DIMACS, April 2014
Invited talk at Workshop on Mathematics of Planet Earth: Data-Aware Energy Use, University of California, San Diego, September 2014
Invited talk at Atlanta Lecture Series in Combinatorics and Graph Theory XIII, November 2014
Plenary talk at International Conference on Cyber Security, Fordham University, January 2015
Invited talk at Conference on Validation: What is it?, University of California - Irvine, February 2015

Invited talk at Workshop on MPE: Natural Disasters, Georgia Tech, May 2015
Invited talk at Big 10 Emergency Management and Special Events Conference, with Big Ten Security Directors, Piscataway, NJ, August 2015
Invited talk at Workshop on Mathematics of Planet Earth: Management of Natural Resources, Howard University, June 2015
Invited talk at Mathematics of Planet Earth: Education for the Planet Earth of Tomorrow, University of Tennessee, September 2015
Invited talk on Data and Citizens Science, International workshop on Citizen Science, University of Paris, Dauphine, December 2015
Plenary talk at International Conference on Data Intensive Systems Analysis for Geohazard Studies, Sochi, Russia, July 2016
Plenary talk at TSA-NPPD Public Area Security Summit, Tysons Corner, VA, April 2017
Plenary talk at Workshop on Advanced Development for Security Applications, Northeastern University, May 2017
Keynote talk at Conference on Cyber Security Community Awareness, Kean University, October 2017
Invited talk at Workshop on Social Responsibility of Algorithms, U. of Paris – Dauphine, December 2017
Invited Breakfast Talk at Society for Naval Architects and Marine Engineers Annual Meeting, Providence, RI, October 2018
Invited talk at Workshop on Social Responsibility of Algorithms, Paris, December 2019
Invited talk at Workshop on Big Data and Systems Analysis, International Institute for Systems Analysis, Vienna, February 2020
Plenary talk at International Conference on Matrix Theory with Applications to Combinatorics, Optimization and Data Science, Cheju Island, Korea, December 2022 (virtual)
Invited talk at International Conference on Data Analysis, Optimization and their Applications, Moscow, January 2023 (virtual)
Invited talk at Workshop on Meaningful, Useful, Legitimate Information in Decision Making, Paris, December 2023

Invited Lecture Series:

Five lectures on "Mathematics and the Social Sciences," Mathematics Association of Two-Year Colleges of NJ, Middlesex County College, 1973
Ten lectures on "Mathematical Models in Environmental Science," Cornell University, 1973
Ten Lectures on "Graph Theory and its Applications to Problems of Society," an NSF-CBMS Research Conference, Colby College, 1977
Ten lectures on "Discrete Mathematical Models in the Social, Biological and Environmental Sciences," The Citadel, 1978
Ten lectures on "Mathematical Models and Contemporary Problems," MD-DC-VA Section of the MAA, Salisbury State College, 1978
Four lectures on "Graph-theoretical Models of Problems of Society," Allegheny College, 1979
Four lectures on "Applications of Graph Theory," Western Maryland College, 1981
Five lectures on "Graph Theory Models in the Social Sciences and Group Decisionmaking," Sloan Applied Mathematics Workshop, Davidson College, No. Carolina, 1983

Outstanding Mathematician Lectures, University of New Haven, 1983
Four-lecture minicourse on "Applications of Discrete Mathematics," MAA Annual Meeting, Louisville, 1984
Four-lecture minicourse on "Applications of Discrete Mathematics," MAA Annual Meeting, Anaheim, 1985
Four lectures on "Applications of Discrete Mathematics," Association Colleges of Central Kansas, McPherson, KS, 1985
Day-long Workshop on "Applications of Graph Theory," ORSA Annual Meeting, Boston, 1985
Eight lectures at Jilin University of Technology, Changchun, Jilin Province, Peoples Republic of China, 1985
Four lectures at Academia Sinica, Beijing, Peoples Republic of China, 1985
Two lectures at University of Shandong, Jinan, Shandong Province, Peoples Republic of China, 1985
Two lectures at Tongji University, Shanghai, Peoples Republic of China, 1985
Six lectures on "Applications of Discrete Mathematics," Claremont Graduate School, 1986
Four lecture minicourse on "Applications of Discrete Mathematics," MAA Annual Meeting, San Antonio, 1987
Four lectures at Florida Atlantic University, Boca Raton, 1987
Three lectures, MAA, Florida Section, Boca Raton, 1987
Ten lectures on "Applications of Discrete Mathematics," MAA Northeastern Section, University of Maine, Orono, 1987
Fourteen lectures to le Troisieme Cycle Romand, Grimentz, Switzerland, 1988
Twelve lectures for Mathematics Association of Two Year Colleges of New Jersey, Princeton, May 1988 and September 1988
Four lectures to COMAP Faculty Advancement Workshop on Discrete Mathematics, Boston, MA, 1988
Eight lectures, MAA Allegheny Mountain Section, Allegheny College, Meadville, PA, 1988
Four lecture minicourse on "Applications of Discrete Mathematics," MAA Annual Meeting, Phoenix, 1989
Five lectures on Applications of Graph Theory, DIMACS Summer Workshop for High School Teachers, New Brunswick, NJ, 1989
Two lectures as Visiting Distinguished Professor, Clemson University, 1990
Five Lectures on Applications of Graph Theory, DIMACS Summer Workshop for High School Teachers, New Brunswick, NJ, 1990
Four Lectures on Applications of Graph Theory and Counting, DIMACS Summer Workshop for High School Students, New Brunswick, NJ, 1990
Three lectures on Graph Theory and its Applications, Jackson State University, Jackson, Mississippi, 1990
Two lectures on Applications of Graph Theory, DIMACS Summer Workshop for High School Teachers, New Brunswick, NJ, 1991
Four lectures on Graph Theory and its Applications, William Paterson College, Wayne, NJ, 1992
Five lectures on Applications of Graph Theory, DIMACS Summer Workshop for High School Teachers, New Brunswick, NJ, 1992
Two Lectures on Order Relations and Utility Functions at Random Utility 2000, Duke

University, 2000
Two lectures on Applications of Graph Theory at Short Course on A Sampling of Applications of Graph Theory, MAA National Meeting, San Diego, CA, 2002
Two lectures on Bioconsensus and Channel Assignments at University of Paris, Dauphine, 2002
Six hours of tutorial lectures on The Theory of Measurement and its Applications at DIMACS Working Group Meeting on Order-theoretic Aspects of Epidemiology, DIMACS, 2005
Two hours of lectures on Measurement of Pollution, MAA Mathfest, Short course on Environmental Modeling, Knoxville, TN, 2006
Three lectures on Mathematics and Homeland Security at Conference on Mathematics and Homeland Security at Department of Homeland Security Center of Excellence for Dynamic Data Analysis, May 2007
INFORMS National Meeting, Austin, TX (tutorial series on Meaningless Statements in Epidemiology), November 2010
Two Lectures on Data Analysis and Homeland Security at Visual Analytics Summer School, Middlesex University, London, UK, September 2010

Other Invited or Key Lectures:

Panelist, MAA Summer Meeting, Dartmouth College, 1972
Invited talk at George Washington University Conference on Graphs and Combinatorics, Washington, DC, 1973
Symposium participant, Mathematical Psychology Meetings, Montreal, 1973
Panelist, MAA Annual Meeting, San Francisco, 1974
Invited talk at Operations Research Society of America Meeting, Chicago, 1975
Panelist, MAA Annual Meeting, San Antonio, 1976
Invited talk at Operations Research Society of America Meeting, New York, 1978
Discussant, Energy Information Administration Symposium on Computer Assisted Analysis and Model Simplification, University of Colorado, 1980
Invited talk at AMS Special Session on Graph Theory and Combinatorics, Bryn Mawr, 1982
Invited panelist at MAA New Jersey Section Meeting, Georgian Court College, 1982
Invited talk at Silver Jubilee Combinatorics Conference, University of Waterloo, 1982
Invited talk at Operations Research Society of America Meeting, Chicago, 1983
Invited talk at Operations Research Society of America Meeting Orlando, FL, 1983
Panelist at Meeting of Department Chairmen, AMS/MAA Annual Meeting, Louisville, 1984
Invited talk at First Hoboken Symposium on Graph Theory, Stevens Inst. of Technology, 1984
Invited panelist at Amer. Educational Research Asso./Nat'l Council on Measurement in Education Joint Annual Mtg., Chicago, 1985
Panelist at NY Academy of Sciences Internat'l Conference on Combinatorial Mathematics, 1985
Invited talk at special session at AMS National Meeting, New Orleans, 1986
Invited minisymposium speaker, SIAM Nat'l Mtg., Denver, 1987
Invited talk to West Windsor-Plainsboro High School, NJ, 1988
Invited talk to Princeton High School, Princeton, NJ, 1988
Invited talk to High School Institute for Science and Math, Douglass College, 1988

Invited Faculty Workshop, Westfield High School, NJ, 1989
Invited talk to Rahway High School, NJ, 1989
Invited talk to High School Institute for Science and Math, Douglass College, 1989
Invited talk to Spotswood High School, Spotswood, NJ, 1990
Invited talk to International Symposium on Functional Equations, Graz, Austria, 1990
Invited talk at Joint Policy Board in Mathematics Press Briefing on Mathematics and the Environment, Baltimore, MD, 1992
Invited talk at ECCO V, meeting of European Chapter on Combinatorial Optimization, Technische Universitat of Graz, Graz, Austria, 1992
Invited talk at Fourth Annual Stony Brook Biomathematics Conference, SUNY, Stony Brook, NY, 1992
Invited talk at 4th Intern. Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Palma de Mallorca, Spain, 1992
Series of four invited talks at workshop on Mathematical Systems Underlying Axiomatic Measurement Theories, University of California, Irvine, CA, 1992
Invited talk at conference on Discrete Mathematics in the Schools, DIMACS, 1993
Invited panelist at Conference on Graduate Programs in the Applied Mathematical Sciences, Clemson University, Clemson, SC, 1993
Invited talk at special session on Graph Theory at American Mathematical Society Meeting, Washington, DC, 1993
Invited talk at Cresskill High School, Cresskill, NJ, 1994
Invited talk at special session on Graph Theory at American Mathematical Society Meeting, Orlando, FL, 1995
Invited talk at Ocean Township High School, Oakhurst, NJ, 1995
Invited talk at at Livingston High School, Livingston, NJ, 1995
Invited talk at DIMACS Leadership Program Reunion, Piscataway, NJ, 1995
Invited talk at Rutherford High School, Rutherford, NJ, 1996
Invited talk at International Conference on Combinatorics, Balatonlelle, Hungary, 1996
Invited talk at session on Mathematics and the Social Sciences, American Mathematical Society Mathfest, Seattle, Washington, 1996
Invited talk at DIMACS workshop on Mathematical Hierarchies and Biology, Piscataway, NJ, 1996
Invited talk at special session on Partially Ordered Sets, American Mathematical Society Meeting, San Diego, CA, 1997
Invited talk at special session on Mathematical Aspects of Consensus Theory, American Mathematical Society Meeting, Washington, DC, 2000
Invited talk to Math Academy 2000, Archdiocese of Newark, Program for Teachers, Seton Hall University, 2000
Invited panelist, Conference on Challenges for Theoretical Computer Science, Portland, OR, 2000
Invited talk at Conference on Ordinal and Symbolic Data Analysis, Brussels, Belgium, 2000
Invited panel organizer and panelist at Chairs Colloquium (for Chairs of Departments in the Mathematical Sciences), National Academy of Sciences, Washington, DC, 2000
Invited talk at special session on Graph Theory, American Mathematical Society Meeting, Hoboken, NJ, 2001
Invited talk at Collegiate School, New York, NY, 2001

