
Curriculum vitae – Michel Mandjes

Personal information

Name Mandjes, Michael Robertus Hendrikus (Michel)
Address Maasstraat 82 III, 1078 HM Amsterdam, The Netherlands
Birth February 14, 1970, in Zaandam, The Netherlands
Civil status Married, father of a daughter

Education

1982-1988 Gymnasium β ,
Triniteitslyceum, Haarlem, The Netherlands.
1988-1993 M.Sc. degree in Econometrics (cum laude),
Vrije Universiteit (VU), Amsterdam, The Netherlands.
1989-1993 M.Sc. degree in Mathematics (cum laude),
Vrije Universiteit (VU), Amsterdam, The Netherlands.
1993-1996 Ph.D. degree in Operations Research,
Vrije Universiteit (VU), Amsterdam, The Netherlands.

Working experience

1990-1992 Vrije Universiteit (VU), Amsterdam, The Netherlands,
Department of Econometrics:
Student assistant.
1993-1996 Vrije Universiteit (VU), Amsterdam, The Netherlands,
Department of Econometrics:
Research assistant.
1996-1998 KPN Research, Leidschendam, The Netherlands,
Department of Planning, Performance, and Reliability:
Member of technical staff.
1999-2001 Bell Laboratories/Lucent Technologies, Murray Hill NJ, United States,
Mathematical Sciences Research Center:
Member of technical staff.
2000-2004 University of Twente (UT), The Netherlands,
Faculty of Mathematical Sciences:
Full professor of Stochastic Operations Research.
2000-2006 Center for Mathematics and Computer Science (CWI), Amsterdam, The Netherlands,
Department of Probability, Networks, and Algorithms:
Senior researcher; department head (theme leader) PNA2.
2004-.... University of Amsterdam (UvA), The Netherlands,
Korteweg-de Vries Institute (KdVI) for mathematics:
Full professor of Applied Probability (as of 2006 full-time).
2008 Stanford University, United States,
Management Science and Engineering:
Visiting professor (sabbatical leave from UvA).
2013-2014 New York University (NYU), United States
Stern School of Business:
Visiting professor
(in context of visiting faculty program between UvA and NYU).

Address

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http: http://www.cwi.nl/~michel
Address University of Amsterdam (UvA),
 Korteweg-de Vries Institute for Mathematics,
 Science Park 904,
 1098 XH Amsterdam,
 The Netherlands.
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Fax +31 20 525 7820.

Research interests

- *Stochastic processes and queues.* Gaussian processes - Lévy processes - asymptotic techniques - large deviations, large-buffer asymptotics, many-sources asymptotics - infinite-server queues - fluid queues - fluid limits, diffusions.
- *Queueing models for communication networks.* Models for wireline networks, IP - Feedback queues, TCP - Markov fluid models - long-range dependence, heavy tails, fractional Brownian motion, Gaussian traffic - loss networks - wireless networks, GSM, UMTS, ad hoc networks - queues under various scheduling disciplines - diffusion approximations.
- *Stochastic simulation.* Fast simulation - rare events - importance sampling - exponential change of measure - splitting techniques.
- *Traffic management.* Quality of Service - service differentiation, generalized processor sharing, diffserv - traffic management, resource allocation, admission control.
- *Traffic analysis.* Traffic measurements - Gaussian modeling, fractional Brownian motion - model selection - anomaly detection - bandwidth provisioning, dimensioning - measurement-based algorithms.
- *Network economics.* Charging and pricing in communication networks - bandwidth brokering - cost allocation models, resource allocation - congestion cost - Paris metro pricing.
- *Financial models.* Insurance models - risk analysis - ruin probabilities - Cramér-Lundberg theory - credit risk - Lévy-based models - Wiener-Hopf techniques - numerical inversion of Laplace transforms - option pricing.
- *Service systems.* Performance and optimization of service systems - health care applications - appointment scheduling.

Scientific activities: research partners

Michel Mandjes has currently collaborations with, among others,

- Lars Norvang Andersen (*Aarhus University*, reflected Lévy processes),
- Dave Anderson (*University of Wisconsin at Madison*, chemical reaction networks, martingale techniques),
- François Baccelli (*University of Texas at Austin*, inversion techniques),
- Nick Bambos (*Stanford University*, rate-based control algorithms),
- Hans van den Berg (*TNO ICT and University of Twente*, traffic management, admission control),
- Jose Blanchet (*Columbia University*, rare-event simulation, queueing asymptotics),
- Sem Borst (*Eindhoven University of Technology and Bell Labs*, queues with heavy-tailed input, generalized processor sharing),
- Onno Boxma (*Eindhoven University of Technology*, queues with Lévy-input),
- Koen De Turck (*Ghent University*, time scalings, infinite-server systems),
- Krzysztof Dębicki (*University of Wrocław*, Gaussian processes),

- Peter Glynn (*Stanford University*, correlation structure reflected fBm, advanced simulation techniques),
- Boudewijn Haverkort (*University of Twente*, TCP modeling, Petri nets),
- Sandeep Juneja (*Tata Institute for Fundamental Research*, birthday problems, importance sampling),
- Offer Kella (*Hebrew University, Jerusalem*, Lévy processes),
- Jeong Han Kim (*Microsoft Research*, large deviations techniques),
- Krishnan Kumaran (*Exxon-Mobil Research*, traffic management, admission control, QoS differentiation),
- Petteri Mannersalo (*VTT*, sample-path large deviations, Gaussian processes),
- Debasis Mitra (*Bell Labs*, Markov fluid models, network economics, bandwidth brokering),
- Yoni Nazarathy (*University of Queensland*, critically loaded queues, fluid and diffusion approximations),
- Ilkka Norros (*VTT*, sample-path large deviations, Gaussian processes),
- Zbigniew Palmowski (*University of Wrocław*, Lévy processes),
- Rudesindo Núñez-Queija (*University of Amsterdam*, network economics, resource allocation),
- Teun Ott (*Rutgers*, correlation structure reflected Lévy),
- Aiko Pras (*University of Twente*, network measurements),
- Ad Ridder (*Vrije Universiteit Amsterdam*, large deviations techniques, fast simulation),
- Tomasz Rolski (*University of Wrocław*, Lévy processes),
- Iraj Saniee (*Bell Labs*, traffic management, network economics),
- Werner Scheinhardt (*University of Twente*, Markov fluid models, feedback),
- Peter Spreij (*University of Amsterdam*, stochastic processes, financial mathematics),
- Aleksandr Stolyar (*Bell Labs*, traffic management, queueing),
- Judith Timmer (*University of Twente*, network economics),
- Anwar Walid (*Bell Labs*, Markov fluid models, energy efficient engineering),
- Alan Weiss (*MathWorks*, large deviations techniques),
- Ward Whitt (*Columbia University*, critically loaded queues),
- Bert Zwart (*CWI*, heavy tails, processor sharing).

