

**31th CONFERENCE ON THE
MATHEMATICS OF OPERATIONS RESEARCH**

and

SEMINAR ON “OPERATIONS RESEARCH AND HEALTH CARE”

**Conference Center ‘The Werelt’, Lunteren, The Netherlands
January, 17 – 19, 2006**

AIM and SCOPE

The aim of the conference is to promote research activities and cooperation between senior and junior researchers in the mathematics of Operations Research in the Netherlands. The program offers high quality research and applications and should appeal to both academic researchers and people from profit and non-profit organizations.

On the last day a seminar is jointly organized by the LNMB (Landelijk Netwerk Mathematische Besliskunde) and NGB (Nederlands Genootschap Besliskunde) on the subject “Operations Research and Health Care”.

The program should give ample opportunity for informal discussions. The conference center is located in the scenic surroundings of Lunteren, in the center of the Netherlands.

During the first two days, there are five prominent invited speakers from abroad who will present two lectures in their field of research:

- Bruce Golden (University of Maryland, USA) : <http://www.rhsmith.umd.edu/dit/faculty/golden.html>
- Shane Henderson (Cornell University, Ithaca, USA): <http://www.orie.cornell.edu/~shane/home.html>
- Pablo Parrilo (MIT, Cambridge, USA): <http://www.mit.edu/~parrilo>
- Philippe Robert (INRIA, Rocquencourt, France): <http://www-rocq.inria.fr/~robert/>
- Lex Schrijver (CWI & University of Amsterdam: <http://homepages.cwi.nl/~lex/>

The seminar on “Operations Research and Health Care” is held on Thursday.

On Tuesday and Wednesday there are also some 30-minutes presentations by Ph.D. students.

Biographies of the five invited speakers and a registration form can be found in this announcement.

For more information: www.lnmb.nl/conferences/lunteren2006

Program Tuesday January 17

10.15	Registration
10.55 – 11.00	Opening
11.00 – 11.45	Shane Henderson: <i>Call Centers and Poisson's Equation</i>
12.00 – 12.45	Bruce Golden: <i>The Split Delivery Vehicle Routing Problem: Using Integer Programming within a Heuristic Framework</i>
12.45	Lunch
14.00 – 15.00	PhD presentations (parallel)
15.15 – 16.00	Philippe Robert: <i>Tree Algorithms, Communication Networks and Data Structures</i>
16.15 – 17.00	Lex Schrijver: <i>Matchings, Colourings, Dimers</i>
17.15 – 18.00	Presentation of the Gijs de Leve Prize
18.30	Dinner
20.30	Meeting for the members of the LNMB

Program Wednesday January 18

09.00 – 09.45	Pablo Parrilo: <i>Sum of Squares Programs: What are They Good For, and How To Solve Them</i>
10.00 – 10.45	Shane Henderson: <i>Variance Reduction for Markov Processes and Poisson's Equation</i>
11.15 – 12.00	Philippe Robert: <i>Scaling Methods for Communication Networks</i>
12.15 – 13.00	Lex Schrijver: <i>Exploiting Symmetry in Optimization</i>
13.00	Lunch
14.30 – 16.00	PhD presentations (parallel)
16.15 – 17.00	Bruce Golden: <i>The Minimum Label Spanning Tree Problem: Some Genetic Algorithm Approaches</i>
17.15 – 18.00	Pablo Parrilo: <i>SOS/SDP methods: from optimization to games</i>
18.30	Dinner
20.30	Meeting PhD students LNMB

Program Thursday January 19

- 09.30 – 10.00 Registration and Coffee
10.00 – 10.15 Welcome and introduction by the chairman Anne Jonkman
10.20 – 12.20 *OR and logistics in health care*
Michael Carter: *Operations Research in the health care or Who let the engineer into the hospital?*
Mark van Houdenhoven: *Hospital process optimization: where to start?*
Gerhard Wullink: *Health care process optimization: mathematics is the easy part!*
Erwin Hans: *Operations research based process optimization at Erasmus MC*
12.20 Lunch
13.30 – 15.30 *OR and medical treatment*
Dick den Hertog, *Introduction*
Eva Lee: *Operations Research Challenges in Medicine and HealthCare*
Aswin Hoffman: *Multi-objective fluence map optimization for intensity-modulated radiotherapy*
Marjolein van Ballegooijen and Dik Habbema: *Health care efficiency improvement in action: the case of cervical cancer screening in the Netherlands*
15.45 – 17.15 *OR and decision making in health care*
Joris van de Klundert: *Introduction*
Maarten Rutgers: *Integral improvement of the orthopaedic chain*
Etienne Rouwette: *System dynamics modeling on health care: supply and demand of dementia care*
17.15 – 18.00 Drinks

PHD PRESENTATIONS AND LNMB DIPLOMAS

The PhD students of the LNMB are strongly recommended to present a paper at this conference. In order to receive the LNMB diploma, a PhD student must have given such presentation at least once. For each presentation 30 minutes are available in one of the parallel sessions. For each contributed paper a senior member of the LNMB will be available to act as discussant.