Invited talk at DIMACS Working Group Meeting on Mathematical Sciences Methods for the Study of Deliberate Releases of Biological Agents and their Consequences, 2002
Invited talk at Symposium on Bioconsensus: Bringing Social Choice Theory to Biology, AAAS National Meeting, Boston, 2002
Invited talk at Rutgers Symposium on Homeland Security, 2002
Invited talk at DIMACS International Conference on Computational and Mathematical Epidemiology, 2002
Invited talk at Minisymposium on Applications of Mathematics to the Study of Deliberate Releases of Biological Agents and Related Topics, SIAM 30th Anniversary Meeting, Philadelphia, 2002
Invited talk at Conference on Mathematical Modeling of the Spread of Selected Bioterrorism Agents, MITRE Corporation, 2002
Invited Talk at Knowledge, Discovery and Dissemination Symposium, 2003
Invited talk at MITRE Corporation Meeting on Modeling and Prediction of Disease, McLean, VA, 2003
Invited talk at DIMACS Workshop on Tree of Life, 2003
Invited talk at Knowledge, Discovery and Dissemination Symposium, McLean, VA, 2003
Invited talk at Rutgers University Symposium on Homeland Security Research, Sept. 2003
Invited talk at State of New Jersey Symposium on Homeland Security Research, Oct. 2003
Invited talk at NIH BISTI (Biomedical Information Science and Technology Initiative) Symposium: Digital Biology: The Emerging Paradigm, Bethesda, MD, 2003
Invited talk at Minisymposium, ENST-Bretagne, Brest, France, 2004
Invited panelist at ASA Workshop on Statistics and Counter-terrorism, New York, 2004
Invited talk at Knowledge, Discovery and Dissemination Symposium, McLean, VA, 2004
Invited talk at INFORMS Special Session on Diagnosis Models for Port of Entry Inspections, San Francisco, November 2005
Invited talk at Knowledge, Discovery and Dissemination Symposium, McLean, VA, 2005
US-China Computer Science Leadership Summit, Beijing, China, May 2006
Invited talk at Knowledge, Discovery and Dissemination Symposium, McLean, VA, 2006
Talk at Conference on Probabilistic Combinatorics & Algorithms: a Conference in Honor of Joel Spencer's 60th Birthday, April 2006
Invited talk at DHS Workshop on Consequence Modeling, March 2007
Invited panelist at DHS University Programs Summit, Washington, DC, March 2007
Talk at Advanced Study Institute on Mathematical Modeling of Infectious Diseases of Africa, at African Institute for Mathematical Sciences, Muizenberg, South Africa, June 2007
Talk at Workshop on Puzzling Mathematics and Mathematical Puzzles: A Gathering in Honor of Peter Winkler's 60th Birthday, Rutgers, June 2007
Invited Talk at National Visual Analytics Consortium Meeting, Pacific Northwest National Labs, November 2007
Talk at Domestic Nuclear Detection Academic Research Initiative Conference, April 2008
Talk at DIMACS Workshop on New Directions in Algorithms, Combinatorics and Optimization: A Conference Honoring the 65th Birthday of William T. Trotter, Georgia Tech, May 2008
REU Seminar, DIMACS, June 2008
Invited talk on modeling the impat of policy options at Workshop on Modeling the Impact of

Policy Options during Public Health Crisis, Banff International Research Station, July 2008
Invited talk on climate and disease at Workshop on Modeling the Impact of Policy Options during Public Health Crisis, Banff International Research Station, July 2008
Response Talk at Workshop on Algorithmic Decision Theory, University of Paris-Dauphine, October 2008
Workshop on Port Security/Safety, Inspection, Risk Analysis and Modeling, Rutgers, November 2008
Workshop on Mathematical Science Methods to Enhance Nuclear Detection, Rutgers, November 2008
Invited talk at Workshop on Boolean and Pseudo-Boolean Functions in Memory of Peter L. Hammer, January 2009
Talk at Domestic Nuclear Detection Academic Research Initiative Conference, April 2009
REU Seminar, DIMACS, June 2009
Invited talk at Visual Analytics Community (VAC) Consortium Meeting, University of Maryland, August 2009
Invited talk at International Conference on Stochastic Modeling and Optimization Dedicated to the 80th Birthday of Andras Prekopa, November 2009
Invited talk at Kickoff Conference for DHS Center for Visual Analytics for Command, Control, and Interoperability Environments (VACCINE), Purdue University, November 2009
Talk at NJ Office of Homeland Security and Preparedness, Hamilton, NJ, January 2010
Invited talk at Department of Homeland Security University Network Summit, Washington, DC, March 2010
Talk at Domestic Nuclear Detection Academic Research Initiative Conference, April 2010
Talk at New York City Police Department, April 2010
REU Seminar, DIMACS, June 2010
Invited talk at Advanced Study Institute on Conservtion Biology, Southern African Wildlife College, Hoedspruit, Limpopo, South Africa, August 2010
Invited talk at US Coast Guard Research and Development Center, New London, CT, September 2010
Talk at New York City Police Department, November 2010
Invited talk at DHS University Programs Summit, Washington, DC, March 2011
Talk at Domestic Nuclear Detection Academic Research Initiative Conference, April 2011
Invited talk at Visual Analytics Community (VAC) Consortium Meeting, University of Maryland, May 2011
Invited talk at Technologies for Incident Preparedness Conference, National Harbor, MD, September 2011
Invited talk at Workshop on Effective Engagement and Collaboration of US CISE-China Researchers, Arlington, VA, May 2011
Invited talk at Workshop on Information and Communication Technologies for Sustainability, held in Conjunction with IEEE SECON 2011, Sal Lake City, June 2011
Invited talk at Maritime Risk Symposium, Rutgers, November 2011
Invited talk at 10 Years Later: A National Conference on Preparedness and Response, New Brunswick, NJ, December 2011
Talk at Domestic Nuclear Detection Academic Research Initiative Conference, July 2012

Invited Talk at Immigration and Customs Enforcement, Washington, DC, October 2012
Invited talk at DHS Office of Strategic Planning, Analysis, and Risk, October 2012
Invited talk at Special Session Mathematics of Planet Earth: Energy, Population, Sustainability, at Joint Mathematics Meetings, San Diego, CA, January 2013
Invited briefing to NJ Office of Homeland Security and Preparedness, Sports/Entertainment Security Group, September 2013
Talk at Third International Conference on Algorithmic Decision Theory, Brussels, Belgium, November 2013
Invited panel talk at National Strategic Maritime Risk Conference, Purdue University, November 2013
Invited talk at American Mathematical Society Special Session on My Favorite Graph Theory Conjectures, Baltimore, MD, January 2014
Invited talk at MPE2013+ Workshop: Challenges and Opportunities, Arizona State University, January 2014
Invited panel talk at Conference on Cyber/Homeland Security - Opportunities for U.S.-Israel Partnerships, New Jersey Inst. of Technology, January 2014
Invited talk at Fusion Fest: Marrying Methods to Solve Real-world Problems, Rutgers University, October 2014
Invited panel talk at CREATE-TSA Summer Symposium, University of Southern California, July 2015
Talk at International Conference on Information, Intelligence, Systems and Applications, 1st International Workshop on Modeling, Computing and Data Handling for Marine Transportation, Corfu, Greece, July 2015
Invited talk at INFORMS National Meeting, Philadelphia, November 2015
Opening talk at Workshop on Modeling of Infectious Disease with a Focus on Ebola, Dakar, Senegal, March 2016.
Invited panel talk at Opportunities for U.S.-Israel Technology Partnerships for Advancing Innovation for First Responders & Homeland Security, NJIT, January 2016
Invited talk to Rutgers College Class of 1961, Rutgers Day, April 2016
Contributed paper at 2016 IEEE International Symposium on Technologies for Homeland Security, Boston, May 2016, winner of best paper award.
Invited talk to Summit Old Guard, September 2016.
Invited presentation (given by others for me) at Cyber Security Conference at NATO Maritime Interdiction Operational Training Centre (NMIOTC), Souda Bay, Crete, October 2016.
Opening talk at Workshop on Chesapeake Fisheries: From Oysters to Economics, Morgan State University Pearl Lab, Saint Leonard, MD, August 2017.
Invited talk at US Coast Guard Sector Long Island Sound in Cyber Security Workshop, Niantic, CT, December 2017.
Opening talk at Workshop on Mathematics of Planet Earth: The Future, DIMACS, July 2018.
Opening talk at Workshop on Automated Biometric Identification of Individual Cheetahs and Leopards, Duke University, August 2018.
Invited talk at session on Risk Analysis for Uncertain Futures at Society for Risk Analysis Annual Meeting, New Orleans, December 2018.
Invited talk (given by others for me) at session on Uncertain Futures at Society for Benefit Cost Analysis Annual Meeting, Washington, DC, March 2019.

Invited panel talk at Conference on Systems Analysis in Eurasia, National University of Science and Technology, Moscow, Russia, April 2021. [virtual]
Invited panel talk at Conference on Transformative Disaster Risk Governance, York University, Toronto, Canada, April 2021. [virtual]
Invited panel talk at SciDataCon Conference, S. Korea, October 2021 [virtual]
Invited panel talk at session on International Engagement in Mathematical Sciences Research During the COVID-19 Pandemic, Joint Mathematics Meetings, April 2022 [virtual]
Invited talk at CBP-ADEPT workshop, Northeastern University, August 2022 [virtual]
Invited talk at Sustainability session at workshop on Human-Machine Collaboration in a Changing World, Paris, December 2022 [virtual]
Invited "Lunch and Learn" webinar to US Committee on the Marine Transportation System, February 2023 [virtual]
Invited presentation to ESF-1 Working Group of the FEMA Region X Regional Interagency Steering Committee (RISC), February 2023 [virtual]
Invited presentation to Interagency (US Government) Committee on the Supply Chain, March 2023 [virtual]
Invited presentation to Cybersecurity and Infrastructure Security Agency (CISA) Resilience Services Branch, April 2023 [virtual]
Invited presentation to Interagency Task Group on Cyber-Physical Systems (co-chaired by CISA, USACE, NSF), April 2023 [virtual]
Invited presentation to US Coast Guard Waterways Management, October 2024 [virtual]
Invited presentation to US Coast Guard Board of Inquiry convened after the Francis Scott Key Bridge Collapse in Baltimore, November 2024 [virtual]
Invited presentation at ADSA28: Building Effective Security for Soft Targets, Notheastern University, Boston, MA, November 2024
Invited presentation at Society for Risk Analysis, Austin, Texas (presented by co-author), December 2024

Misc. seminar talks at:

