

VLADIMIR A. PROTOPODESCU

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CAREER INTERESTS: Development of basic research programs in emerging science and technology areas such as: complexity, emergence of physical properties in systems with multiple time and length scales, nonlinear dynamical systems and chaos, quantum information science and technology, global optimization, and inverse problems with applications to reverse engineering at the nanoscale. Support DOE leadership team in formulation of such programs, their implementation (interaction with national labs and universities), and assessment of their impact. Support potential interactions of BES's Division of Material Science and Engineering with Congress and administration (OMB). If needed, serve as interface with other government agencies (e.g. DARPA, NSF, DOD, etc.) in areas of mutual technical interest.

EDUCATION

Ph.D. in Mathematical Physics
Institute of Atomic Physics, Bucharest, Romania, 1976

M.S. in Theoretical Physics
University of Bucharest, Bucharest, Romania, 1968

EMPLOYMENT

01/91 - Present Lockheed Martin Energy Research Corp. and U.T.-Battelle Research, Inc.
Senior Research Staff and Project Manager, Oak Ridge National Laboratory.

01/85 - 12/90 Research Staff and Project Manager, Oak Ridge National Laboratory.

09/83 - 09/84 Boston University, Boston MA
Research Associate and Project Leader, Chemistry Department.

02/82 - 08/93 Yale University, New Haven CT
Research Associate, Chemistry Department.

10/79 - 01/82 Institute for Physics and Nuclear Engineering, Bucharest, Romania
Senior Research Staff, Mathematical Physics Department

10/72 - 09/79 Institute for Physics and Nuclear Engineering, Bucharest, Romania
Project Leader, Mathematical Physics Department.

09/68 -09/72 Institute of Atomic Physics, Bucharest, Romania
Research Staff, Theoretical Physics Department.

PROFESSIONAL DISTINCTIONS

AWARDS

R&D 100 Award, 1998
Lockheed Martin Significant Event Award, 1997
Martin Marietta Special Achievement Award, 1990
Martin Marietta Significant Achievement Award, 1988
The Romanian Academy Award "D. Hurmuzescu" for Physics, 1978
The State Fellowship for Distinguished Merit, 1964-1966

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PATENT "Fast and Secure Encryption/Decryption Method Based on Chaotic Dynamics",
(with R. T. Santoro and J. S. Tolliver); December 1995

OTHER PROFESSIONAL ACTIVITIES AND SKILLS

1988 - Present Adjunct Professor, Mathematics Department, University of Tennessee, Knoxville;
Courses in Calculus, Vector Calculus and Analysis, Complex Analysis, Partial
Differential Equations, and Dynamical Systems; Student Supervision,
Committees
Doctoral

1996 - Present Member of the Advisory Board of the Series "Modeling and Simulation in Science,
Engineering, and Technology," Birkhäuser

1992 - Present Member of the Editorial Board of the CRC "Mathematical Modeling Series"

1990 - Present Associate Editor of the journal "Mathematical Models and Methods in Applied
Sciences," World Scientific

2002 - Present Associate Editor of the journal "Transport Theory and Statistical
Physics," Marcel Dekker

1989 - 1992 Member of the Editorial Board of the Series "Advances in Mathematics for
Applied Sciences," World Scientific

1988 Judge in the International High School Technical Exhibition, Knoxville

1978 - Present Editorial work: writing, editing, and translating from various languages (see the
attached list "Other Publications")

1968 - Present Reviewer and referee for various professional journals and funding agencies

1971 - 1972 Coach of the Romanian Team for the International Physics Olympiads

MEMBERSHIPS American Mathematical Society
International Association of the Mathematical Physicists
Society for Industrial and Applied Mathematics
American Physical Society

LANGUAGES Romanian (native language), English, French, Italian, reading knowledge of German
and Russian

ADDITIONAL ASSIGNMENTS

Visiting Professor

04/98 — 05/98 Mathematics Department, University of Franche Comte, Besancon, France
04/89 — 05/89 Mathematics Department, University of Bologna, Italy
10/84 — 12/84 Institute of Applied Mathematics, University of Florence, Italy
10/81 Institute of Mathematics, University of Kaiserslautern, Germany
11/81 — 12/81 Physics Department, University of Milano, Italy