Scientific activities: supervision

- Ph.D. thesis supervisor of
 - N.K. Boots (Vrije Universiteit Amsterdam, with A.A.N. Ridder and H.C. Tijms; February 5, 2002),
 - N.D. van Foreest (University of Twente, with W.R.W. Scheinhardt; December 17, 2004),
 - A.B. Dieker (CWI Amsterdam, with graduation at University of Amsterdam; March 9, 2006; *with honors*),
 - R. van de Meent (University of Twente, with A. Pras and L.J.M. Nieuwenhuis; March 24, 2006),
 - P.M.D. Lieshout (CWI Amsterdam, with graduation at University of Amsterdam, with S.C. Borst; September 5, 2008),
 - R. Malhotra (University of Twente and Alcatel-Lucent, with J.L. van den Berg; October 31, 2008),

- F. Roijers (University of Amsterdam and TNO ICT, with J.L. van den Berg; February 11, 2009),
 - D.I. Miretskiy (University of Twente, with W.R.W. Scheinhardt; November 12, 2009),
 - A. Es-Saghouni (University of Amsterdam; November 17, 2009),
 - V.J.G. Leijdekker (University of Amsterdam and ABN-AMRO, with P.J.C. Spreij; May 25, 2010),
 - P.W. Żuraniewski (University of Amsterdam; March 11, 2011),
 - J.D. Ivanovs (University of Amsterdam and EURANDOM, with O.J. Boxma; September 6, 2011),
 - B.P.H. Kemper (University of Amsterdam and IBIS UvA BV, with J. de Mast; November 17, 2011),
 - M.R. Koot (University of Amsterdam, with C.T.A.M. de Laat and G.J. van 't Noordende; June 27, 2012),
 - K.M. Kosiński (University of Amsterdam and EURANDOM, with O.J. Boxma; September 27, 2012; *with honors*),
 - P.A.G.J.M. Gruntjes (University of Amsterdam, with P.J.C. Spreij; September 27, 2013),
 - N.M. Asghari (University of Amsterdam),
 - H. Thórsdóttir (CWI Amsterdam, with J.G. Blom),
 - G. Huang (University of Amsterdam, with P.J.C. Spreij),
 - W. Ellens (University of Amsterdam and TNO ICT, with J.L. van den Berg),
 - F. Iandolo (University of Amsterdam, with P.J.C. Spreij),
 - P. Kovács (University of Amsterdam, with N.S. Walton and R. Núñez-Queija),
 - A. Kuiper (University of Amsterdam and IBIS UvA BV, with J. de Mast),
 - V.R. Harmsen (University of Amsterdam, with R.G. de Vilder and M.R. Pistorius),
 - M. van Beek (University of Amsterdam, with E.M.M. Winands and P.J.C. Spreij),
 - M. Jansen (University of Amsterdam and University Ghent, with K. de Turck and S. Wittevrongel);
 - J. Kuhn (University of Amsterdam and University of Queensland, with Y. Nazarathy).
- M.Sc. thesis supervisor of
 - P. van der Stoel (1997 – KPN Research/Vrije Universiteit Amsterdam);
 - M. van Uiter (1999 – KPN Research/University of Tilburg);
 - T. Dieker (2002 – CWI/Vrije Universiteit Amsterdam);
 - J. Slegers (2002 – Worldcom/University of Twente);
 - R. de Jonge (2007 – University of Amsterdam);
 - S. Greeuw (2009 – Technical University of Denmark/University of Amsterdam);
 - E. Boezeman (2009 – Shell/University of Amsterdam);
 - B. Groot (2011 – University of Amsterdam);
 - M. Boersma (2011 – University of Amsterdam);
 - D. van Waarden (2012 – MIcompany/University of Amsterdam);
 - A. Kuiper (2012 – IBIS/University of Amsterdam);
 - J. Kuhn (2013 – TNO/University of Amsterdam);
 - D. Broedersz (2014 – VUmc/University of Amsterdam);
 - N. Starreveld (2014 – University of Amsterdam);
 - S. Błaszczuk (2014 – University of Amsterdam).
 - Ph.D. thesis committee member of
 - P.-T. de Boer (University of Twente; supervisors: I. Niemegeers and V.F. Nicola),