Bell Labs*, Columbia, Cornell*, CUNY*, Dartmouth*, DIMACS*, Duke, Educational Testing Service, Fordham, IBM, Ithaca College, Los Alamos National Laboratory, Miami University, Montclair State College, National Telecommunications and Information Administration, Northeastern*, Orange Coast College, Princeton*, RAND Corp.*, Rutgers*, Stanford*, Stevens, Stony Brook*, Telcordia Technologies, UC Berkeley, UC Irvine, UCLA*, UC Riverside, Waterloo
(* indicates more than once)

Departmental or School-Wide Colloquia or Seminars:

1967-68 Dartmouth
1968-69 Dartmouth
1969-70 Cornell, Dartmouth
1971-72 Binghamton, Cornell, Dartmouth, Denver
1972-73 Baylor, Cornell, MIT, Texas
1973-74 Cornell, Gettysburg, Hunter, Lawrence, Montclair State, North Carolina State, Rutgers (Math), Rutgers (Computer Science), Seton Hall
1974-75 Adelphi, Colby, Cornell, Franklin and Marshall, Johns Hopkins, Miami of Ohio,

	Tennessee, Vanderbilt, Villanova, Virginia Tech., Wesley, Westinghouse Research Labs, Wilkes
1975-76	Connecticut, Salisbury State, Swarthmore, Union, Vassar, Wisconsin (Stevens Point), Western Carolina
1976-77	Bowling Green, Colgate, General Motors Res. Labs., Manhattan, Montclair State
1977-78	Harvard, North Carolina State
1978-79	Lehigh, Rider
1979-80	Bell Labs, Cornell, Exxon
1980-81	Hunter, Miami of Ohio, Rutgers (Indus. Engr.)
1981-82	The Citadel, Clemson, Mitre Corporation, Northeastern, South Carolina
1982-83	Rutgers (Operations Research)
1983-84	Lausanne, Missouri, Stevens, Wesleyan
1984-85	Aachen, Bonn, Johns Hopkins, McPherson, University of CA/Irvine, Rutgers (Industrial Engineering), East China Normal University (Shanghai, China), Beijing Institute of Tech (China)
1985-86	Rutgers (Operations Research)
1986-87	Free University of Brussels, Hartford, Maine
1987-88	Colorado (Denver), Miami University, Worcester Poly
1988-89	Glassboro State, Johns Hopkins, Supercomputing Research Center, Wright State
1989-90	Dickinson, Fordham, Northeastern, University of Puerto Rico, Williams
1990-91	Dartmouth, Waterloo, Xavier (New Orleans)
1991-92	Seton Hall
1992-93	Pittsburgh, Tennessee
1993-94	University of Colorado (Denver), Dartmouth, GERAD (University of Montreal)
1994-95	Louisville
1995-96	Kyung-Hee University (Seoul, S. Korea), Pohang Inst. of Science and Technology (Pohang, S. Korea), Dartmouth
1996-97	College of Staten Island (CUNY)
1997-98	Fordham, Jawaharlal Nehru University (Delhi, India)
1999-00	DIMATIA (Charles University, Prague, Czech Rep.), Indiana University of Pennsylvania, Cheju National University (Cheju Island, Korea), Kyung-Hee University (Seoul, Korea), Seoul National University (Seoul, Korea)
2001-01	Illinois Institute of Technology, South Carolina
2001-02	Dartmouth, University of Greenwich (UK), University of Michigan, National Taiwan University
2002-03	Colgate, Montclair State
2003-04	RPI
2004-05	Lawrence Livermore National Laboratory
2005-06	Trinity, Xi'An Xiaotong (China)
2007-08	Department of Homeland Security, Seton Hall
2008-09	Los Alamos National Lab
2009-10	Pacific Northwest National Lab
2013-14	West Chester University
2014-15	University of Texas – San Antonio
2017-18	Drew University
2018-19	RPI

2019-20 Tufts
2020-21 Missouri University of Science and Technology
2021-22 City College of New York

Professsional Activities:

Advisory Boards:

1992-00: External Advisory Board, Center for Theoretical Studies in the Physical Sciences, NSF Minority Excellence Center at Clark Atlanta University
2003-06: Chair, Advisory Committee, NSF Office of International Science and Engineering
2003...: Representative to NJ State Regional Homeland Security Technology Council
2004-07: Advisory Committee, NJ Department of Homeland Security Center for Biological, Radiological, Nuclear, and Environmental (CBRNE) Training
2006...: Member, State of New Jersey Health Emergency Preparedness Advisory Council
2007-10: Co-Chair, NJ Office of Homeland Security and Preparedness (OHSP) Preparedness College
2009-12: Member, NSF Mathematical and Physical Sciences Advisory Committee
2010-12: Member, NSF Advisory Committee for Environmental Research and Education
2011-17: Member, Scientific Advisory Committee to International Institute for Applied Systems Analysis
2012-18: Member, Board on Mathematical Sciences and Applications, National Academy of Sciences

Member of:

American Mathematical Society (AMS)
Consortium for Mathematics and its Applications (COMAP)
Mathematical Association of America (MAA)
Institute for Operations Research and Management Science (INFORMS)
Society for Industrial and Applied Mathematics (SIAM)
Society for Mathematical Psychology
Classification Society of North America
Association for Computing Machinery (ACM), Special Interest Group in Algorithms and Computational Theory (SIGACT)
Association for Women in Mathematics
Society for Mathematical Biology

Editorships:

Editor, SIAM Review, 1972-1979
Editor, special issue of SIAM Jour. on Applied Math., Sept., 1975
Associate Editoriate SIAM Jour. on Applied Math., 1975-1983
Editorial Board, Encyclopedia of Math and its Applications, 1975-1983
Editorial Board, Discrete Applied Mathematics, 1978 ...
Advisory Editor and Editorial Board, Jour. of Math. Social Sciences, 1979-1997
Editorial Board, Mathematical and Computer Modelling, 1979-2014
Editorial Board, SIAM Journal on Algebraic & Discrete Methods, 1980-1987
Editorial Board, Marcel Dekker Series in Pure and Applied Mathematics, 1980-1986
Editorial Board, Annals of Operations Research, 1983 ...

Editorial Board., Journal of Mathematical Psychology, 1986 ...
Editorial Board, SIAM Journal on Discrete Mathematics, 1987-1997
Editorial Board, Journal of Combinatorics, Information, and Systems Science, 1990 ...
Editorial Board, Journal of Computational Biology, 1993 ...
Advisory Editorial Board, CRC Handbook of Discrete and Combinatorial Mathematics, 1993-1999
Editorial Board, Discrete Mathematics, Algorithms and Applications, 2009 ...
Advisory Board, Computational Social Networks, 2013 ...

Positions in Professional Societies:

1977-81:	Secretary of SIAM
1980...:	Member, COMAP (formerly UMAP) Consortium Council
1981:	Candidate for President of SIAM
1981-82:	Member, CBMS Council
1982:	Candidate for SIAM Board of Trustees
1983-92:	Member, Board of Directors of SIMS (formerly SIAM Institute for Mathematics and Society; now Societal Institute for the Mathematical Sciences)
1984-87:	Vice President of SIAM
1987:	Candidate for SIAM Board of Trustees
1987-92:	Secretary of SIAM Institute for Mathematics and Society (SIMS)
2015…	Member, Advisory Board, SIAM Activity Group on Mathematics of Planet Earth

Other Activities for Professional Societies:

1976-81:	Member, Committee on the Undergraduate Program, MAA
1976-80:	Member, CUPM Panel on a General Mathematical Sciences Program
1979-81:	Chairman, MAA-SIAM Committee on Applications of Mathematics in the College Curriculum
1979-80:	Member, SIAM Education Committee
1982-84:	Member, SIAM Program Committee
1982-85:	Chairman, SIAM Committee on Relations with the Federal Government
1984-87:	Chairman, SIAM Major Awards Committee
1984-86:	Member, Steering Committee, SIAM Activity Group in Discrete Mathematics
1986-90:	Member, SIAM Committee on Science Policy
1988:	Member, SIAM Nominating Committee
1990-92:	Member, AMS Committee on Cooperative Symposia
1993:	AMS Representative to Organizing Committee for International Conference on Ordinal Data Analysis
1997:	Member, AMS/AAAS Liaison Committee
2000-18:	Member, SIAM Committee on Science Policy
2006-08:	Member, AMS Science Policy Committee
2002-03:	ACM/SIGACT Distinguished Service Award Prize Committee

"Special Focus Programs" Organized:

1993-00: DIMACS "Special Year" on Mathematical Support for Molecular Biology, Chair of Organizing Committee
1999-03: DIMACS Special Focus on Computational Molecular Biology, member of Organizing Committee
2002-10: DIMACS Special Focus on Computational and Mathematical Epidemiology, Chair of Organizing Committee
2004-08: DIMACS Special Focus on Computation and the Socio-Economic Sciences, co-Chair of organizing committee
2004-10: DIMACS Special Focus on Information Processing in Biology, Chair of Organizing Committee
2006-12: DIMACS/MBI African BioMathematics Initiative, Chair of Organizing Committee
2010-13: DIMACS Special Focus on Algorithmic Decision Theory, Chair of Organizing Committee
2012-15: DIMACS Special Focus on Energy and Algorithms, Organizing Committee
2012-18: Mathematics of Planet Earth 2013+, Chair of Organizing Committee
2013: Mathematics of Planet Earth, Organizing Committee
2019…: DIMACS Special Focus on Mechanisms and Algorithms to Augment Human Decision Making, Organizing Committee

Conferences Organized:

1974: Program Committee, SIAM Annual Meeting
1975: Conference Chairman, SIMS Res. Applications Conference on Mathematics and Energy
1977: Program Chairman, SIAM 25th Anniversary Meeting
1978: Program Committee, SIAM Fall Meeting
1978: Symposium Chairman, IGT Symposium on Energy Modeling and Net Energy Analysis
1979: Symposium Chairman, IGT Symposium on Energy Modeling II
1979-81: Member, Steering Committee, Environmetrics '81
1980: Symposium Chairman, IGT Symposium on Energy Modeling III
1981: Symposium Chairman, SIAM Symposium on Applications of Discrete Mathematics
1981-82: Symposium Chairman, IGT Symposium on Energy Modeling IV
1982-83: Symposium Chairman, Second SIAM Symposium on Applications of Discrete Mathematics
1984-86: Conference Co-Chairman, Third SIAM Conference on Applications of Discrete Mathematics
1985: Program Committee, Graph Theory Day X
1985: Organizer of Minisymposium on Applications of Discrete Mathematics to Problems of Society, SIAM National Meeting
1985-86: Organizer, Advanced Research Institute on Discrete Applied Mathematics, Rutgers University
1986...: Program Chairman, Workshop on Applications of Combinatorics and Graph Theory in the Biological and Social Sciences, Institute for Mathematics & its

