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6. AUTHOR(S)

Professors C.A. Floudas & P.M. Pardalos

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)Princeton University
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13. ABSTRACT (Maximum 200 words)

The conference on "Recent Advances In Global Optimization" took place during May 10-11, 1991 at Princeton University. It was organized by Professor C.A. Floudas (Princeton University) and P.M. Pardalos (Penn State) and supported by AFOSR under grant AFOSR-91-0116. The conference was very successful and attracted researchers from a wide spectrum of interests and activities that is reflected in applied mathematics, computer science, operations research, chemical, civil, mechanical and electrical engineering, biochemistry and chemistry. It represents the first truly international conference devoted exclusively on the subject of global optimization, having 80 participants from USA, Germany, Finland, Italy, France, Vietnam, Russia, Canada, Portugal and Mexico. Princeton University recently published a book (Eds. Floudas and Pardalos) with the refereed papers presented at the conference and the Journal of Global Optimization is going to devote two issues on selected papers of this conference.

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Final Report

Grant AFOSR-91-0116

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Recent Advances in Global Optimization

A Conference at Princeton University
May 10–11, 1991
Computer Science Building
Auditorium 104

Organizers: Professor C. A. Floudas, Princeton University
Professor P. M. Pardalos, Pennsylvania State University

Sponsors: Air Force Office of Scientific Research (AFOSR)
Pennsylvania State University
Princeton University

92-12935



Friday, May 10, 1991

8:00–8:25 a.m. **Registration**
Pick up materials outside Auditorium 104, Computer Science Building.

8:25 a.m. **Welcome**
C. A. Floudas, Princeton University

Session I.a Chair: P. M. Pardalos, Pennsylvania State University

8:35 a.m. *Plenary Lecture I*
Survey of Recent Results in Computational Global Optimization
J. B. Rosen, University of Minnesota

9:15 a.m. **Approximation Algorithms for Concave Quadratic Programming**
S. Vavasis, Cornell University

9:40 a.m. **A New Complexity Result on Minimization of a Quadratic Function over a Sphere Constraint**
Y. Ye, University of Iowa

10:05 a.m. **Hamiltonian Cycles, Quadratic Programming, and Ranking of Extreme Points**
M. Chen and J. A. Filar, University of Maryland, Baltimore County

10:30–10:45 a.m. **Break**

Session I.b Chair: P. M. Pardalos, Pennsylvania State University

10:45 a.m. **Performance of Local Search in Minimum Concave-Cost Network Flow Problems**
G. M. Guisewite and P. M. Pardalos, Pennsylvania State University

11:10 a.m. **Solution of the Concave Linear Complementarity Problem**
J. J. Judice, Universidade de Coimbra, Portugal, and A. M. Faustino, Universidade do Porto, Portugal

11:35 a.m. **Global Solvability of Generalized Linear Complementarity Problems and a Related Class of Polynomial Problems**
A. A. Ebiefung and M. M. Kostreva, Clemson University

Noon–1:00 p.m. **Lunch**
Engineering Quadrangle Convocation Room

Session II.a

Chair: C. A. Floudas, Princeton University

1:10 p.m.

Plenary Lecture II

The Complementary Convex Structure

H. Tuy, Institute of Mathematics, Hanoi, Vietnam

1:50 p.m.

A Class of Global Optimization Problems Solvable by Sequential Unconstrained Convex Minimization

H. Tuy, Institute of Mathematics, Hanoi, Vietnam, and F. A. Al-Khayyal, Georgia Institute of Technology

2:15 p.m.

A Cutting Plane Algorithm for a Class of Nonlinear/O-1 Integer Programs

S. Ben Saad, AT&T Bell Laboratories

2:40 p.m.

Mathematical Programs with a Two-Dimensional Reverse Convex Constraint

P. T. Thach, R. E. Burkard, Technische Universität, Graz, Austria, and W. Oettli, Universität Mannheim, Germany

3:05 p.m.

The Method of Embedding with Branching in Concave Programming

V. P. Bulatov and O. V. Khamisov, Siberian Energy Institute, U.S.S.R.

3:30–3:45 p.m.

Break

Session II.b

Chair: C. A. Floudas, Princeton University

3:45 p.m.

Unconstrained and Constrained Global Optimization of Polynomial Functions in One Variable

V. Visweswaran and C. A. Floudas, Princeton University

4:10 p.m.