- Q. Deng (Eindhoven University of Technology; supervisor: O.J. Boxma),
- P. Lassila (Helsinki University of Technology; supervisor: J. Virtamo),
- R. Litjens, M.Sc. (University of Twente; supervisors: W.H.M. Zijm and R.J. Boucherie),
- M.F.M. Nuijens (Universiteit van Amsterdam; supervisors: M.S. Keane and A.A. Balkema),
- H. Gautama (Technical University Delft; supervisors: A. van Gemund and H. Sips),
- R. Groenevelt (Université de Nice/Sophia Antipolis; supervisor: P. Nain),
- T.J.J. Denteneer (Eindhoven University of Technology; supervisor: O.J. Boxma),
- R. Bekker (Eindhoven University of Technology; supervisors: O.J. Boxma and S.C. Borst),
- L. Leskelä (Helsinki University of Technology; supervisors: I. Norros and E. Valkeila),
- M.B. Vermaat (University of Amsterdam; supervisor: R.J.M.M. Does),
- P. Mokveld (University of Amsterdam; supervisor: C. Klaassen),
- H. de Koning (University of Amsterdam; supervisor: R.J.M.M. Does),
- P. Zareba (Vrije Universiteit Amsterdam; supervisors: A.W. van der Vaart, K.O. Dzharidze, and J.H. van Zanten),
- T. Zaburkenko (University of Twente; supervisors: B.R.H.M. Haverkort and P.-T. de Boer),
- S. Gugushvili (University of Amsterdam; supervisors: C.A.J. Klaassen, P.J.C. Spreij, and A.J. van Es),
- M. Riaz (University of Amsterdam; supervisor: R.J.M.M. Does),
- R. Haijema (University of Amsterdam; supervisors: N.M. van Dijk and J. van der Wal),
- R. Egorova (Eindhoven University of Technology; supervisors: A.P. Zwart and S.C. Borst),
- W. van der Weij (Vrije Universiteit Amsterdam; supervisor: R.D. van der Mei),
- N.S. Walton (University of Cambridge; supervisor F.P. Kelly),
- K. Avrachenkov (*habilitation*; Université de Nice/Sophia Antipolis; supervisor: P. Nain),
- A. Sperotto (University of Twente; supervisors: B.R.H.M. Haverkort and A. Pras),
- M. Dobrzyński (University of Amsterdam; supervisors: J. Verwer and H. Westerhof),
- B. Kauffmann (ENS Paris; supervisor: F. Baccelli),
- A. Marynych (University of Utrecht; supervisor: A. Gnedin),
- E. Veerman (University of Amsterdam; supervisors: C.A.J. Klaassen and P.J.C. Spreij),
- B. Kaynar (Vrije Universiteit Amsterdam; supervisors: A.A.N Ridder and H.C. Tijms),
- M. Harkema (University of Twente; supervisors: L.J.M. Nieuwenhuis and R.D. van der Mei),
- J. Bajars (University of Amsterdam; supervisor: J. Frank),
- F. Mata (Universidad Autónoma de Madrid; supervisor: J. Aracil),
- T.P. Erdmann (University of Amsterdam; supervisor: J. de Mast),
- A. De Larrard (Université Paris VI; supervisor: R. Cont),
- D. Reijbergen (University of Twente; supervisors: R.J. Boucherie, B.R. Haverkort, P.-T. de Boer, and W.R.W. Scheinhardt),
- W. Volk-Makarewicz (Vrije Universiteit Amsterdam; supervisors: L. Stougie and B. Heidergott)
- P. den Iseger (Erasmus Universiteit Rotterdam; supervisor: R. Dekker),
- D. Baillie (University of Amsterdam; supervisor: C.A.J. Klaassen),
- M. Frolkova (Vrije Universiteit Amsterdam; supervisors: A.P. Zwart and S. Foss),
- J. Bosman (Vrije Universiteit Amsterdam; supervisors: R.D. van der Mei and R. Núñez-Queija).

Teaching

- 1993–1996: *Quantitative Methods*, for bachelor students in economics (Vrije Universiteit Amsterdam);
- 2001–present: *Stochastic Models for Telecommunication Systems*, for master students in mathematics and PhD students in mathematics and/or operations research (University of Twente, LNMB – Dutch Network for the Mathematics of Operations Research);
- 2004–2011: *Markov Chains* (in Dutch the course is called *Kansrekening*), for bachelor students in mathematics (University of Amsterdam);
- 2006–present: *Stochastics I* (elementary probability theory), for bachelor students in mathematics (University of Amsterdam);
- 2011–present: *Lévy Fluctuation Theory, with applications in finance and OR*, for master students in mathematics (University of Amsterdam);
- 2011: *Stochastic Integration*, for master students in mathematics (University of Amsterdam);
- 2012–present: *Topics in Stochastic Networks*, for master students in mathematics (University of Amsterdam);
- 2013–present: contributed to *Operations & Process Management*, for bachelor students in business economics (University of Amsterdam).

Miscellaneous international scientific activities

- Author of book ‘Large deviations for Gaussian Queues’ (Wiley, 2007).
- Preparing the book ‘Lévy-driven Queues and Fluctuation Theory’, with K. Deǒbicki (Springer).
- Associate editor of the journals *Stochastic Models*, *Queueing Systems*, *Stochastic Systems*, and the *Applied Probability Trust* journals (i.e., *Journal of Applied Probability* and *Advances in Applied Probability*).
- Program Committee Chair (with O.J. Boxma) of the INFORMS Applied Probability conference (Eindhoven, the Netherlands, 2007).
Program Committee Chair (with S.C. Borst and M. Squillante) of the ITC (International Teletraffic Congress) 22 conference (Amsterdam, the Netherlands, 2010).
Program Committee Chair (with O.J. Boxma and A.P. Zwart) of Stochastic Networks 2014 (Amsterdam, the Netherlands, 2014).
Organizer of a workshop at Oberwolfach on Stochastic Networks (jointly with S. Foss, G. Last, and B. Prabhakar). Oberwolfach, Germany, 2010.
Organizer (with A.A.N. Ridder) of RESIM 2014 (Amsterdam, the Netherlands, 2014).
- Member of the Technical Programme Committee of ITC 17 (Salvador de Bahia, Brazil, 2001), 18 (Berlin, Germany, 2003), 19 (Beijing, China, 2005), 20 (Ottawa, Canada, 2007), 21 (Paris, France, 2009), and 23 (San Francisco, USA, 2011).
Organizer of a session on Gaussian queues at INFORMS Applied Probability (Ottawa, Canada, 2005), and a session on Lévy-driven queues at INFORMS Applied Probability (Stockholm, Sweden, 2011). Member of the Technical Programme Committee of INFORMS Applied Probability (Stockholm, Sweden, 2011; San Jose, Costa Rica, 2013)
Member of the Technical Programme Committee of ACM Sigmetrics/Performance (St. Malo, France, 2006), ACM Sigmetrics (New York, USA, 2010), and Performance (Namur, Belgium, 2010, Amsterdam, the Netherlands, 2011, Vienna, Austria, 2013, and Torino, Italy, 2014).
Member of the Technical Programme Committee of Value Tools (Pisa, Italy, 2006).
Member of the Technical Programme Committee of the European Meeting of Statisticians (EMS; Oslo, Norway, 2005); organizer of a special session on Applied Probability and Queues.
Member of the Technical Programme Committee of ITCOM, Conference on Internet Performance and Control (Orlando, FL, USA, 2001-2004).
Member of the Technical Programme Committee of ITC Specialist Seminars (Antwerp, Belgium, 2004; Berlin, Germany, 2008).