Guest Researcher

11/82 — 12/82 Theoretical Physics Department, C.E.N. Saclay, France
03/81 — 09/81
and
03/80 — 06/80 Institute of Reactor Physics, Chalmers University of Technology, Göteborg, Sweden

Invited Papers

07/01 2001 SIAM Annual Meeting, San Diego, California
06/01 INFORMS International, Maui, Hawai'i
06/01 11th International Conference on Waves and Stability in Continuous Media, Porto Ercole, Italy
02/01 2001 International Conference on Neural Networks and their Applications, Tenerife, Spain
07/00 3^d World Congress of Nonlinear Analysts, Catania, Italy.
05/00 International Workshop on Differential Equations and Optimization Problems, Athens, Ohio
06/99 10th International Conference on Waves and Stability in Continuous Media, Vulcano, Italy
05/99 16th International Conference on Transport Theory, Atlanta, Georgia
05/98 Workshop on Control of Partial Differential Equations, Besancon, France
09/97 International Conference on Intelligent Systems and Semiotics (ISAS) '97, NIST, Gaithersburg, Maryland
07/97 International Conference on the Advances of Nonlinear Dynamics near the

Millenium (ANDM) '97, San Diego, California

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- 06/97 International Congress of the International Society for Analysis, Applications and Computation (ISAAC) '97, Newark, Delaware
- 07/96 International Conference on Mathematical Models of Nonlinear Excitation, Transport, Dynamics, and Control in Condensed Matter and Other Media, Tver, Russia
- 03/96 Workshop on Biologically Inspired Autonomous Systems, Durham, North Carolina
- 05/91 TIMS\ORSA Joint National Meeting, Nashville
- 05/89 11th International Conference on Transport Theory, Blacksburg, Virginia
- 02/89 Workshop on Attrition Modeling in Large-Scale Simulations, Dallas, Texas
- 09/88 3rd International Workshop on Mathematical Aspects of Fluid and Plasma Dynamics, Salice Terme, Italy
- 10/87 FY 1987 Annual Meeting of the Applied and Computational Mathematical Program (ACMP), DARPA, Washington, D.C.
- 06/87 4th International Workshop on Nonlinear Evolution Equations and Dynamical Systems, Balaruc-les-Bains, France
- 03/87 10th International Conference on Transport Theory, La Jolla, California
- 06/85 9th International Conference on Transport Theory, Montecatini, Italy
- 06/85 International Workshop on Operator Theory and its Applications, Amsterdam, Holland
- 03/83 8th International Conference on Transport Theory, Blacksburg, Virginia
- 11/82 Oberwolfach Conference in Transport Theory, West Germany
- 06/80 International Symposium in Transport Theory, Vienna, Austria

Visiting Lecturer

- 02/02 Politecnico di Valencia, Physics Department, Spain
- 02/02 Politecnico di Valencia, Mathematics Department, Spain
- 12/00 University of Kansas, Physics Department
- 05/98 University of Cergy, Mathematics Department, France
- 05/98 ESPCI, Electronics Laboratory, Paris, France

05/98 University of Bourgogne, Submicronic Microscopy Department, Dijon, France
02/98 University of Texas at Austin, Physics Department
04/97 University of Porto Rico at Cayey, Mathematics Department