The deadline for the application of a PhD presentation is **December 1**. To apply, send the following information to kallenberg@math.leidenuniv.nl: your name and the name of your supervisor, the title and an abstract of about half a page. When you give a PhD presentation, you also have to fill in the application form.

During the conference the LNMB diplomas will be presented to the PhD students who have fulfilled the requirements for this diploma (750 credit points or 25 ECTS and a PhD presentation).

If you believe to have fulfilled these requirements, please send **before December 14**, an e-mail to kallenberg@math.leidenuniv.nl with the following information:

- your family name and full first name(s);
- date of birth (dd/mm/yy);
- place of birth (city, country);
- certificated courses with credit points;
- Lunteren conferences you have attended (you receive 30 credit point for each conference).

LOCATION

Conference Center 'De Werelt', Westhofflaan 2, Lunteren, The Netherlands, phone 0318 - 484641.

For more information, e.g. 'how to reach' see: www.congrescentrum.com

ORGANIZATION AND INFORMATION

The conference is organized by the LNMB (Landelijk Netwerk Mathematische Besliskunde), the seminar jointly with the NGB (Nederlands Genootschap Besliskunde).

For more information contact the director of the LNMB, Lodewijk Kallenberg (kallenberg@math.leidenuniv.nl; phone 071 - 5277130) or look at the site www.lnmb.nl/conferences/lunteren2006.

REGISTRATION

One can register by sending in the registration form and transferring the fee. Participants can register for the entire meeting as well as for partial arrangements. It is possible, against reduced rates, to share a room; in that case a roommate should be indicated on the registration form. PhD students of the LNMB who attend the entire meeting including the seminar are entitled to a reduction of € 50,- of the fee in addition to the financial support of 50% of their traveling expenses.

The various fees and bank account can be found on the enclosed registration form. Please send this form as soon as possible, but **ultimately December 16**, to the secretary of the LNMB, Mrs. W.A. Hasselton - Snijder, Mathematical Institute, Leiden University, P.O. Box 9512, 2300 RA Leiden, The Netherlands.

SPEAKERS ON JANUARY 17 AND 18

Bruce Golden (Department Robert H. Smith School of Business at the University of Maryland, USA)

Bruce Golden received his bachelor's degree in mathematics from the University of Pennsylvania and his masters and doctoral degrees from the Massachusetts Institute of Technology. He joined the faculty of the University of Maryland Business School in 1976 and served as a Department Chairman from 1980 to 1996. Currently, Bruce is the France-Merrick Chair in Management Science in the Robert H. Smith School of Business at the University of Maryland. His research interests include heuristic search, combinatorial optimization, networks, and applied operations research. Bruce has received numerous awards, including the Thomas L. Saaty Prize (1994), the University of Maryland Distinguished Scholar-Teacher Award (2000), the INFORMS Award for the Teaching of OR/MS Practice (2003), and the INFORMS Computing Society Prize (2005). He was named an INFORMS Fellow in 2004. Since 1999, Bruce has served as Editor-in-Chief of NETWORKS. Before that, he was Editor-in-Chief of the INFORMS Journal on Computing.

Shane Henderson (School of Operations Research and Industrial Engineering, Cornell University, USA)

Shane G. Henderson is an associate professor in the School of Operations Research and Industrial Engineering at Cornell University. He has previously held positions in the Department of Industrial and Operations Engineering at the University of Michigan and the Department of Engineering Science at the University of Auckland. His overall professional goal is to contribute to both research and learning in the theory and application of stochastic simulation and applied probability, with some emphasis on the interface between these areas and optimization. He is an associate editor for the ACM Transactions on Modeling and Computer Simulation, Operations Research Letters, and Mathematics of Operations Research, and the secretary of the INFORMS Simulation Society. His research interests include discrete-event simulation and simulation optimisation. He is interested in structured simulation optimization, where the optimization problem enjoys certain properties, like convexity or quasi convexity, that one can exploit to develop algorithms that are robust and fast. Specific applications in this area include radiation treatment planning, call center planning, yacht match racing, ambulance deployment, adaptive Monte Carlo and policy identification in complex networks.