Member of the Technical Programme Committee of the 1st EURO-NGI Conference (Rome, Italy, 2005), the 2nd EURO-NGI Conference (Valencia, Spain, 2006), and the 3rd EURO-NGI Conference (Trondheim, Norway, 2007).

Member of the Technical Programme Committee of NET-COOP 2007 (Avignon, France, 2007), NET-COOP 2009 (Eindhoven, the Netherlands, 2009), NET-COOP 2010 (Ghent, Belgium, 2010), and NET-GCOOP 2011 (Paris, France, 2011).

Member of the Technical Programme Committee of RESIM 2008 (Rennes, France, 2008).

Member of the Technical Programme Committee of International Workshop on Computational Stochastics, part of the International Conference on Computational Science (Amsterdam, the Netherlands, 2010).

Member of the Technical Programme Committee of ACM Sigmetrics Workshop on Mathematical performance Modeling and Analysis (MAMA 2007, 2008, 2009, 2010, 2011, 2012, 2013).

Member of Programme Committee Stochastic Networks 2012 (Boston, MA, United States, 2012).

- Leader of Work Package 5.2 (jointly with O.J. Boxma) Network of Excellence EURO-NGI: 2003–2006.

Leader of Work Package 5 Network of Excellence EURO-NGI: 2005–2006.

- Organizer of the workshop ‘Rare events in communication networks’ (jointly with O.J. Boxma), within the framework of EURO-NGI. Eindhoven, the Netherlands, 2005.

Organizer of the 2nd Korean-Dutch workshop on queueing and its applications in telecommunications (jointly with H.C. Tijms). Amsterdam, the Netherlands, 2006.

Organizer of the workshop ‘Stochastic performance models for resource allocation in communication systems’ (jointly with R.D. van der Mei and R. Núñez-Queija), within the framework of EURO-NGI. Amsterdam, the Netherlands, 2006.

- Advisor EURANDOM, Eindhoven, the Netherlands; theme Queueing and Performance Evaluation; 2004–present.
- Coordinator of theme ‘Stochastic Networks’, NWO Mathematics cluster STAR.
- Guest Researcher CWI (PNA2); 2006–present.
- Referee for ACM Transactions on Modeling and Computer Simulation, Advances in Applied Probability, Annals of Applied Probability, Annals of Operations Research, Computer Networks, IEEE Infocom, IEEE/ACM Transactions on Networking, IEEE Communications Letters, Journal of Applied Probability, Mathematical Methods of Operations Research, Mathematics of Operations Research, Operations Research, Methodology and Computing in Applied Probability, Performance Evaluation, Probability in the Engineering and Informational Sciences, Queueing Systems, Stochastic Models, Stochastic Systems, Telecommunication Systems.

Miscellaneous national scientific activities

- Member project steering committee EQUANET (funded by Dutch Ministry of Economic Affairs through its agency SENTER/Novem; partners: CWI, Lucent Technologies, TNO Telecom, TU/e, UT; 2002–2005).
- Member Evaluation Committee VIDI awards, Netherlands Organization for Scientific Research NWO (2005, 2006, 2007).
- Member Evaluation Committee VICI awards, Netherlands Organization for Scientific Research NWO (2011).
- Member board Stieltjes Institute (representing CWI), and project leader Stieltjes programme 4.2 *Stochastic Operations Research* (jointly with G.M. Koole): 2004–2006.
- Member advisory group *Voorverkenning ICT*, Royal Dutch Academy of Sciences KNAW (2004).
- ‘Commissaris’ (member of the supervisory board) of IBIS UvA BV: 2007–2009.
- Member ‘Commissie Onderzoek’, Platform Wiskunde Nederland (as of 2010).
- Member of Scientific Advisory Council, faculty of Mathematics and Computer Science, Eindhoven University of Technology (as of 2014).

Grants, projects, and awards

- 1994: Master thesis *Large deviations: theoretical results and queueing applications*, written under supervision of H.C. Tijms, A.A.N. Ridder, and P.J. Holeywijn, was awarded the Dutch Operations Research Prize (NGB – Netherlands Operations Research Association), and runner up in the VVS competition (VVS – Dutch Association for Statistics);
- 1999: Marcel F. Neuts award for the paper ‘Rare event analysis of the state frequencies of a large number of Markov chains’, for the best paper in the journal *Stochastic Models* in 1999.
- 2001: Burgen Scholarship of Academia Europaea.
- 2002: nomination for best-paper award Infocom 2002 for the paper ‘Generalized Processor Sharing queues with heterogeneous traffic classes’, coauthored by S. Borst and M. van Uitert.
- 2013: Grant from University of Amsterdam to visit New York University during the academic year 2013–2014.
- 2012–2016: Australian Research Council (ARC) Grant (with L. Andrew, S. Low, Y. Nazarathy, and H. Vu).
- NWO (Netherlands Organization for Scientific Research):
 - 2001: EQUIP (CWI; two PhD students, with V.F. Nicola); rare-event simulation.
 - 2005: LOGICA (UvA; one PhD student, with P.J.C. Spreij); Gaussian queues.
 - 2006: QNIS (CWI; one post-doc, with R.J. Boucherie, O.J. Boxma, R.D. van der Mei); Queueing Networks of Interacting Servers.
 - 2008: SQALP (UvA/EURANDOM; one PhD student, with O.J. Boxma); Lévy-driven queues.
 - 2010: STAR (CWI/TUE/UvA/UL/VU; two-year funding for two assistant professors at UvA; two-year funding for a PhD student). Travel grants for K. Dębicki, O. Kella, P. Glynn, S. Juneja, J. Blanchet, Y. Nazarathy, G. Weiss, A. Proutière.
 - 2013: 2QR (UvA/CWI/TUE: two PhD students, with O.J. Boxma, R. Núñez-Queija, A.P. Zwart): multidimensional queueing and risk problems.
- 2014–2024: NWO *Gravitation* Programme, with CWI, UL, and TUE.