Applications, University of Minnesota
1986-87: Organizer, Second Advanced Research Institute on Discrete Applied Mathematics, Rutgers University
1987: International Advisory Committee, First International Conference on Creative Studies, Shanghai, 1987.
1987-88: Organizer, Third Advanced Research Institute on Discrete Applied Mathematics, Rutgers University
1988-89: Organizer, Fourth Advanced Research Institute on Discrete Applied Mathematics, Rutgers University
1988-90: Program Committee, First Alaska Graph Theory Conference: Quo Vadis Graph Theory
1989: Co-Organizer, DIMACS Workshop on Reliability of Computer and Communication Networks, Rutgers University
1989-90: Organizer, Fifth Advanced Research Institute on Discrete Applied Mathematics
1990-91: Organizer, Sixth Advanced Research Institute on Discrete Applied Mathematics
1990-91: Organizer, Workshop on Graph Labellings, Northeastern University
1991: Organizer, Genome Day, DIMACS
1991-92: Organizer, Seventh Advanced Research Institute on Discrete Applied Mathematics
1992-93: Consulting Organizer, Conference on Graduate Programs in the Applied Mathematical Sciences, Clemson University, Clemson, SC
1993: Organizing Committee, International Conference on Ordinal Data Analysis, Amherst, Massachusetts
1996: Organizing Committee, DIMACS workshop on Mathematical Hierarchies and Biology
1996-97: Organizing Committee, DIMACS/DIMATIA Conference on the Future of Discrete Mathematics, Stirin Castle, Czech Republic
1996-98: Organizing Committee, Conference on Combinatorial and Global Optimization, Chania, Greece
1997: Organizing Committee, DIMACS Workshop on Mathematical Hierarchies and Biology
1998: Organizing Committee, Hong Kong University of Science and Technology DIMACS Far-East Workshop on Algorithms and Combinatorics, Hong Kong, 1998
1998: Organizing Committee, International Conference on Combinatorics Statistics, Pattern Recognition, and Related Areas, Mysore, India
1998: Organizing Committee, DIMACS Workshop on Combinatorial Clustering and Multi-domain Protein Structure
1998: Organizing Committee, DIMACS Workshop on Advances and Opportunities at the Biology-Math-Computation-Physical Sciences Interface
1998: Chair, A Celebration of DIMACS (DIMACS' 10th Anniversary Meeting)
1999: Organizing Committee, DIMACS Miniworkshop on Mathematical and Computational Approaches to Elections
1999-00: Organizing Committee, International Conference on Ordinal and Symbolic

	Data Analysis, Brussels, Belgium
2000:	Organizing Committee, DIMACS Workshop on Bioconsensus
2000:	Organizing Committee, DIMACS Workshop on Policy-driven Decision Making and Dynamic Interoperability
2001:	Organizing Committee, DIMACS Workshop on Integration of Diverse Biological Data
2001:	Organizing Committee, DIMACS Workshop on Bioconsensus II
2001-02:	Organizing Committee, DIMACS-National Chiao Tung University Conference on Interconnections among Codes, Designs, Graphs and Molecular Biology, Hsinchu, Taiwan
2001-02:	Organizer, Short Course: A Sampling of Applications of Graph Theory
2002:	Organizer, Working Group Meeting on Mathematical Sciences Methods for the Study of Deliberate Releases of Biological Agents and their Consequences
2003:	Organizer, Workshop on Modeling Social Responses to Bioterrorism Involving Infectious Agents
2005:	Organizer, DIMACS-DIMATIA-Renyi Working Group Meeting on Graph Coloring and their Generalizations, Budapest
2005:	Organizing Committee, Governor Codey's School Security Summit, Rutgers University
2005-06:	Scientific Committee for Program on National Defense and Homeland Security, SAMSI (Statistical and Applied Mathematical Sciences Institute)
2005:	DIMACS Working Group on DNA and the Barcode of Life
2005:	DIMACS Epidemiology Minisymposium
2005:	Conference on Linking Mathematics and Biology in the High Schools, DIMACS
2006:	Experimental Analysis of Algorithms: Interfaces between Statistics and Computer Science, DIMACS
2006:	Workshop on Computational Optimization and Logistics Challenges in the Enterprise, Exxon-Mobil Research and Engineering, Annandale, NJ
2006:	DIMACS DIMATIA Renyi Combinatorial Challenges Meeting
2006:	The DNA Barcode Data Analysis Initiative (DBDAI): Developing Tools for a New Generation of Biodiversity Data, Paris
2006:	New Jersey Universities Homeland Security Research Consortium Symposium, Fairleigh Dickinson University
2006:	US-China Computer Science Leadership Summit, Beijing, China
2006:	Chair, DIMACS/AIMS/SACEMA Workshop on Facing the Challenge of Infectious Diseases in Africa: The Role of Mathematical Modeling, Johannesburg, South Africa
2006:	New Jersey Universities Homeland Security Research Consortium Symposium, Rutgers University
2006:	DIMACS/LAMSADE Workshop on Voting Theory and Preference Modeling Universite of Paris – Dauphine
2007:	Chair, DHS Center for Dynamic Data Analysis Kickoff Conference, Rutgers
2007:	Meeting Co-Chair, IEEE Conference on Intelligence and Security Informatics, New Brunswick, NJ

2007: Chair, DIMACS/AIMS/SACEMA Advanced Study Institute and Workshop on Mathematical Modeling of Infectious Diseases of Africa, Cape Town and Stellenbosch, South Africa

2007: Organizer, DIMACS Workshop on Recent Advances in Mathematics and Information Sciences for Analysis and Understanding of Massive and Diverse Sources of Data, Rutgers

2007: Organizer, Workshop on The Mathematics of Homeland Security: Topics for High School Teachers, Department of Homeland Security Center of Excellence for Dynamic Data Analysis, Rutgers University

2007: Organizer, DIMACS Bio-Math Connection (BMC) Field Testers Workshop (Computational Biology), Rutgers

2007: Organizer, Reconnect Conference on Data Analysis and Law Enforcement, Rutgers

2007: Organizing Committee, Symposium: The State of the Art in the Decision Sciences Location, University of Luxembourg

2007: Organizer, Mini Symposium on Discrete Science Applications in Homeland Security, Department. of Homeland Security Center of Excellence for Dynamic Data Analysis, Rutgers University

2008: Organizer, US-Africa Advanced Study Institute on Mathematical Modeling of Infectious Diseases in Africa, African Institute for Mathematical Sciences, Muizenberg, South Africa

2008: Organizer, Reconnect Conference on Mathematical Methods in Biosurveillance, Rutgers

2008: Organizer, Second US-China Computer Science Leadership Summit, Arlington, VA

2008: Organizer, DIMACS Bio-Math Connection (BMC) Field Testers Workshop (Epidemiology)

2008: Organizing Committee, Workshop on Modeling the Impact of Policy Options during Public Health Crises, Banff International Research Station

2008: Organizer, Workshop on Algorithmic Decision Theory, University of Paris-Dauphine

2008: Organizer, Workshop on Port Security/Safety, Inspection, Risk Analysis and Modeling, Rutgers

2008: Workshop on Mathematical Science Methods to Enhance Nuclear Detection, Rutgers

2008: Organizing Committee, Eighth New Jersey Universities Homeland Security Research Consortium Symposium Homeland Security: From Face Recognition to Disease Detection, Natural Disasters to Transit Security, Princeton University

2009: Organizer, DIMACS/CINJ BioMedical Informatics Summit, The Cancer Institute of NJ (CINJ), New Brunswick, NJ

2009: Organizing Committee, Clinic on Meaningful Modeling of Biological Data, African Institute for Mathematical Sciences

2009: Organizer, DIMACS Bio-Math Connection (BMC) Field Testers Workshop (Ecology and Population Biology), Rutgers

2009: Organizer, Advanced Study Institute and Workshop on Economic

Epidemiology, Makerere University, Kampala, Uganda
2009: Organizer, Reconnect Conference on Visual Analytics and Applications, Rutgers
2009: Organizing Committee, International Conference on Algorithmic Decision Theory, Venice
2009: Organizer, DIMACS 20th Birthday Conference, Rutgers
2010: Organizing Committee, Miniworkshop on Algorithms and Energy, Rutgers
2010: Chair, Third US-China Computer Science Leadership Summit, Beijing, China
2010: Organizing Committee, DIMACS/MBI Clinic on Meaningful Modeling of Epidemiological Data, Muizenberg, South Africa
2010: Chair, CCICADA Kickoff Conference, Rutgers
2010: Chair, DIMACS/MBI Advanced Study Institute and Workshop on Conservation Biology, Southern African Wildlife College, Hoedspruit, Limpopo, South Africa
2010: Chair, Conference on Mathematical Challenges for Sustainability, Rutgers
2010: Co-Chair, Workshop on Evidence-based Policy Making, University of Paris Dauphine
2011: Organizing Committee, Advanced Study Institute on Conservation Biology, Kenya Wildlife Service Training Institute, Naivasha, Kenya
2011: Chair, US-China Computer Workshop on Collaborations in CS and Sustainability, Rutgers
2011: Co-Chair, DIMACS Sustainable Planet Education Program Workshop, Rutgers
2011: Co-Chair, International Conference on Algorithmic Decision Theory, Rutgers
2011: Organizing Committee, DIMACS/MBI Workshop on Genetics and Disease Control, Elmina, Ghana
2011: Co-Chair, Workshop on Smart Cities, University of Paris-Dauphine
2011: Organizing Committee, Maritime Risk Symposium – Developing Public-Private Partnerships in Homeland Security: How Risk Impacts Government Policy and Business Requirements, Rutgers
2012: Chair, DIMACS/MBI Workshop on Quantitative Landscape Ecology and Environmental Sustainability, University of Kwa-Zulu-Natal, Durban, South Africa
2012: Organizing Committee, Workshop on Algorithmic Aspects of Information Fusion, Rutgers
2012: Steering Committee, Maritime Risk Symposium: Reducing Costs and Increasing Effectiveness in the Maritime Environment, University of Southern California, Los Angeles
2014: Workshop Introducing Topics of Mathematics of Planet Earth 2013+, Arizona State University
2014: Organizing Committee Mathematics of Planet Earth 2013+ Workshop on Sustainable Human Environments, Rutgers
2015: Organizing Committee, Mathematics of Planet Earth 2013+ Workshop on Data-Aware Energy Use, UC San Diego