Pablo Parrilo (Massachusetts Institute of Technology, Cambridge, USA)

Pablo A. Parrilo received a Ph.D. in Control and Dynamical Systems from the California Institute of Technology in 2000. He has held short-term visiting appointments at the University of California at Santa Barbara, Lund Institute of Technology, and UC Berkeley.

He is currently at the Department of Electrical Engineering and Computer Science of the Massachusetts Institute of Technology, where he is affiliated with the Laboratory for Information and Decision Systems (LIDS) and the Operations Research Center (ORC).

His research interests include optimization methods for engineering applications, control and identification of uncertain complex systems, robustness analysis and synthesis, and the development and application of computational tools based on convex optimization and algorithmic algebra to practically relevant engineering problems. Parrilo is the recipient of the 2005 Donald P. Eckman Award of the American Automatic Control Council, as well as the triennial SIAM Activity Group on Control and Systems Theory (SIAG/CST) Prize. He was also a finalist for the Tucker Prize of the Mathematical Programming Society for the years 2000-2003.

Philippe Robert (INRIA-Rocquencourt, France)

Philippe Robert received his PhD from the University of Paris VI, Laboratory of Probability. His research interests include theoretical aspects of stochastic networks, random algorithms and scaling methods of Markov processes. Algorithmic aspects of communication protocols and mathematical representations of the measurements of the Internet traffic are currently the main applications of his research. He is teaching at the University of Paris VI and Ecole Polytechnique. He wrote a book "Stochastic Networks and Queues" in 2003, published by Springer-Verlag New-York. He is at the head of the Research Team "Communication Networks, Algorithms and Probability" at INRIA. He is president of the scientific committee of the INRIA research center near Paris.

Lex Schrijver (CWI & University of Amsterdam, The Netherlands)

Lex Schrijver studied mathematics at the Free University and gained his doctorate there in 1977. After an appointment at the Mathematical Centre in Amsterdam and a professorship at Tilburg University, he is researcher at the Center for Mathematics and Computer Science (CWI) in Amsterdam since 1989. Since 1990 he also is a part-time professor at the University of Amsterdam.

His research interest is in the area of discrete mathematics and optimization, especially polyhedral methods. Schrijver has published more than 120 articles and wrote the standard books *Theory of Linear and Integer Programming* and the three-volume *Combinatorial Optimization: Polyhedra and Efficiency*.

In 1982 and 2003 he received the Fulkerson prize, in 1987 and 2004 the Lanchester prize, and in 2003 the Dantzig prize. Recently, in November 2005, Schrijver received the prestigious NWO-Spinoza award.

SPEAKERS ON JANUARY 19

Marjolein van Ballegooijen (Erasmus Medical Center, Rotterdam)

Marjolein van Ballegooijen is a Medical Physician and Epidemiologist and coordinator of the research projects concerning cervical cancer and colorectal cancer screening at the Department of Public Health of Erasmus MC. After completing of her PhD on costs and effects of cervical cancer screening she extended her work field to colorectal screening. She is experienced in public policy issues. She has extensive experience in model (MISCAN) based projects towards recommendations for Dutch policy makers concerning cancer screening. This work had impact on the practice of the Dutch national cervical cancer-screening program (change in age range and interval for screening rounds) and on the consensus recommendations for surveillance after polypectomy in colon adenoma patients.

Michael Carter (Healthcare Resource Modeling Laboratory, University of Toronto, Canada)

Michael Carter is a Professor in the Department of Mechanical and Industrial Engineering at the University of Toronto. He received his doctorate in Mathematics (Optimization) from the University of Waterloo in 1980. He has worked extensively in university timetabling, production scheduling and healthcare applications. His current research focus is in the area of healthcare resource modeling with a variety of projects in several hospitals, home care and mental health institutions. He was the winner of the Annual Practice Prize from the Canadian Operational Research Society (CORS) three times (1988, 1992 and 1996). In 2000, he received the CORS Award of Merit for lifetime contributions to Canadian Operational Research. He also received an "Excellence in Teaching" Award from the University of Toronto Student Administrative Council. He is on the editorial board for the "Journal of Scheduling" and the journal "Health Care Management Science". He is a member of the "Nursing Effectiveness, Utilization and Outcomes Research Unit" and a mentor in the "Health Care, Technology and Place" Program at the University of Toronto. He was a lecturer with the Project H.O.P.E. international program in Healthcare Quality in Central and Eastern Europe.