Mandjes acting as the main applicant and project leader; other applicants M.T. de Berg, S.C. Borst, O.J. Boxma, H. Buhrman, R.W. van der Hofstad, W.Th.F. den Hollander, A.M.J. Koonen, J.S.H. van Leeuwen, A. Schrijver, G.J. Woeginger.

Project *Networks*; 7 tenure-track positions, 14 postdoc positions, 35 PhD students; total grant is M€ 23 (M€ 29 with matching).
- SENTER/Novem (Dutch Ministry of Economic Affairs), Agentschap NL:
 - 2003: EQUANET (CWI; with Lucent Technologies, TNO ICT, University of Twente, Eindhoven University of Technology); end-to-end QoS in IP networks.
 - 2011–2012: CAD (UvA; with TNO and UT); anomaly detection.
- ICES-KIS:
 - 2004: BRICKS (CWI; with several partners from industry and academia); resource allocation, processor sharing, fluid queues.
- Telematica Instituut:
 - 2002: M2C-QoS (CWI; with R. van de Meent and A. Pras); traffic measurements, provisioning.
- Industry:
 - 2001: consultancy project at UUNET/WorldCom (CWI; provisioning IP links).
 - 2005–2010: Ph.D. project V.J.G. Leijdekker at ABN AMRO (UvA; with P.J.C. Spreij).
 - 2005–2008: Ph.D. project R. Malhotra at Lucent Technologies (UT; with J.L. van den Berg — supported by an NWO-Casimir grant).

2006: consultancy project at EMC (UvA; with P.M.D. Lieshout).

2007–2009: Ph.D. project F. Roijers at TNO ICT (UvA; with J.L. van den Berg).

2010–2013: consultancy project at SURFnet (UvA; with P. Żuraniewski and A. den Boer).

2012–2016: Ph.D. project W. Ellens at TNO ICT (UvA; with J.L. van den Berg).

- Europe:

- 2008–2011: COST TMA. Short-Term Scientific Mission P. Żuraniewski (2009). Short-Term Scientific Mission F. Mata (2010).

(Long-term) visits

- 2002: INRIA-Rocquencourt (Ph. Robert);
- 2002: Microsoft Research, Cambridge (P. Key, L. Massoulié);
- 2002: VTT, Espoo, Finland (I. Norros, P. Mannersalo);
- 2003, 2007, 2009: the University of Wrocław (K. Dębicki, T. Rolski);
- 2004: invited guest at the special program on Applied Probability and Performance Evaluation at the Mittag-Leffler institute (I. Kaj);
- 2006: University of Melbourne (P. Taylor);
- 2007: Universiteit van Stellenbosch (A.E. Krzesinski);
- 2008: sabbatical at Stanford University (P. Glynn, B. Prabhakar);
- 2009: Stanford University (P. Glynn, N. Bambos);
- 2010: invited guest at the special program on Stochastic Networks at the Newton Institute, University of Cambridge (S. Foss *et al.*);
- 2011: Tata Institute for Fundamental Research, Mumbai, India (S. Juneja);
- 2011: Columbia University (J. Blanchet);
- 2012: Hebrew University, Jerusalem (O. Kella);
- 2013: Swinburne University, University of Melbourne, University of Queensland (L. Andrew, Y. Nazarathy, P. Taylor);
- 2013–2014: New York University (M. Armony, M. Pinedo, J. Reed).

Invited talks

- 1997: Invited talk Workshop on Stochastic Networks, Cambridge, UK (“Optimal trajectory to overflow in a queue fed by a large number of sources”; organizers: R. Gibbens and F. Kelly)
- 1998: Invited talk INRIA Queueing Seminar (projet MISTRAL), Sophia-Antipolis, France (“Optimal trajectory to overflow in a queue fed by a large number of sources”; organizer: Ph. Nain)
- 1998: Invited lecture Nederlands Wiskundig Congres, Enschede, the Netherlands (“Connection Admission Control for integrated real-time and non-real-time traffic in ATM networks”)
- 1999: Plenary talk ITC (International Teletraffic Congress) 16, Edinburgh, UK (“Aspects of pricing in an integrated services network”)
- 1999: Invited talk Workshop on Internet Quality Economics, MIT, Cambridge, MA, USA (“Pricing of Variable Bit Rate services based on trace-based leaky bucket parameter estimation”; organizer: J. Bailey)
- 2000: Invited talk Workshop on Stochastic Networks, Cambridge, UK (“An analysis of the phase transition phenomenon in packet networks”; organizers: R.J. Gibbens and F.P. Kelly)
- 2001: Invited talk on Stochastic Networks at the Conference on Stochastic Processes and their Applications (Bernoulli Society), 27, Cambridge, UK (“An analysis of the phase transition phenomenon in packet networks”; organizers: J. Norris, F.P. Kelly *et al.*)