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12/96 Vanderbilt University, Mathematics Department
03/95 Howard University, Electrical Engineering Department
04/94 Virginia Polytechnic Institute, Department of Physics
03/94 Emory Medical School, Atlanta, Georgia
02/93 Boston University, College of Engineering
12/92 University of Florida at Gainesville, Department of Physics and Mathematics
01/92 Texas Tech University, Lubbock, Texas
03/91 Space Institute of the University of Tennessee, Tullahoma
01/91 University of Alabama at Birmingham, Department of Mathematics
03/90 University of Louisville, Department of Mathematics
05/89 Universities of Bologna, Ferrara, and Pavia, Departments of Mathematics
11/86 Trinity College, Department of Mathematics
University of Texas at San Antonio, Department of Mathematics
12/85 Indiana University, Department of Mathematics
12/84 Politecnico di Torino, Department of Mathematics
11/84 University of Florence, Department of Mathematics
09/84 Chalmers University of Technology, Göteborg, Department of Mathematics
09/84 University of Amsterdam, Department of Mathematics
06/84 Virginia Polytechnic Institute, Department of Mathematics
10/83 Oak Ridge National Laboratory, Engineering Physics Division
03/83 Virginia Polytechnic Institute, Department of Physics
10/82 Massachusetts Institute of Technology, Chemistry Department

12/82 C. E. N. Saclay, Department of Theoretical Physics
12/81 Politecnico di Milano, Department of Mathematics
11/81 University of Florence, Department of Mathematics
11/81 University of Bologna, Department of Nuclear Engineering
09/81 University of Utrecht, Department of Physics

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09/81 University of Amsterdam, Department of Physics
08/81 Chalmers University of Technology, Göteborg, Department of Mathematics
05/80 University of Lund, Department of Physics
04/80 University of Uppsala, Department of Physics
04/80 Royal Institute of Technology, Stockholm
04/80 Chalmers University of Technology, Göteborg, Department of Physics
12/79 University of Kiev, Department of Physics
11/78 International Centre for Theoretical Physics, Trieste, Physics Department

Contributed Papers

07/02 6th International conference on Quantum Communication, Measurement, and Computing (QCMC'02), Cambridge, Massachusetts
09/02 IASTED International Conference AIA 2002, Malaga, Spain
05/02 20th Symposium on Energy Engineering Sciences, Argonne, Illinois
04/02 223rd ACS National Meeting, Orlando, Florida
07/01 34th Workshop on Optimization and Control with Applications, Erice, Sicily
06/01 Gordon Research Conference on Nonlinear Science, Mount Holyoke, Mass.
11/00 MRS Fall 2000 Symposium, Boston, Massachusetts
10/00 DARS International Conference, Knoxville, Tennessee
05/00 18th Symposium on Energy Engineering Sciences, Argonne, Illinois
10/99 Workshop on Differential Equations, Knoxville, Tennessee
08/99 5th International Conference on Information Systems Analysis and Synthesis

(ISAS '99), Orlando, Florida

07/99 International Joint Conference on Neural Networks, Washington, D.C

06/99 5th Experimental Chaos Conference, Orlando, Florida

03/99 APS Centennial Meeting, Atlanta, Georgia

03/99 SIAM Southeastern Meeting, Knoxville, Tennessee

03/99 Interdisciplinary Workshop "Chaos in Brain ?", Bonn, Germany

10/96 AMS Meeting, Chattanooga, Tennessee

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10/96 Conference on Intelligent Systems: A Semiotic Perspective,
Gaithersburg, Maryland

08/96 Workshop on Foundations of Information/Decision Fusion, Washington, D.C.

04/96 International Conference on Robotics and Automation, Minneapolis, Minnesota

02/96 27th Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Baton Rouge, Louisiana

01/96 4th Symposium on Artificial Intelligence and Mathematics, Fort Lauderdale, Florida

06/95 NSF-CBMS Conference on Inverse Problems and Nondestructive Testing, Lexington, Kentucky

04/95 International Conference on State of the Art in Global Optimization : Computational Methods and Applications, Princeton, New Jersey

12/94 33rd IEEE Conference on Decision and Control, Orlando, Florida

10/94 14th Southeastern - Atlantic Regional Conference on Differential Equations, Knoxville, Tennessee

01/94 Joint Mathematics Meeting (AMS, AWM, MAA, and NAM), Cincinnati, Ohio

10/93 13th Southeastern - Atlantic Regional Conference on Differential Equations, Wilmington, North Carolina