Dik Habbema (Erasmus Medical Center, Rotterdam)

Dik Habbema is since 1987 professor of medical decision sciences at the Department of Public Health of the Erasmus MC, University Medical Center Rotterdam. He co-ordinates the decision sciences research programme, which has evaluation of early detection of disease, (tropical) infectious disease control and clinical decision sciences as its three main lines of research. Assessing population health impact of interventions, model building and validation, prediction and evaluation, optimizing the choice of interventions, and cost-effectiveness analysis are important activities. He has (co-) authored several hundreds of scientific publications in these fields.

Erwin Hans (Operational Methods for Production and Logistics, University of Twente)

Erwin Hans is Assistant Professor at the department "Operational Methods for Production and Logistics" of the University of Twente (School of Business, Public Administration and Technology). After his study of Applied Mathematics, specialization Operations Research, he did a Ph.D. research on the development of models and techniques for tactical capacity planning in manufacturing. Since his promotion he remains active in this field, a.o. through supervising Ph.D. students. Since 2003 he also performs research in health care. In collaboration with Erasmus MC and AMC he focuses on applying operations research techniques for process optimization in hospitals. Beside research, he is responsible for a number of master lectures in the "Industrial Engineering & Management"-master at the University of Twente.

Dick den Hertog (Tilburg University)

Dick den Hertog is a full professor of Operations Research at CentER and the Department of Econometrics at the Tilburg University. He received his Ph.D. (cum laude) from the Technical University Delft in 1992. From 1992 till 1999 he has been an Operations Research consultant at CQM in Eindhoven. His main research focus is nonlinear programming, and in particular deterministic simulation-based optimization methods.

Aswin Hoffman (Radboud University, Nijmegen)

Aswin L. Hoffmann received the MSc degree in Electrical Engineering from the Eindhoven University of Technology in 1996. He has been a Junior Researcher at the Department of Applied Physics at the Delft University of Technology from 1996 through 1998. From then to 2002 he was a Research Scientist at the Biomedical Engineering Research Centre of the Department of Urology of the Radboud University Nijmegen Medical Centre. Since 2002 he is in training to become a Clinical Physicist, specialized in Radiotherapy Physics at the Department of Radiation Oncology within the same institute. There, he currently also holds a position as a Research Scientist working on optimization of radiotherapy treatment planning. His research interests include medical decision making and multi-objective optimisation of inverse treatment planning for intensity-modulated radiotherapy.

Mark van Houdenhoven (Erasmus Medical Center, Rotterdam)

Mark van Houdenhoven is an economist of background and has worked for more than 12 years as a manager in healthcare. Nowadays, he is the manager of the OR-department, ICU and Anesthesiology department of the Erasmus MC in Rotterdam. He has a particular interest in logistical concepts in health care. In this context he implemented an innovative way of planning surgical procedures and dealing with medical variability at the OR-department of the Erasmus MC. For this innovative planning concept he received the KIVI speurwerkprijs from the Dutch Society for Engineers. He is also interested in the application and development of Operations Research in Hospitals, and performs research in this particular field of health logistics.

Joris van de Klundert (Maastricht University)

Joris van de Klundert received his Masters degree in Computer Science from Erasmus University Rotterdam in 1991, and his Ph.D. in Operations Research in 1996 at Maastricht University. He is currently employed as associate professor of operations research at Maastricht University, and as director of Mateum. Mateum is an operations research solutions provider specialized in health care industry. Joris van de Klundert has worked on numerous operations research projects in the service industry.

Eva Lee (Georgia Institute of Technology, USA)

Eva Lee is an associate professor with a joint appointment in IsyE at Georgia Institute of Technology and the Department of Radiation Oncology at the Emory University School of Medicine. She is also Director of the Center for Operations Research in Medicine. Dr. Lee earned a Ph.D. at Rice University in the Department of Computational and Applied Mathematics. She was awarded a NSF/NATO postdoctoral fellowship and a postdoctoral fellowship from Konrad-Zuse-Zentrum Informationstechnik Berlin in 1995. In 1996, she received the NSF CAREER Young Investigator Award for research on integer programming and parallel algorithms. In 2005, she receives the INFORMS Pierskalla Best Paper Award for research excellence in HealthCare Management Science for her work on emergency treatment response and real-time staff allocation for bioterrorism and infectious disease outbreak.

Dr. Lee works in the area of mathematical modeling and computational algorithms with a primary emphasis on medical/healthcare decision analysis and logistics operations management. In healthcare, she has developed clinical decision-support systems to help analyze large-scale biological, DNA/genomic and clinical data to assist in disease diagnosis and prediction, optimal treatment and drug delivery, healthcare outcome analysis and prediction, and healthcare operations logistics.

Dr. Lee has received five patents on innovative medical systems and devices, Her research has been featured and discussed in New York Times, London Times, Urology Times, the Atlanta Business Chronicle, and the Homeland Security IAIP Directorate Daily Report.