Reduction of Indefinite Quadratic Programs to Bilinear Programs

P. Hansen and B. Jaumard, GERAD, Ecole des Hautes Etudes Commerciales, Canada

4:35 p.m.

One-Dimensional Global Optimization Using Linear Lower Bounds

M. Bromberg and T. S. Chang, University of California at Davis

5:00 p.m.

Detecting Ill-Conditioning of Polytopes and Convex Bodies

P. Gritzman and V. Klee, University of Trier, Germany

5:30–7:30 p.m.

Dinner

Prospect House

Saturday, May 11, 1991

8:00–8:10 a.m.

Registration

Pick up materials outside Auditorium 104, Computer Science Building.

Session III.a

Chair: P. M. Pardalos, Pennsylvania State University

8:10 a.m.

Plenary Lecture III

A New Simplicial Cover Technique in Constrained Global Optimization

R. Horst, University of Trier, Germany

8:50 a.m.

Optimizing the Sum of Linear Fractional Functions

J. E. Falk, George Washington University, and S. W. Palocsay, James Madison University

9:15 a.m.

Minimizing and Maximizing the Product of Linear Fractional Functions

H. Konno and Y. Yajima, Tokyo Institute of Technology, Japan

9:40 a.m.

Integral Global Optimization of Constrained Problems in Functional Spaces with Discontinuous Penalty Functions

Q. Zheng, Shanghai University of Science and Technology, and D. Zhuang, Mount Saint Vincent University, Canada

10:05 p.m.

Numerical Methods for Global Optimization

Yu. Evtushenko, M. Potapov, and V. Korotkich, Computing Center of U.S.S.R. Academy of Sciences

10:30–10:45 a.m.

Break

Session III.b

Chair: P. M. Pardalos, Pennsylvania State University

10:45 a.m.

Rigorous Methods for Parallel Global Optimization

R. Moore, E. Hansen, and A. Leclerc, Ohio State University

11:10 a.m.

An Interval Branch and Bound Algorithm for a Certain Class of Constrained Optimization Problems

R. B. Kearfott and M. Novoa III, University of Southwestern Louisiana

11:35 p.m.

Global Solution of Sparse Algebraic Process Design Problems

R. E. Swaney, University of Wisconsin

Noon–1:00 p.m.

Lunch

Engineering Quadrangle Convocation Room

Session IV.a

Chair: C. A. Floudas, Princeton University

1:10 p.m.

Plenary Lecture IV

A Continuous Approach to Compute Upper Bounds in Quadratic Maximization Problems with Integer Constraints

A. Kamath and N. Karmarkar, AT&T Bell Laboratories

1:50 p.m.

Hide-and-Seek: A Simulating Annealing Algorithm for Global Optimization

C. J. P. Belisle, H. E. Romeijn, and R. L. Smith, University of Michigan

2:15 p.m.

Global Optimization of Composite Laminates Using Improved Hit and Run

Z. B. Zabinsky, D. L. Graesser, M. E. Tuttle, and G. I. Kim, University of Washington

2:40 p.m.

New Stochastic Methods for Solving Large-Scale Global Optimization Problems

R. Schnabel and E. Eskow, University of Colorado, Boulder

3:05 p.m.

Stochastic Minimization of Lipschitz Functions

R. Mladineo, Rider College

3:30–3:45 p.m.

Break

Session IV.b

Chair: C. A. Floudas, Princeton University

3:45 p.m.

Packet Annealing: A Deterministic Method for Global Minimization: Application to Molecular Conformation

D. Shalloway, Cornell University

4:10 p.m.

Mixed-Integer Linear Programming Formulations for Some Nonlinear Discrete Design Optimization Problems

I. E. Grossmann, V. T. Voudouris, and O. Ghattas, Carnegie-Mellon University

4:35 p.m.

Mixed-Integer Nonlinear Programming on Generalized Networks

S. S. Nielsen and S. A. Zenios, University of Pennsylvania

5:00 p.m.

Global Minima in Root Finding

A. Lucia and J. Xu, Clarkson University

5:25 p.m.

Mapped Homotopy-Continuation Algorithms for Global Optimization

A. C. Sun and W. D. Seider, University of Pennsylvania

5:50 p.m.

A Global Optimization Approach to Software Testing

R. Barbagallo, M. C. Recchioni, and F. Zirilli, Universita' di Roma, Italy

6:15 p.m.

Closing

P. M. Pardalos, Pennsylvania State University