2015:Organizing Committee, Mathematics of Planet Earth 2013+ Workshop on Global Change, UC Berkeley
2015: Organizing Committee, Mathematics of Planet Earth 2013+ Workshop on Natural Disasters, Georgia Tech
2015: Organizing Committee, Mathematics of Planet Earth 2013+ Workshop on Management of Natural Resources, Howard University
2015: Organizing Committee, Mathematics of Planet Earth 2013+ Workshop on Education for the Planet Earth of Tomorrow, University of Tennessee
2015: Organizing Committee, International Workshop on Citizens Science, University of Paris-Dauphine
2015: Chair, Learning Seminar and Symposium on Maritime Cyber Security, Rutgers
2015: Research Chair, Maritime Cyber Research Summit, Cal Maritime
2015-16: Research Chair, Research Working Group on Maritime Cyber Security, Port of Long Beach, CA
2015-16: Research Chair, Research Working Group on Maritime Cyber Security, University of Southern California
2015-16: Co-chair, International Workshop on Modeling of Infectious Diseases, with a Focus on Ebola, Dakar, Senegal
2016: Organizing Committee, A Conversation on Venue Security After Paris, MetLife Stadium, NJ
2016: Organizing Committee, Workshop on Zika, UC Berkeley
2016: Planning Committee, Maritime Risk Symposium, University of North Carolina
2016: Research Chair, Research Working Group on Maritime Cyber Security, University of North Carolina
2017: Organizing Committee, Workshop on Chesapeake Fisheries: From Oysters to Economics, Morgan State University PEARL Lab, Saint Leonard, MD
2016-17: Planning Committee, Maritime Risk Symposium, Tiffin University
2017: Advisory Committee, Workshop on Social Responsibility of Algorithms, University of Paris-Dauphine
2017-18: Organizer and Research Chair, Research Working Group on Maritime Cyber Security, DIMACS, Rutgers University
2017-18: Planning Committee, Maritime Risk Symposium, Oak Ridge National Laboratory
2018: Organizer, Workshop on Maritime Cyber Security: Coast Guard/University Research Initiative, CCICADA, Rutgers University
2018: Organizer, Workshop on Mathematics of Planet Earth: The Future, DIMACS, Rutgers University
2018 Organizing Committee, Workshop on Automated Biometric Identification of Individual Cheetahs and Lions, Duke University
2018 Organizing Committee, Workshop on Drones for Safety and Security: A New Agenda, Rutgers
2018-19: Planning Committee, Maritime Risk Symposium, SUNY Maritime
2019: Program Committee, International Conference on Algorithmic Decision Theory, Duke

2019: Organizing Committee, Workshop on Social Responsibility of Algorithms, University of Paris-Dauphine
2019-20: Planning Committee, Maritime Risk Symposium, U. of Illinois
2019-20: Co-chair, Workshop on Big Data and Systems Analysis, International Institute for Applied Systems Analysis, Laxenburg, Austria
2019-22: Organizing Committee, Workshop on Social Responsibility of Algorithms, Australian National University, Canberra
2020: Organizer, DHS Centers of Excellence Workshop on the Supply Chain during COVID-19
2020: Organizer, DHS Centers of Excellence Workshop on Enhanced Supply Chain Crime During the Pandemic
2020: Organizer, DHS Centers of Excellence Workshop on the Supply of Labor During the Pandemic
2020: Organizer, DHS Centers of Excellence Workshop on the Food Supply Chain During the Pandemic
2020: Organizer, DHS Centers of Excellence Workshop on the Supply Chain for Medicines, Vaccines, PPEs During the Pandemic
2020-21: Planning Committee, Maritime Risk Symposium, U. of Houston
2021: Organizer, DHS Centers of Excellence Workshop on COVID-19 Vaccine Efficacy and Safety
2021: Organizer, DHS Centers of Excellence Workshop on COVID-19 Vaccine Distribution and Prioritization
2021: Organizer, DHS Centers of Excellence Workshop on the Suez Canal Incident and Its Impact on the Global Maritime Supply Chain
2021: Program Committee, International Conference on Algorithmic Decision Theory, U. of Toulouse
2021-22: Organizing Committee, Human Machine Collaboration, LAMSADE, University of Paris-Dauphine
2021-22: Planning Committee, Maritime Risk Symposium, Argonne National Lab
2022 Organizing Committee, Workshop on Social Responsibility of Algorithms, Australian National University
2022-23: Organizing Committee, International Conference on Data Analysis, Optimization and their Applications, Moscow
2022-23: Planning Committee, Maritime Risk Symposium, SUNY Maritime
2022: Organizing Committee, Workshop on Algorithm and Mechanism Design for Achieving the UN Sustainable Development Goals
2023: Organizing Committee, Workshop on Meaningful, Useful and Legitimate Information in Decision Making, LAMSADE, University of Paris-Dauphine
2024: Organizing Committee, SCRIPS Workshop: Supply Chain Resilience Issues, Problems and Solutions for the Homeland Security Enterprise, Washington, DC

Miscellaneous Professional Activities:

1974-76: SIAM Lecturer
1975: Outside Evaluation Committee, Mathematics Department, Allegheny College
1975: Outside Evaluation Committee, Program in Math and the Social Sciences,

	Dartmouth College
1976:	Participant, MAA Workshop on Applied Math Modules, Cornell University
1976...:	Member, MAA Consultant's Bureau
1977-78:	Oversight Committee, NSF-RANN Project on Structural Models of Technology Assessment
1979-81:	Member, State Energy Models Tech. Committee, Colorado School of Mines Research Institute
1980:	Outside Evaluation Committee, Mathematics Department, SUNY/Plattsburgh
1982:	Outside Evaluator, State University College at Buffalo
1983:	Outside Member, Ph.D. Committee at New York University
1984:	Member, Office of Naval Research Review Panel on Research Options
1984...:	Member, Steering Committee, Mathematical Competition in Modeling
1985-87:	Member, Committee on Applications of Mathematics, National Research Council
1985:	Outside Evaluation Committee, Mathematics Department, Colgate University
1985:	Outside Evaluation Committee, Computer Science Department, Hunter College
1986:	Board of Visitors, Office of Naval Research Advisory Board
1987:	Consultant visit to University of Hartford
1988:	Board of Visitors, Office of Naval Research Advisory Board
1991:	Committee of Visitors, Instructional Materials Development Program, National Science Foundation
1991-95:	Visiting Lecturers Panel, MAA
1991:	Member, National Science Foundation Review Panel on Statewide Initiatives in Science, Mathematics, and Engineering Education
1992...:	External Advisory Board, Center for Theoretical Studies in the Physical Sciences, NSF Minority Excellence Center at Clark Atlanta University
1992:	Chair of NSF Panel on the Role of Faculty from the Mathematical Science Disciplines in the Undergraduate Education of Science and Mathematics Teacher
1993:	Committee of Visitors, Office of Special Projects, Division of Mathematical Sciences, NSF
1993:	Co-Chair, External Review Committee, Graduate Program in the Mathematical Sciences, Clemson University, Clemson, SC
1993-97:	Member, Working Group in Discrete Mathematics (Advisory Group for Discrete Mathematics in the Schools)
1994:	NSF Panel on Instructional Materials Development
1994:	Co-chair, External Review Committee, Department of Mathematics, University of Colorado, Denver
1994:	Committee of Visitors, Instructional Materials Development Program, Division of Elementary, Secondary, and Informal Science Education, NSF
1999:	Senior Researcher and Panel Organizer, NSF Career PI Meeting
2001:	Participant, NSF International REU Best Practices Workshop
2002:	Participant, NIH Consultation on Smallpox Modeling
2002:	Participant, Secretary of HHS Emergency Preparedness Modeling Group
2003:	Participant, NSF-NIH Symposium on Math-Biology Linkages

2003: Participant, NIH Models of Infectious Disease Agents Study Review Committee, 2003
2003: Participant in Conference on Mathematical Modeling of Spread of Agricultural Bioterrorism Agents, MITRE Corporation, McLean, VA
2003: Panelist at NIH BISTI (Biomedical Information Science and Technology Initiative) Symposium: Digital Biology: The Emerging Paradigm, Bethesda, MD
2003...: Representative to NJ State Regional Homeland Security Technology Council
2004: Invited participant at ASA/INFORMS Workshop on OR-Stat, Santa Fe, NM
2004-10: Co-Chair, New Jersey Universities Homeland Security Research Consortium
2004...: Steering Committee, Rapid Response Institute, Monmouth University
2005: Invited participant: AFMIC, ITIC, DHS Conference on Avian Influenza: Threat to Homeland Security, Chantilly, VA
2006: Leader, National Science Foundation-CISE US Computer Science Leadership Delegation to China
2006...: Member, State of New Jersey Domestic Security Preparedness Planning Group
2007: Invited participant, Center for Disease Control (CDC) Preparedness Modeling Conference, Atlanta, GA
2011-12: Chair NSF Mathematical and Physical Sciences Advisory Committee Subcommittee on Name of Division of Mathematical Sciences
2012-15: Co-Chair, NSF Committee on Support for the Statistical Sciences at NSF
2014-16: Member, Science and Technology Project Management Committee, NJ Office of Homeland Security and Preparedness
2016: Chair, Panel to Evaluate NSF STC Applications
2016: Delegate to Next Einstein Forum, Dakar, Senegal
2016: Lecture at NSF meeting of directors of new STCs on running an STC
2018: International Selection Committee for AIMS-Canada Climate Change Science Chairs
2018… Co-Director (with Igor Sheremet, Deputy Director for Science, Russian Foundation for Basic Research) of CODATA Task Group on Advanced Mathematical Tools for Data-driven Applied Systems Analysis
2019: Participant in Meeting: Rencontres Initiative Planete A, Quebec
2019: Participant in Meeting: Sustainability in the Digital Age: Resilience Facing Global Challenges
2020: Panel Organizer of session on PPE during and after COVID at Clean 2020 Summit
2021: Panel Organizer of session on Data Science and Systems Analysis, SciDataCon, S. Korea

Educational Programs Organized:

1989...: Organizer and Lecturer, DIMACS Leadership Program (high school teachers, later K-8)
1989...: Organizer and Lecturer, DIMACS Young Scholars Program (high school students)
1992-11: Director, DIMACS Research Experiences for Undergraduates International

REU Program
1996-99: Director, DIMACS Research and Education Institute (DREI) (researchers plus high school teachers), Director
1998...: Director, Reconnect Program for College Faculty (after 2009 Assistant Director)
1999...: DIMACS Educational Modules Series
2000-04: Director, DIMACS Connect Institute (DCI) (researchers plus high school teachers)
2004-07: Director, DIMACS BioMath Connect Institute (researchers plus high school teachers)
2006…: Director, DyDAn and CCICADA Research Experiences for Undergraduates Program
2006-12: Director, DIMACS BioMath Connection (modules for high schools)
2010-14: Director, DIMACS Program on Integrating Mathematics and Biology (modules, a course, and a book for high schools)
2011-13: Co-Chair, DIMACS Sustainable Planet Education Program: One Day Sustainability Modules for Mathematics Classes

Selected Homeland Security Research Programs Directed:

2007-10: A Decision Logic Approach to the Port of Entry Inspection Problem, supported by NSF and ONR
2007-10: Enhancing Force Deployment in Law Enforcement and Counter-terrorism Using Data Analytics, with Port Authority of New York/New Jersey
2007-12: Sensor Management for Nuclear Detection, supported by Domestic Nuclear Detection Office (DNDO)
2010-12: Stadium Evacuation Analysis Project, DHS
2010-12: Urban Commerce and Security Study for DHS Office of University Programs
2011: Development of Smart Phone Apps that Connect to the Incident Command Function of the Hippocrates Situational Awareness System, NJ Department Of Health and Senior Services
2011-12: Using Social Media for Alerts and Warnings, for DHS First Responders Group
2011-12: Modeling of Offsite Container Inspection Processes for US Customs and Border Protection (CBP)
2011-12: Fusion Center Data Analysis and Assessment, DHS Office of Intelligence & Analysis
2011-12: Flood Mitigation on the Raritan River, for Federal Emergency Management Agency (FEMA)
2012: Coast Guard Boat Allocation Problem
2012: A Targeted Risk-based Approach to Fisheries Law Enforcement in the First Coast Guard District
2012-14: SAFETY ACT: Best Practices for Stadium Security, for DHS Office of SAFETY Act Implementation
2012-14: Aviation Capability and Capacity Assignment Module (ACCAM), US Coast Guard
2013-14: Unaccompanied Alien Children, ICE, CBP, HHS