- 2002: Invited talk Microsoft Research, seminar on networking, Cambridge, UK (“Models for TCP performance analysis”; organizer: P. Key)
- 2002: Invited talk INRIA Queueing Seminar (projet RAP), Rocquencourt, France (“Feedback fluid queues”; organizer: Ph. Robert)
- 2002: Invited talk LMS/ICMS meeting on Modern Problems in Applied Probability, Edinburgh, UK (“Traffic with an FBM limit: convergence of the workload process”; organizers: S. Foss and S. Zachary)
- 2003: Invited talk Benelux workshop on Performance Analysis of Communication Systems, Eindhoven, the Netherlands (“Queues with Gaussian inputs: modeling of traffic correlations, quality of service, and network design”; organizers: C. Blondia, S. Borst, and O. Boxma)
- 2003: Invited talk Meeting on Applied Probability and Advanced Communication Networks, Bedlewo, Poland (“Sample-path large deviations for tandem and priority queues with many Gaussian inputs”; organizers: T. Rolski and R. Szekli)
- 2004: Invited talk Workshop on Quantitative Models for Production and Communication Networks, Eindhoven, the Netherlands (“Large Deviations of Sojourn Times in PS Queues”; organizers: T. de Kok and O. Boxma)
- 2004: Invited talk Workshop “A Mathematical Perspective on Queueing and Teletraffic Modeling”, Institut Mittag-Leffler, the Royal Swedish Academy of Sciences, Djursholm, Sweden (“Processor sharing queues with light-tailed input”; organizer: I. Kaj)
- 2005: Invited talk Conference European Meeting of Statisticians (EMS 2005), Oslo, Norway (“Large deviations of infinite intersections”; organizers: A. van der Vaart *et al.*)
- 2006: Invited talk Postgraduate Workshop on Stochastic Processes, Melbourne, Australia (“Large deviations of Gaussian queues”; organizers: A. Motyer *et al.*)
- 2006: Invited talk Workshop “New Directions in Applied Probability: Stochastic Networks and beyond”, Edinburgh, UK (“A fluid system with coupled input and output, and its application to bottlenecks in ad hoc networks”; organizers: S. Foss, T. Konstantopoulos, and S. Zachary)
- 2007: Invited talk Workshop on Rare Event Simulation, Nice, France (“Reflected fractional Brownian motion: Fast simulation, convergence to stationarity, and correlation structure”; organizers: B. Tuffin and G. Rubino)
- 2007: Invited talk Meeting on Stochastic Networks, Będlewo, Poland (“Reflected fractional Brownian motion: convergence to stationarity and correlation structure”; organizers: T. Rolski, Z. Palmowski, K. Dębicki, and R. Szekli)
- 2007: Key note London Mathematical Society; Workshop on Mathematical Foundations for the Internet, London, UK (“Gaussian models for the Internet”; organizers: R. Gibbens and P. Key)
- 2008: Invited talk ICME seminar, Stanford, US (“Convergence to stationarity of reflected fractional Brownian motion”; organizer: P. Glynn)
- 2008: Invited talk OR seminar, Stanford, US (“Convergence to stationarity of reflected fractional Brownian motion”; organizer: R. Johari)
- 2008: Invited talk Stochastic Networks 2008, Paris, France (“Convergence to stationarity of reflected fractional Brownian motion”; organizers: F. Baccelli and J. Mairesse)
- 2008: Invited talk OR seminar, Stanford, US (“Transient analysis of reflected Lévy processes”; organizer: R. Johari)
- 2008: Invited talk networking/communications/signal processing seminar, Berkeley, US (“Research dimensioning through buffer sampling”; organizer: V. Anantharam)
- 2008: Invited talk workshop on Stochastic Networks, University of Wrocław (“Transient analysis of reflected Lévy processes”; organizers: K. Dębicki, Z. Palmowski, R. Szekli, T. Rolski)
- 2008: Key note workshop Young European Queueing Theorists, Eindhoven, the Netherlands (“Transient analysis of reflected Lévy processes”; organizers: M. Jonkheere, M. Lelarge, and S. Shneer)

- 2009: Invited talk Meeting on Stochastic Networks, Będlewo, Poland (“On the correlation function of reflected Lévy processes”; organizers: T. Rolski, Z. Palmowski, K. Dębicki, and R. Szekli)
- 2009: Invited talk Cisco Research, San Jose, USA (“Research dimensioning through buffer sampling”; organizer: A. Clemm)
- 2009: Invited talk mathematical seminar, University of Clausthal, Germany (“On the correlation function of reflected Lévy processes”; organizer: W. Sandmann)
- 2009: Key note TMA workshop, Aachen, Germany (“Traffic models, and their use in provisioning and traffic management”; organizers: M. Papadopouli, P. Owezarski, and A. Pras)
- 2009: Invited talk Bristol Maths department, University of Bristol, UK (“On the correlation function of reflected Lévy processes”; organizers: J. Cruise and A. Ganesh)
- 2010: Invited talk Newton Institute, Cambridge, UK (“Simulation-based computation of the correlation function of reflected Lévy processes”; organizer: S. Foss)
- 2010: Invited talk Nederlands Wiskundig Congres, Utrecht, the Netherlands (“On the correlation function of reflected Lévy processes”; organizer: A. Gnedin)
- 2010: Invited talk Israeli-Dutch workshop on queueing, Eindhoven, the Netherlands (“Appointment scheduling”; organizers: I. Adan, O. Boxma, and G.-J. van Houtum)
- 2010: Invited mini-course Fields-MITACS workshop on approximations, asymptotics and resource management for stochastic networks, Ottawa, Canada (“Lévy-driven queues”; organizers: M. Huang, and Y. Zhao)
- 2010: Invited talk workshop on rare event simulation RESIM 2010, Cambridge, UK (“Simulation-based computation of the correlation function of reflected Lévy processes”; organizers: P. Glynn *et al.*)
- 2011: Invited talk seminar Tata Institute for Fundamental Research, Mumbai, India (“Simulation-based computation of the correlation function of reflected Lévy processes”; organizer: S. Juneja)
- 2011: Invited talk seminar Indian Institute of Technology — Perwez Shahabuddin Memorial Lecture (“New trends in rare-event simulation”; organizers: S. Juneja and K. Seth)
- 2011: Invited talk Meeting on Stochastic Networks, Będlewo, Poland (“Generalized birthday problems”; organizers: T. Rolski, Z. Palmowski, K. Dębicki, and R. Szekli)
- 2011: Invited talk workshop on the occasion of F. Kelly’s honorary doctorate, Eindhoven University of Technology (“Generalized birthday problems”; organizers: S. Borst and O. Boxma)
- 2011: Invited talk Heriot-Watt University, Edinburgh, UK (“Generalized birthday problems”; organizer: S. Foss)
- 2011: Invited talk INRIA, Paris, France (“Research dimensioning through buffer sampling”; organizer: F. Baccelli)
- 2011: Invited talk INRIA, Paris, France (“Generalized birthday problems”; organizer: F. Baccelli)
- 2012: Invited talk Stochastic Networks 2012, Boston, USA (“Transient analysis of Lévy-driven queues”; organizers: J. Tsitsiklis, D. Shah, and D. Gamarnik)
- 2012: Invited talk ‘Academia meets Industry’, Eindhoven, the Netherlands (“Optimized appointment scheduling”; organizer: O. Boxma)
- 2013: Invited talk Swinburne University, Melbourne, Australia (“Reflected and Markov-modulated Lévy processes”; organizer: L. Andrew)
- 2013: Invited talk University of Queensland, Brisbane, Australia (“Reflected and Markov-modulated Lévy processes”; organizer: Y. Nazarathy)
- 2013: Invited talk workshop on large deviations in finance, Imperial College, London (“Reflected and Markov-modulated Lévy processes”; organizers: M. Davis, N. Pham, A. Jacquier)
- 2013: Invited talk workshop ‘Modern probabilistic techniques for design and analysis of stochastic systems and networks’, Cambridge, UK (“Time scaling results for Markov-modulated infinite-server systems and OU processes”; organizers: V. Anantharam, F. Baccelli, S. Foss, P. Glynn)