06/93 61st Military Operations Research Society (MORS) Symposium, Dayton, Ohio

03/93 879th Meeting of the American Mathematical Society, Knoxville, Tennessee

03/93 7th National Conference of Undergraduate Research, University of Utah

- 07/91 2nd International Conference on Industrial and Applied Mathematics, Washington, D.C.
- 04/91 IMA Workshop on Variational Problems, Minneapolis, Minnesota
- 05/91 22nd Annual Conference on Modeling and Simulation, Pittsburgh
- 12/90 29th IEEE Conference on Decision and Control, Honolulu, Hawaii
- 11/90 Southeastern Atlantic Regional Conference on Differential Equations, Blacksburg, Virginia
- 06/90 58th Military Operations Research Society (MORS) Symposium, Alexandria, Virginia
- 06/90 8th International Conference of Cybernetics and Systems, New York, New York

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- 05/90 International Conference on Integral Methods in Science and Engineering, Arlington, Virginia
- 01/90 International Joint Conference on Neural Networks, Washington, D.C.
- 12/89 1st Annual Symposium on Special Operations/Low Intensity Conflicts, Alexandria, Virginia
- 11/89 Workshop on Neural Networks, University of Tennessee/Oak Ridge National Laboratory, Oak Ridge, Tennessee
- 10/89 Southeast and Atlantic Conference on Differential Equations, Charlotte, North Carolina
- 09/88 International Workshop on Discrete Velocity Models, Lattice Gas Dynamics, and Foundations of Hydrodynamics, Villa Gualino, Torino, Italy
- 07/88 16th Symposium on Rarefied Gas Dynamics, Pasadena, California
- 12/87 58th Statistical Mechanics Meeting, Rutgers University, New Jersey
- 07/87 1st International Conference on Industrial and Applied Mathematics, Paris, France
- 06/87 IEEE First Annual International Conference on Neural Networks, San Diego, California
- 01/87 93rd Annual Meeting of the AMS, San Antonio, Texas
- 10/86 6th Annual Southeastern Atlantic Regional Conference on Differential Equations, Clemson University, South Carolina
- 08/86 16th IUPAP Conference on Thermodynamics and Mechanics, Boston

07/86	8 th International Congress of the Mathematical Physicists, Marseille, France
05/86	55 th Statistical Mechanics Meeting, Rutgers University
05/85	53 rd Statistical Mechanics Meeting, Rutgers University
05/82	47 th Statistical Mechanics Meeting, Rutgers University
01/82	2 nd Meeting in Statistical Mechanics, Paris, France
08/81	6 th International Conference of the Mathematical Physicists, Berlin, Germany
06/80	5 th International Summer School in Statistical Mechanics, Enschede, Holland
09/79	International School of Statistical Mechanics, Poiana Brasov, Romania

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Participant

05/02	CCS/CNMS Special Workshop on Phase Transitions and Transport Phenomena in Nanoscale Systems, Oak Ridge, Tennessee
10/96	915 th Meeting of the American Mathematical Society, Chattanooga, Tennessee
07/95	Workshop on Nonlinear and Dynamics and Time Series, Montréal, Canada
10/93	NASA-ARO Workshop on Formal Models for Intelligent Control, Cambridge, Massachusetts
03/93	Symposium on Advanced Information Processing and Analysis, Tysons Corner, Virginia
10/87	Combined Midwest-Southeast Differential Equations Conference (organizer of the special session on Transport Theory), Vanderbilt University
12/86	56 th Statistical Mechanics Meeting, Rutgers University
01/86	Topical Conference on Chaos in Physical Systems, Georgia Institute of Technology
12/85	54 th Statistical Mechanics Meeting, Rutgers University

03/85 Chaotic Dynamics Conference, Georgia Institute of Technology

12/83 50th Statistical Mechanics Meeting, Rutgers University

11/83 Greater Boston Area Statistical Mechanics Meeting, Boston University

10/83 Symposium on the Dynamics of Dense Gases, Massachusetts Institute of Technology

07/82 Symposium on Random Walks, National Bureau of Standards

07/72 International Summer School in Functional Analysis, Timisoara