2013-15:	Metrics for the Southern Border, CBP, US Coast Guard
2013-15:	Coast Guard Boat Allocation Problem II: Sharing
2014-15:	SAFETY ACT: Metrics for Stadium Security, for DHS Office of SAFETY Act Implementation
2015-18:	Maritime Cyber Security, with US Coast Guard
2015-18:	Identity and Access Management, with Cyber Security Division
2015-16:	Government Inspections of Domestic Cargo: Impact and Implications
2015-16:	Crowd Simulation for the Port Authority Bus Terminal in New York City
2016-17:	Interoperability Tools and Information Sharing Environments, with ODNI
2016-18:	SAFETY Act: Economics of Security and Randomization for Large Venue
2017-21:	Best Practices for Digital Forensics
2018-20:	Development of an Algorithm for Enhanced Adjudication for Aviation Security Programs: with TSA
2020-21:	Chair, DHS University Centers of Excellence Initiative on the Supply Chain during COVID-19
2020-21:	Disruptions to the Information and Communications Technology Supply Chain
2021…:	Modeling the Impact of Complex, Multi-Vector Disruptions to the Marine Transportation System (MCAT)
2021-23:	Detecting Criminal Disruptions of Supply Chains with an Emphasis on Pharmaceutical, Medical Device, and Solar Array Supply Chains
2021…:	PI for Rutgers/CCICADA for SENTRY DHS Center of Excellence led by Northeastern University: protecting soft targets and crowded spaces
2021…:	Dynamic Digital Twins for Secure and Smart Civic Space (as part of the SENTRY Center of Excellence)
2021…:	Real-Time Crowd Forecasting for Risk Assessment and Layered Security Design with Applications to Management and Design of Crowded Spaces (as part of the SENTRY Center of Excellence)
2024…:	Streamlining USCIS Document Validation Using Artificial Intelligence

Rutgers Activities:

Departmental:

Mathematics Department:
Applied Math Committee, member since 1972 and chairman 5 terms
Personnel Planning Committee - various terms
Undergraduate Committee - various terms
Graduate Committee, 1984-1986
Many ad hoc committees

RUTCOR:
Executive Committee, many terms
Personnel Committee, many terms
Admissions Committee, many terms
Many ad hoc committees

Graduate School of Education:
Search Committee, Faculty in Mathematics Education, 2000-2003

University-Wide:

Physical Sciences Curriculum Committee, 3 terms
Provost's Committee on School of Business, 1984-1985
Executive Committee, Center for Computer Aids to Industrial Productivity, 1982-1985
Graduate Director, Interdisciplinary Ph.D. Program in OR, 1984-1989
CAIP Review Panel, 1986
University Speakers Bureau, 1988 ...
Representative to Executive Committee, Center for Discrete Mathematics and Theoretical Computer Science, 1988-1993, 1994-1995
Member, Search Committee for Dean of School of Business, Rutgers Camden, 1989
Member, New Brunswick Faculty Senate Committee on Educational Policy, 1990-1991
Member, Faculty Advisory Board, Center for Computer Aids to Industrial Productivity, 1991-2005
Member, Provost's Committee on the National Transit Institute, 1992
Research Advisory Board, 1992-1993, 1993-1994, 1998 ...
University Awards Committee, 1992-1993, 1993-1994
Provost's Committee on Strategic Planning in Continuing Education, 1993
Advisory Committee on Appointments and Promotions to Professor I - Math and Natural Sciences, Faculty of Arts & Sciences, 1993-1994
Organizer, Ad hoc Interdisciplinary Committee to Update the BioMath Major, 1994-1995
Program Committee for Science and Engineering Resource Center, Phase II (SERC II), 1995-1996
President's Committee on Implementation of the Strategic Plan: Information

Science and Related Fields, 1995
Rutgers Council on Governmental Relations, 1996 ...
Participant, Rutgers Delegation to Coalition for National Science Funding, Congressional Display, 1996
Member, Search Committee for Dean of Engineering, 1996-1998
Member, Science Cabinet, 1997-1999
Member, Information Sciences Council/Information Sciences and Technology Council, 1997-2007
Executive Committee, Center for Math, Science and Computer Education (CMSCE), 1999 …
Organizer, Rutgers Delegation to Coalition for National Science Funding, Congressional Display, 2000
Member, High Speed Network Applications Committee, 2000-2001
Presentation on Mathematical Sciences and Bioterrorism to National Issues Subcommittee, Board of Trustees, Rutgers, 2002
Coordinator, Rutgers Telecommunications Proposals to NJ Commission on Jobs, Growth, and Economic Development, 2003
Member, Rutgers-Picatinny Arsenal Coordinating Committee, 2003-2005
Faculty Advisor, Rutgers Student University Anti-Terrorism Coalition, 2004-2005
Member, Committee to Evaluate CAIP, 2004
Chair, Research Advisory Board Investigating Committee, 2004-2005
Member, Committee to Evaluate Dean of Arts and Sciences, 2005-2006
Computing Consortium Committee, 2005 ...
Rutgers Representative to Executive Board of University Center for Disaster Preparedness and Emergency Response (a joint activity of Rutgers, University of Medicine and Dentistry of NJ, and Robert Wood Johnson University Hospital), 2006 ...
Chair, Search Committee for Director of Institute of Marine and Coastal Sciences, 2007-2008
Co-Director, Laboratory of Port Security, 2006 ...
Rutgers Discovery Informatics Institute (RDII) Internal Advisory Board, 2015 ...
Chair, Provost's Search Committee for Henry Rutgers Data Science Professorship, 2015-2016
Co-organizer, Vice Chancellor's Ideation Forum, 2018
Member, SAS Committee on Issues Involving AI, Data Science, and Machine Learning, 2019-2020
Member, SAS Committee on Evaluating Centers, 2020, 2021, 2022, 2023

Selected Rutgers-Wide Initiatives:

Co-Director, Advanced Research Institute in Discrete Applied Mathematics, 1986-92
Initiative on Advancing Women in Computer Science (AWiCS), Management Committee, 2019-2022; Steering Committee 2022 …
Director, DATA-INSPIRE, Rutgers TRIPODS Institute, 2019…
Member, Steering Committee, Rutgers Critical AI Initiative, 2019 …
Member, Organizing Committee, Rutgers AI & Pandemics Initiative, 2020 …

Rutgers Leadership Positions:

Director, Rutgers Center for Operations Research, 1982-1983
Associate Director, Center for Discrete Mathematics and Theoretical Computer Science, 1989-1992
Acting Director, Center for Discrete Mathematics and Theoretical Computer Science, 1991, 1992-1993
Director, Center for Discrete Mathematics and Theoretical Computer Science, 1996-2011; Emeritus Director 2011 ...
Chair, Rutgers University Homeland Security Research Initiative (RUHSRI), 2003-2008
Director, DHS University Center of Excellence, Center for Dynamic Data Analysis (DyDAn) 2006-2009
Director, Command, Control, and Interoperability Center for Advanced Data Analysis (CCICADA), 2009 …
Interim Director, Center for Discrete Mathematics and Theoretical Computer Science (DIMACS), 2018-2019

Ph.D. Students:

Student	Year of Ph.D.	Current Position
Rochelle Leibowitz	1978	Professor, Wheaton College
Margaret Cozzens	1981	Research Distinguished Professor, DIMACS, Rutgers University; formerly President of Colorado Institute of Technology; Provost, University of Colorado-Denver; And Division Director, NSF
Robert Opsut	1984	Director of Program Review and Evaluation, Health Resources, Management and Policy Office of the Assistant Secretary of Defense for Health
Arundhati Raychaudhuri	1985	Professor, College of Staten Island
Suh-ryung Kim	1988	Professor, Seoul National University, Seoul, S. Korea
Barry Tesman	1989	Professor, Dickinson College, holder of the Mathias Chair
Sam Rosenbaum	1990	Instructor, Bard High School Early College
Garth Isaak	1990	Professor and Associate Dean for Research and Graduate Studies, Lehigh University
Chi Wang	1991	Associate Professor, University of Louisville, and New Media Department, J. Walter Thompson, USA, Detroit, MI
Denise Sakai Troxell	1992	Associate Professor, Babson College
Dale Peterson	1995	Faculty, U.S. Air Force Academy
Aleksandar Pekec	1996	Professor, Duke University (School of Business)
Shaoji Xu	1998	Senior SAS Programmer at Allergan
Li Sheng	1998	Associate Professor, Drexel University
Paul Dreyer	2000	Senior mathematicians, RAND Corporation, and Professor of Public Policy at Pardee RAND Graduate School

Stephen Hartke	2004	Associate Professor, University of Colorado, Denver

Publications:

Books Authored:

1. F.S. Roberts, *Discrete Mathematical Models, with Applications to Social, Biological and Environmental Problems*, Prentice-Hall, Englewood Cliffs, NJ, 1976.

1a. Russian translation of #1, Nauka, Moscow, 1986.

2. F.S. Roberts, *Graph Theory and its Applications to Problems of Society*, NSF-CBMS Monograph #29, SIAM Publications, Philadelphia, 1978.

3. F.S. Roberts, *Measurement Theory, with Applications to Decisionmaking, Utility, and the Social Sciences*, Addison Wesley, Reading, MA, 1979. (Book in the Encyclopedia of Mathematics and its Applications series.)

3a. Digital printing, Cambridge University Press, 2009.

4. F.S. Roberts, *Applied Combinatorics*, Prentice-Hall, Englewood Cliffs, NJ, 1984.

5. F.S. Roberts and B. Tesman, *Applied Combinatorics, Second Edition*, Pearson Prentice Hall, Upper Saddle River, NJ, 2004.

5a. New edition, 2009: Chapman&Hall/CRC, an imprint of Taylor&Francis, including added section with answers to selected exercises, 2009, 860 pages.

5b. Chinese paperback edition (in English), Pearson Education Asia, 2005.

5c. Simplified Chinese edition (in Chinese), Pearson Education Asia and China Machine Press, 2007.

6. F.S. Roberts and B. Tesman, *Applied Combinatorics, Third Edition,* Chapman & Hall/CRC, an imprint of Taylor & Francis, 2024.

Books Edited:

1. F.S. Roberts (ed.), *Energy: Mathematics and Models*, SIAM Publications, Philadelphia, 1976.

2. F.S. Roberts (ed.), *Energy Modeling and Net Energy Analysis*, Inst. of Gas Technology, Chicago, 1979.

3. F.S. Roberts (ed.), *Energy Modeling II: The Interface Between Model Builder and Decision Maker*, Inst. of Gas Technology, Chicago, 1980.

4. F.S. Roberts (ed.), *Energy Modeling III: Dealing with Energy Uncertainty*, Inst. of Gas

Technology, Chicago, 1981.

5. F.S. Roberts (ed.), *Energy Modeling IV: Planning for Energy Disruptions*, Inst. of Gas Technology, Chicago, 1982.

6. W.F. Lucas, F.S. Roberts, and R.M. Thrall (eds.), *Discrete and System Models*, Springer-Verlag, NY, 1983.

6a. Chinese translation of #6, National University of Defense Technology, University Press, Changsha, Hunan, People's Republic of China, 1997.