- 2014: Invited talk seminar Business Analytics, Vrije Universiteit, Amsterdam, the Netherlands (“Optimized appointment scheduling”; organiser: G. Koole)

Thesis

M. Mandjes (1996). *Rare event analysis of communication networks*. Vrije Universiteit Amsterdam.

Books

M. Mandjes. *Large deviations for Gaussian queues*. Wiley, Chichester, UK, 2007.

K. Dębicki and M. Mandjes. *Queues and Lévy fluctuation theory*. Springer, New York, USA, *forthcoming*.

Refereed publications

1993-2000:

- (1) M. Mandjes (1993). Large Deviations and Queuing Applications. *Operations Research Proceedings DGOR/NSOR*, Amsterdam, the Netherlands, pp. 35-41.
- (2) M. Mandjes and A. Ridder (1995). Finding the conjugate of Markov fluid processes. *Probability in the Engineering and Informational Sciences*, Vol. 9, pp. 297-315.
- (3) M. Mandjes (1995). Overflow asymptotics for large communication systems with general Markov fluid sources. *Probability in the Engineering and Informational Sciences*, Vol. 10, pp. 501-518.
- (4) M. Mandjes (1996). Rare event analysis of batch-arrival queues. *Telecommunication Systems*, Vol. 6, pp. 161-180.
- (5) M. Mandjes (1997). Fast simulation of blocking probabilities in loss networks. *European Journal of Operational Research*, Vol. 101, pp. 393-405.
- (6) M. Mandjes and H. van den Berg (1997). Some new techniques for resource allocation in single- and multi-link ATM systems. *Proceedings ITC 15*, Washington DC, USA, pp. 1257-1268.
- (7) P. Tran-Gia and M. Mandjes (1997). Modeling of customer retrial phenomenon in cellular mobile networks. *IEEE Journal on Selected Areas in Communications*, Vol. 15, pp. 1406-1414.
- (8) K. van der Wal, M. Mandjes, and H. Bastiaansen (1997). Delay performance of the new Internet service with guaranteed QoS compared to ATM. *Proceedings IEEE ATM Workshop*, Lisbon, Portugal.
- (9) K. van der Wal, M. Mandjes, and H. Bastiaansen (1997). Delay performance of the new Internet service with guaranteed QoS. *Proceedings ISS Conference*, Toronto, Canada, pp. 135-148.
- (10) K. van der Wal, M. Mandjes, and H. Bastiaansen (1997). Delay performance analysis of the new Internet services with guaranteed QoS. *Proceedings of the IEEE*, Vol. 85, pp. 1947-1957.
- (11) M. Mandjes (1997). Performance of queues with ‘worst case input’. *CWI Tract*, Vol. 122, pp. 171-178.
- (12) K. van der Wal, M. Mandjes, and H. Bastiaansen (1997). Delay performance analysis of the new Internet services with guaranteed QoS. *The Internet and Telecommunications: Architectures, Technologies, and Business Developments*. Ed. L. Farnsworth.
- (13) R. Boucherie and M. Mandjes (1998). Computation of performance measures for product form cellular mobile communication networks. *Telecommunication Systems*, Vol. 10, pp. 321-354.
- (14) M. Mandjes (1998). Asymptotically optimal importance sampling for tandem queues with Markov fluid input. *AEÜ International Journal on Electronics and Communications*, Vol. 52, pp. 152-161.
- (15) M. Mandjes and A. Ridder (1999). Optimal trajectory to overflow in a queue fed by a large number of sources. *Queueing Systems*, Vol. 31, pp. 137-170.
- (16) R. Núñez-Queija, H. van den Berg, and M. Mandjes (1999). Performance evaluation of strategies for integration of elastic and stream flows. *Proceedings ITC 16*, Edinburgh, UK, pp. 1039-1050.
- (17) H. van den Berg and M. Mandjes (1999). CAC for integrated real-time and non-real-time traffic. *Nieuw Archief voor de Wiskunde*, Series 4, Vol. 17, pp. 125-133.
- (18) M. Mandjes and N. van Foreest (1999). Aspects of pricing in an integrated services network. *Proceedings ITC 16*, pp. 1331-1340.