Etienne Rouwette (Radboud University, Nijmegen)

Etienne Rouwette received his PhD from Radboud University in Nijmegen in 2003. His research interests focus on the effects of system dynamics, group model building and other participative approaches on group decision making. He teaches at Radboud University and Sioo and is involved in applied projects for a range of public and private organizations. He is a member of the System Dynamics Society and International Association of Facilitators, and organizing chair for the International System Dynamics Conference in Nijmegen in 2006.

Maarten Rutgers (General Director Wilhelmina Hospital Assen)

Maarten Rutgers finished his medical study at Groningen University in 1973. He specialized in neurology and clinical neurophysiology at the University Hospital Rotterdam, now Erasmus Medical Centre. He received his Ph.D. in epidemiology in 1984 at Erasmus University Rotterdam. Since 1986 he is employed in various management positions, mostly in healthcare. Currently he is general director of Wilhelmina Hospital Assen. He is involved in decision making on the portfolio of hospitals and the organization of chains with other healthcare organisations at the strategic level, including mergers.

Gerhard Wullink (Erasmus Medical Center, Rotterdam)

Gerhard Wullink is a researcher at the operating room department of the Erasmus MC. After his study of Mechanical Engineering, specialization Production Planning and Management, he did a Ph.D. research on the development of models and techniques for solving tactical capacity planning problems in manufacturing. The focus of the research was to take into account the variability that is typical for Engineer-To-Order environments. Since his promotion, in March 2005, he works as a researcher in the Erasmus MC on the field of application of operations research techniques in hospitals. Besides his research position, he also works as an internal advisor on the area of process improvement and analysis in the Erasmus MC.

REGISTRATION FORM "LUNTEREN 2006"

Family name :

First Name :

Affiliation :

Address :

Postal Code: City:

Telephone : E-mail address:

Date : Signature:

Full Ph.D. Arrangement (tag your choices)

Fee

- I am LNMB PhD student and **attend the entire meeting** including the seminar on Thursday (Price includes registration fee, lodging in double room, meals and € 50,- reduction paid by the LNMB) ; Price: € 280,- €
- I would like a single room (€ 50,- extra charge) ; Price: € 330,- €

Standard reservation (tag your choices; calculate your fee)

Fee

- Registration fee € 40,-
- I will attend the conference on Tuesday (incl. coffee, tea and lunch); Price: € 37,50 €
- I will attend the conference on Wednesday (incl. coffee, tea and lunch); Price: € 37,50 €
- I will attend the seminar on Thursday (incl. coffee, tea, lunch and drinks); Price: € 50,- €
- I will attend dinner on Tuesday; Price: € 32,50 €
- I will attend dinner on Wednesday; Price: € 32,50 €
- I wish to reserve a single room for Tuesday night (incl. breakfast); Price € 75,- €
- I wish to reserve a single room for Wednesday night (incl. breakfast); Price € 75,- €
- I wish to reserve a double room for Tuesday night (p.p. incl. breakfast); Price € 50,- €
- I wish to reserve a double room for Wednesday night (p.p. incl. breakfast); Price € 50,- €

In case you share a room: Room mate:

TOTAL FEE (please, fill in your total fee)

€

We don't send invoices or confirmations. In case you wish to check your registration look at the LNMB website www.lnmb.nl/conferences/lunteren2006/participants.html ; when you wish to receive a receipt for the fee, send an e-mail to lnmb@math.leidenuniv.nl.

Transfer your fee ultimately December 16 to bank account 85.79.82.990 of Maastricht University with the notes: "no. 35010010 N" (mention this number is absolutely necessary) and "fee LNMB/Lunteren 2006 for" (fill in the name(s)).

Please, return this form **ultimately December 16**, to:

Prof.dr. L.C.M. Kallenberg, Mathematical Institute, Leiden University, PO Box 9512, 2300 RA Leiden.

REGISTRATION FORM

I hereby register for the LNBM/NGB seminar “**Operations Research and Health Care**”, which will be held in Conference Center “De Werelt”, Lunteren, January 19, 2006.

Family name:

First name:

Title:

Company/Institute:

Address:

Postal Code: **City:**

Telephone number: **E-mail:**

Date: **Signature:**

Below, please tick the appropriate box:

I am:

LNMB/NGB member (Registration fee € 75):

Other (Registration fee € 125):

FEE PAYMENT INSTRUCTIONS WILL BE SENT TO YOU AFTER REGISTRATION

Send the registration form before January 9, 2006 by regular mail or e-mail or by fax to

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