7. R.D. Ringeisen and F.S. Roberts (eds.), *Applications of Discrete Mathematics*, SIAM, Philadelphia, 1988.

8. F.S. Roberts (ed.), *Applications of Combinatorics and Graph Theory in the Biological and Social Sciences*, Vol. 17, IMA Volumes in Mathematics and its Applications, Springer-Verlag, New York, 1989.

9. F. Hwang, C. Monma, and F.S. Roberts (eds.), *Reliability of Computer and Communication Networks*, DIMACS Series, Volume 5, American Mathematical Society and Association for Computing Machinery, Providence, RI, 1991.

10. J. Rosenstein, D. Franzblau, and F.S. Roberts (eds.), *Discrete Mathematics in the Schools*, DIMACS Series, Vol. 36, American Mathematical Society, Providence, RI, 1997. (Co-published by National Council of Teachers of Mathematics.).

11. B. Mirkin, F.R. McMorris, A. Rzhetsky, and F.S. Roberts (eds.), *Mathematical Hierarchies and Biology*, DIMACS Series, Vol. 37, American Mathematical Society, Providence, RI, 1997.

12. C.E. Dowling, F.S. Roberts, and P. Theuns (eds.), *Recent Trends in Mathematical Psychology: Psychophysics, Knowledge Representation, Cognition, and Measurement*, Lawrence Erlbaum Associates, Mahwah, NJ, 1998.

13. M. Farach, F.S. Roberts, M. Vingron, and M. Waterman (eds.), *Mathematical Support for Molecular Biology*, DIMACS Series, Vol. 47, American Mathematical Society, Providence, RI, 1999.

14. R.L. Graham, J. Kratochvil, J. Nesetril, and F.S. Roberts (eds.), *Contemporary Trends in Discrete Mathematics*, DIMACS Series, Vol. 49, American Mathematical Society, Providence, RI, 1999.

15. M. Janowitz, F-J. Lapointe, B. Mirkin, F.R. McMorris, and F.S. Roberts (eds.), *Bioconsensus*, DIMACS Series, Vol. 61, American Mathematical Society, Providence, RI, 2003.

16. P. Kantor, G. Muresan, F. Roberts, D.D. Zeng, F-Y. Wang, H. Chen, and R.C. Merkle (eds.), *Intelligence and Security Informatics (Proceedings of the IEEE International Conference ISI 2005)*, Lecture Notes in Computer Science, LNCS 3495, Springer Verlag, Berlin and Heidelberg, 2005.

17. S. Fajtlowicz, P.W. Fowler, P. Hansen, M.F. Janowitz, and F.S. Roberts (eds.), *Graphs and Discovery*, DIMACS Series, Vol. 69, American Mathematical Society, Providence, RI, 2005.

18. S. Brams, W.V. Gehrlein, and F.S. Roberts (eds.), *The Mathematics of Preference, Choice and Order: Essays in Honor of Peter C. Fishburn*, Springer-Verlag, 2009.

19. M. Cozzens and F.S. Roberts (eds.), *Bio-Math in the Schools*, DIMACS Volume Series, American Mathematical Society, Providence, RI, Vol. 76, 2011.

20. M. Cozzens and F.S. Roberts (eds.), *Mathematical and Statistical Challenges for Sustainability*, American Mathematical Society, Providence, RI, 2011.

21. R.I. Brafman, F.S. Roberts, and A. Tsoukias (eds.), *Algorithmic Decision Theory*, Lecture Notes in Artificial Intelligence, Springer-Verlag, Berlin/Heidelberg, 2011, Volume LNAI 6992.

22. C. Biddle, M. Cozzens, and F.S. Roberts (eds.), *Homeland Security Achievements at CCICADA*, in preparation.

23. J. DiRenzo, N. Drumhiller, and F.S. Roberts (eds.), *Issues in Maritime Cyber Security*, PSO/Westphalia Press, 2017.

24. H. Kaper and F.S. Roberts (eds.), *Mathematics of Planet Earth: Protecting Our Planet, Learning from the Past, Safeguarding for the Future*, Springer, 2019.

25. F.S. Roberts and I. Sheremet (eds.), *Resilience in the Digital Age*, Springer, 2021.

26. J-S Dhersin, H. Kaper, W. Ndifon, F. Roberts, C. Rousseau, and G.M. Ziegler (eds.), *Mathematics for Action: Supporting Science-based Decision-making*, UNESCO, 2022. (French translation 2023) (Vietnamese translation 2023)

Book Reviews:

1. F.S. Roberts, Review of Anatol Rapoport: *Mathematical Models in the Social and Behavioral Sciences*, *Contemporary Psychology*, **29** (1984), 990.

Obituaries:

1. S.J. Brams, W.V., Gehrlein, and F.S. Roberts, Peter C. Fishburn (1936–2021), *Soc Choice Welf*, **57** (2021), 1–3. https://doi.org/10.1007/s00355-021-01354-7 (reviews Fishburn's papers published in Social Choice and Welfare)

2. S.J. Brams, W.V., Gehrlein, and F.S. Roberts, Obituary: Peter C. Fishburn (1936-2021), *Discrete Applied Mathematics***, 310** (2022), 109-110. https://doi.org/10.1016/j.dam.2021.10.002 (reviews Fishburn's papers published in Discrete Applied Math)

3. S.J. Brams, W.V., Gehrlein, and F.S. Roberts, Peter C. Fishburn (1936–2021), *Mathematical Social Sciences*, **113** (2021), 230-231. https://doi.org/10.1016/j.mathsocsci.2021.08.001 (reviews Fishburn's papers published in Mathematical Social Sciences)

Articles:

1. F.S. Roberts and P. Suppes, Some problems in the geometry of visual perception, *Synthese*, **17** (1967), 173-201.

2. F.S. Roberts and R.D. Luce, Axiomatic thermodynamics and extensive measurement, *Synthese*, **18** (1968), 311-326.

3. F.S. Roberts, Indifference graphs, in F. Harary (ed.), *Proof Techniques in Graph Theory*, Academic Press, NY, 1969, 139-146.

4. F.S. Roberts, On the boxicity and cubicity of a graph, in W.T. Tutte (ed.), *Recent Progress in Combinatorics*, Academic Press, NY, 1969, 301-310.

5. F.S. Roberts and J.H. Spencer, A characterization of clique graphs, in R. Guy, H. Hanani, N. Sauer, and J. Schonheim (eds.), *Combinatorial Structures and Their Applications*, Gordon and Breach, NY, 1970, 367-368.

6. K.A. Baker, P.C. Fishburn, and F.S. Roberts, A new characterization of partial orders of dimension two, *Annals of NY Acad. of Sci.*, **175** (1970), 23-24.

7. W.F. Ogden and F.S. Roberts, Intersection graphs of families of convex sets with distinguished points, in R. Guy, H. Hanani, N. Sauer, and J. Schonheim (eds.), *Combinatorial Structures and Their Applications*, Gordon and Breach, NY, 1970, 311-313.

8. F.S. Roberts, On nontransitive indifference, *Jour. of Math. Psychology*, **7** (1970), 243-258.

9. F.S. Roberts and J.H. Spencer, A characterization of clique graphs, *Jour. of Comb. Theory*, **10B** (1971), 102-108 (an expanded version of #5).

10. F.S. Roberts, Homogeneous families of semiorders and the theory of probabilistic consistency, *Jour. of Math. Psychology*, **8** (1971), 248-263.

11. F.S. Roberts, On the compatibility between a graph and a simple order, *Jour. of Combinatorial Theory*, **11** (1971), 28-38.

12. F.S. Roberts, Signed digraphs and the growing demand for energy, *Environment and Planning*, **3** (1971), 395-410.

13. F.S. Roberts, Noise pollution: The unseen problem, *Coast Environment*, **1** (1971), 13-15.

14. R.Z. Norman and F.S. Roberts, A derivation of a measure of relative balance for signed digraphs and a characterization of extensive ratio systems, *Jour. of Math. Psychology*, **9** (1972), 66-91.

15. R.Z. Norman and F.S. Roberts, A measure of relative balance for social structures, in J. Berger, M. Zelditch, and B. Anderson (eds.), *Structural Theories in Progress, II*, Houghton-Mifflin, NY, 1972, 358-391.

16. K.A. Baker, P.C. Fishburn, and F.S. Roberts, Partial orders of dimension 2, *Networks*, **2** (1972), 11-28.

17. F.S. Roberts, What if utility functions do not exist?, *Theory and Decision*, **3** (1972), 126-139.

18. F.S. Roberts, A note on Fine's axioms for qualitative probability, *Annals of Probability*, **1** (1973), 484-487.

19. F.S. Roberts, Building and analyzing an energy demand signed digraph, *Environment and Planning*, **5** (1973), 199-221.

20. F.S. Roberts, Tolerance geometry, *Notre Dame Jour. of Formal Logic*, **14** (1973), 68-76.

21. F.S. Roberts, Laws of exchange and their applications, *SIAM Jour. of Applied Math.*, **26** (1974), 260-284.

22. F.S. Roberts, Structural characterizations of stability of signed digraphs under pulse processes, in R. Bari and F. Harary (eds.), *Graphs and Combinatorics*, Springer Verlag Lecture Notes #406 1974, 330-338.

23. F.S. Roberts and T.A. Brown, Signed digraphs and the energy crisis, *Amer. Math. Monthly*, **82** (1975), 577-594.

24. F.S. Roberts, Weighted digraph models for the assessment of energy use and air pollution in transportation systems, *Environment and Planning*, **7** (1975), 703-724.

25. F.S. Roberts, Structural analysis of energy systems, in F.S. Roberts (ed.), *Energy: Mathematics and Models*, SIAM Publications, 1976, 84-101.

26. F.S. Roberts, Commuter transportation and the energy crisis, in R. Axelrod (ed.), *The Structure of Decision*, Princeton University Press, 1976, 142-179.

27. F.S. Roberts, Graphs, garbage, and a pollution solution, in D.P. Maki and M. Thompson (eds.), *Mathematical Models in the Undergraduate Curriculum*, Proc of Conference held at Indiana University, 1976, 58-94.

28. F.S. Roberts and C.H. Franke, On the theory of uniqueness in measurement, *Jour. of Math. Psychology*, **14** (1976), 211-218.

29. F.S. Roberts, The questionnaire method, in R. Axelrod (ed.), *The Structure of Decision*, Princeton University Press, 1976, 333-342.

30. F.S. Roberts, DNA counts, pesticide projections, and vehicular vectors, in D. Tarwater (ed.), *The Bicentennial Tribute to American Mathematics*, Math. Asso. of America, 1977, 209-218.

31. F.S. Roberts, Food webs, competition graphs, and the boxicity of ecological phase space, in Y. Alavi and D. Lick (eds.), *Theory and Applications of Graphs*, Springer-Verlag Lecture Notes #642, 1978, 477-490.

32. P.C. Fishburn and F.S. Roberts, Mixture axioms in linear and multilinear utility theories, *Theory and Decision*, **9** (1978), 161-171.

33. F.S. Roberts, Energy modeling and net energy analysis: an overview, in *Energy Modeling and Net Energy Analysis*, Inst. of Gas Technology, Chicago, 1979, 1-25. (Reprinted in *Current Engr. Practice*, 1979.)

34. F.S. Roberts, Graph theory and the social sciences, in R. Wilson and L. Beineke (eds.), *Applications of Graph Theory*, Academic Press, 1979, 255-291.

35. F.S. Roberts, Indifference and seriation, in F. Harary (ed.), *Advances in Graph Theory*, NY Academy of Sciences, 1979, 171-180.

36. F.S. Roberts, On the mobile radio frequency assignment problem and the traffic light phasing problem, *Annals, NY Acad. of Sci.*, **319** (1979), 466-483.

37. F.S. Roberts, Structure and stability in weighted digraph models, *Annals, NY Acad. of Sciences*, **321** (1979), 64-77.

38. F.S. Roberts, Structural modeling and measurement theory, *Tech. Forecasting and Social Change*, **14** (1979), 353-365.

39. F.S. Roberts, Energy modeling: The interface between model builder and decision maker, in *Energy Modeling II: The Interface Between Model Builder and Decision-Maker*, Inst. of Gas Technology, Chicago, 1980, 1-10.

40. F.S. Roberts, On Luce's theory of meaningfulness, *Philos. of Sci.*, **47** (1980), 424-433.

41. F.S. Roberts, Energy modeling: Dealing with energy uncertainty, in *Energy Modeling III: Dealing with Energy Uncertainty*, Inst. of Gas Technology, Chicago, 1981, 1-13.

42. R.J. Opsut and F.S. Roberts, On the fleet maintenance, mobile radio frequency, task assignment, and traffic phasing problems, in G. Chartrand, et al (eds.), *The Theory and Applications of Graphs*, Wiley, New York, 1981, 479-492.

43. F.S. Roberts, Structural models and graph theory, in H. Greenberg and J. Maybee (eds.), *Computer Assisted Analysis and Model Simplification*, Academic Press, New York, 1981, 59-67.

44. P. Hell and F.S. Roberts, Analogues of the Shannon capacity of a graph, *Annals of Discrete Math.*, **12** (1982), 155-168.

45. M.B. Cozzens and F.S. Roberts, T-colorings of graphs and the channel assignment problem, *Congressus Numerantium*, **35** (1982), 191-208.

46. M.B. Cozzens and F.S. Roberts, Double semiorders and double indifference graphs, *SIAM Jour. on Algebraic & Discrete Methods*, **3** (1982), 566-583.

47. F.S. Roberts, Planning for energy disruptions, in *Energy Modeling IV: Planning for Energy Disruptions*, Inst. of Gas Tech., Chicago, 1982, 1-13.

48. F.S. Roberts and J.E. Steif, A characterization of competition graphs of arbitrary digraphs, *Discrete Applied Math.*, **6** (1983), 323-326.

49. M.B. Cozzens and F.S. Roberts, Computing the boxicity of a graph by covering its complement by cointerval graphs, *Discrete Applied Math.*, **6** (1983), 217-228.

50. F.S. Roberts, Efficiency of energy use in obtaining food I: Humans, in H. Marcus-Roberts and M. Thompson (eds.), *Life Science Models*, Springer-Verlag, NY, 1983, 250-285.

51. H. Marcus-Roberts and F.S. Roberts, Efficiency of energy use in obtaining food II: Animals, in H. Marcus-Roberts and M. Thompson (eds.), *Life Science Models*, Springer-Verlag, NY, 1983, 286-348.

52. F.S. Roberts, How to cure the plague of calculus (or revisions in the introductory mathematics curriculum), in A. Ralston and G.S. Young (eds.), *The Future of College Mathematics*, Springer-Verlag, NY, 1983, 121-133.

53. H. Marcus-Roberts and F.S. Roberts, Malaria (models of the population dynamics of the malaria parasite), in H. Marcus-Roberts and M. Thompson (eds.), *Life Science Models*, Springer-Verlag, NY, 1983, 161-177.

54. R.J. Opsut and F.S. Roberts, I-colorings, I-phasings, and I-intersection assignments for graphs and their applications, *Networks*, **13** (1983), 327-345.

55. F.S. Roberts, Is calculus necessary, in M. Zweng, et al (eds.), *Proc. of the Fourth Internat'l Congress on Math. Education*, Birkhauser-Boston, Boston, Mass., 1983, 52-53.

56. R.J. Opsut and F.S. Roberts, Optimal I-intersection assignments for graphs: A linear programming approach, *Networks*, **13** (1983), 317-326.

57. F.S. Roberts, Applications of the theory of meaningfulness to order and matching experiments, in E. DeGreef and J. Van Buggenhaut (eds.), *Trends in Mathematical Psychology*, North-Holland, Amsterdam, 1984, 283-292.

58. F.S. Roberts, Applications of Ramsey theory, *Discrete Applied Math.*, **9** (1984), 251-261.

59. M.B. Cozzens and F.S. Roberts, On k-suitable sets of arrangements and the boxicity of a graph, *J. Comb., Info. & Syst. Sci.*, **9** (1984), 14-24.

60. F.S. Roberts, On the theory of meaningfulness of ordinal comparisons in measurement, *Measurement*, **2** (1984), 35-38.

61. F.S. Roberts, The introductory mathematics curriculum: Misleading, outdated, and unfair, *College Math. Journal*, **15** (1984), 383-385 & 397-399.

62. F.S. Roberts, Applications of edge coverings by cliques, *Discrete Applied Math.*, **10** (1985), 93-109.

63. F.S. Roberts, Applications of the theory of meaningfulness to psychology, *Jour. of Math. Psych.*, **29** (1985), 311-332.

64. A. Raychaudhuri and F.S. Roberts, Generalized competition graphs and their applications, in P. Brucker and R. Pauly (eds.), *Methods of Operations Research, 49*, Anton Hain, Konigstein, West Germany, 1985, 295-311.

65. F.S. Roberts and Z. Rosenbaum, Some results on automorphisms of ordered relational systems and the theory of scale type in measurement, in Y. Alavi, et al (eds.), *Graph Theory and its Applications to Algorithms and Computer Science*, Wiley, NY, 1985, 659-669.

66. F.S. Roberts, Issues in the theory of uniqueness in measurement, in I. Rival (ed.), *Graphs and Orders*, D. Reidel, 1985, 415-444.

67. J. Aczel, F.S. Roberts, and Z. Rosenbaum, On scientific laws without dimensional constants, *J. Math. Anal. & Appl.*, **119** (1986), 389-416.

68. F.S. Roberts and Z. Rosenbaum, Scale type, meaningfulness, and the possible psychophysical laws, *Math. Soc. Sci.*, **12** (1986), 77-95.

69. H. Marcus-Roberts and F.S. Roberts, Meaningless statistics, *J. Educ. Stat.*, **12** (1987), 383-394.

70. K.F. Jones, J.R. Lundgren, F.S. Roberts, and S. Seager, Some remarks on the double competition number of a graph, **60** (1987), 17-24.

71. F.S. Roberts and Y. Xu, On the optimal orientations of city street graphs I: Large grids, *SIAM J. Discr. Math.*, **1** (1988), 199-222.

72. F.S. Roberts and Z. Rosenbaum, Tight and loose value automorphisms, *Discrete Applied Math.*, **22** (1988), 69-79.

73. P.C. Fishburn and F.S. Roberts, Unique finite conjoint measurement, *Math. Soc. Sci.*, **16** (1988), 107-143.

74. P.C. Fishburn, H. Marcus-Roberts, and F.S. Roberts, Unique finite difference measurement, *SIAM J. Discrete Math.*, **1** (1988), 334-354.

75. M.B. Cozzens and F.S. Roberts, On dimensional properties of graphs, *Graphs and Combinatorics*, **5** (1989), 29-46.

76. L.H. Harvey and F.S. Roberts, On the theory of meaningfulness of ordinal comparisons in measurement II, *Annals NY Acad. Sci.*, **555** (1989), 220-229.

77. F.S. Roberts and Y. Xu, On the optimal orientations of city street graphs II: Two east-west avenues or north-south streets, *Networks*, **19** (1989), 221-233.

78. P.C. Fishburn and F.S. Roberts, Uniqueness in finite measurement, in *Applications of Combinatorics and Graph Theory in the Biological and Social Sciences*, IMA Volumes in Mathematics and its Applications, Springer-Verlag, New York, Vol. 17 (1989), 103-137.

79. F.S. Roberts, Meaningless statements, matching experiments, and colored digraphs (applications of graph theory and combinatorics to the theory of measurement), in *Applications of Combinatorics and Graph Theory in the Biological and Social Sciences*, IMA Volumes in Mathematics and its Applications, Springer-Verlag, New York, Vol. 17 (1989), 275-294.

80. P.C. Fishburn and F.S. Roberts, Axioms for unique subjective probability on finite sets,

Jour. of Math. Psych., **33** (1989), 117-130.

81. J. Aczel and F.S. Roberts, On the possible merging functions, *Math. Soc. Sci.*, **17** (1989), 205-243.

82. F.S. Roberts, Seven fundamental ideas in the application of combinatorics and graph theory in the biological and social sciences, in *Applications of Combinatorics and Graph Theory in the Biological and Social Sciences*, Volume 17 of IMA Volumes in Mathematics and its Applications, Springer-Verlag, New York, 1989, 1-37.

83. P.C. Fishburn, A.M. Odlyzko, and F.S. Roberts, Two-sided generalized Fibonacci sequences, *Fibonacci Quart.*, **27** (1989), 352-361.

84. F. Harary, S.-R. Kim, and F.S. Roberts, Extremal competition numbers as a generalization of Turan's theorem, *J. Ramanujan Math. Society*, **5** (1990), 33-43.

85. S. Kim and F.S. Roberts, On Opsut's conjecture for the competition number, *Congr. Num.*, **71** (1990), 173-176.

86. F.S. Roberts, Meaningfulness of conclusions from combinatorial optimization, *Discrete Applied Math.*, **29** (1990), 221-241.

87. F.S. Roberts, Merging relative scores, *J. Math. Anal. & Appl.*, **147** (1990), 30-52.

88. P.C. Fishburn, F.S. Roberts, and H. Marcus-Roberts, Van Lier sequences, *Discrete Applied Math.*, **27** (1990), 209-220.

89. F.S. Roberts, Characterizations of the plurality function, *Math. Soc. Sci.*, **21** (1991), 101-127.

90. F.S. Roberts, From garbage to rainbows: Generalizations of graph coloring and their applications, in Y. Alavi, G. Chartrand, O.R. Oellermann, and A.J. Schwenk (eds.), *Graph Theory, Combinatorics, and Applications*, Wiley, New York, Vol. 2 (1991), 1031-1052.

91. K.A.F. Hefner, K.F. Jones, S. Kim, J.R. Lundgren, and F.S. Roberts, i,j Competition graphs, *Discrete Applied Math.*, **32** (1991), 241-262.

92. D. de Werra and F.S. Roberts, On the use of augmenting chains in chain packings, *Discrete Applied Math.*, **30** (1991), 137-149.

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