- (19) M. Mandjes (1999). Rare event analysis of the state frequencies of a large number of Markov chains. *Stochastic Models*, Vol. 15, pp. 577-592.
- (20) H. Bastiaansen, K. van der Wal, R. Kooij, and M. Mandjes (1999). How real-time can real-time be in a large-scale IP network? End-to-end delay assessment. *Proceedings IEEE RTAS Workshop on QoS for real-time Internet Applications*, pp. 77-84.
- (21) M. Mandjes, K. van der Wal, R. Kooij, and H. Bastiaansen (1999). End-to-end delay models for interactive services on a large-scale IP network. *Proceedings 7th IFIP workshop modeling and evaluation of ATM/IP networks*.
- (22) S. Verwijmeren, M. Mandjes, and R. Boucherie (2000). Asymptotic evaluation of blocking probabilities in a hierarchical cellular mobile network. *Probability in the Engineering and Informational Sciences*, Vol. 14, pp. 81-99.
- (23) M. Mandjes and M. van Uitert (2000). Transient analysis of traffic generated by bursty sources, and its application to measurement-based admission control. *Telecommunication Systems*, Vol. 15, pp. 273-293.
- (24) M. Mandjes and J.H. Kim (2000). Large deviations for small buffers: an insensitivity result. *Proceedings 37th Allerton Conference*, pp. 1105-1112.
- (25) M. Mandjes and S. Borst (2000). Overflow behavior in queues with many long-tailed inputs. *Advances in Applied Probability*, Vol. 32, pp. 1150-1167.
- (26) M. Mandjes, I. Saniee, and A. Stolyar (2000). Load characterization, overload prediction, and load anomaly detection for voice over IP traffic. *Proceedings 37th Allerton Conference*, pp. 567-576.

2001:

- (27) M. Mandjes and J.H. Kim (2001). Large deviations for small buffers: an insensitivity result. *Queueing Systems*, Vol. 37, pp. 349-362.
- (28) M. Mandjes and J.H. Kim (2001). An analysis of the phase transition phenomenon in packet networks. *Advances in Applied Probability*, Vol. 33, pp. 360-280.
- (29) K. Kumaran, M. Mandjes, D. Mitra, and I. Saniee (2001). Resource usage and charging in a multi-service multi-QoS packet network. *Proceedings MIT/Tufts Workshop on Internet Service Qualities and Economics*, Cambridge, US.
- (30) H. van den Berg and M. Mandjes (2001). Admission control in integrated networks: overview and evaluation. *Proceedings 8th International Conference on Telecommunication Systems*, Nashville, US, pp. 132-151.
- (31) K. Kumaran and M. Mandjes (2001). The buffer-bandwidth trade-off curve is convex. *Queueing Systems*, Vol. 38, pp. 471-483.
- (32) M. Mandjes (2001). A note on queues with M/G/ ∞ input. *Operations Research Letters*, Vol. 28, pp. 233-242.
- (33) B. Zwart, S. Borst, and M. Mandjes (2001). Exact queueing asymptotics multiple heavy-tailed on-off flows. *Proceedings Infocom 2001*, Anchorage, US, pp. 279-288.
- (34) M. Mandjes and A. Ridder (2001). A large deviations approach to the transient of the Erlang loss model. *Performance Evaluation*, Vol. 43, pp. 181-198.
- (35) K. Kumaran and M. Mandjes (2001). Multiplexing regulated traffic streams: design and performance. *Proceedings Infocom 2001*, Anchorage, US, pp. 527-536.
- (36) M. Mandjes, I. Saniee, and A. Stolyar (2001). Load characterization, overload prediction, and load anomaly detection for voice over IP traffic. *Proceedings ACM Sigmetrics*, Boston, US, pp. 326-327.
- (37) S. Borst, M. Mandjes, and M. van Uitert (2001). Generalized Processor Sharing queues with heterogeneous traffic classes. *Performance Evaluation Review*, Vol. 29, pp. 40-42.

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- (38) M. Mandjes and A. Ridder (2002). A large deviations analysis of the transient of a queue with many Markov fluid inputs: approximations and fast simulation. *ACM Transactions on Modeling and Computer Simulation*, Vol. 12, pp. 1-26.

- (39) M. Mandjes, D. Mitra, and W. Scheinhardt (2002). A simple model of network access: feedback adaptation of rates and admission control. *Proceedings Infocom 2002*, New York, US, pp. 3-12.
- (40) N.K. Boots and M. Mandjes (2002). Fast simulation of a queue fed by a superposition of many heavy-tailed sources. *Probability in the Engineering and Informational Sciences*, Vol. 16, pp. 205-232.
- (41) S. Borst, M. Mandjes, and M. van Uitert (2002). Generalized Processor Sharing queues with heterogeneous traffic classes. *Proceedings Infocom 2002*, New York, US, pp. 74-83.
- 2003:
- (42) M. Mandjes, D. Mitra, and W. Scheinhardt (2003). A simple model of network access: feedback adaptation of rates and admission control. *Computer Networks*, Vol. 41, pp. 489-504.
- (43) M. Mandjes, D. Mitra, and W. Scheinhardt (2003). Models of network access using feedback fluid queues. *Queueing Systems*, Vol. 44, pp. 365-398.
- (44) T. Dieker and M. Mandjes (2003). On spectral simulation of fractional Brownian motion. *Probability in the Engineering and Informational Sciences*, Vol. 17, pp. 417-434.
- (45) K. Kumaran, M. Mandjes, and A. Stolyar (2003). Convexity properties of loss and overflow functions. *Operations Research Letters*, Vol. 31, pp. 95-100.
- (46) K. Dębicki and M. Mandjes (2003). Exact overflow asymptotics for queues with many Gaussian inputs. *Journal of Applied Probability*, Vol. 40, pp. 704-720.
- (47) M. Mandjes and M. van Uitert (2003). Sample-path large deviations for tandem queues with Gaussian inputs. *Proceedings ITC 18*, Berlin, Germany, pp. 521-530.
- (48) S. Borst, M. Mandjes, and M. van Uitert (2003). Generalized Processor Sharing queues with light-tailed and heavy-tailed input. *IEEE/ACM Transactions on Networking*, Vol. 11, pp. 821-834.
- (49) S. Borst, M. Mandjes, and M. van Uitert (2003). Generalized Processor Sharing queues with heterogeneous traffic classes. *Advances in Applied Probability*, Vol. 35, pp. 806-845.
- (50) N. van Foreest, M. Mandjes, and W. Scheinhardt (2003). Analysis of a feedback fluid model for TCP with heterogeneous sources. *Stochastic Models*, Vol. 19, pp. 299-324.
- (51) N. van Foreest, M. Mandjes, and W. Scheinhardt (2003). Modeling and fairness aspects of asymmetric TCP sources. *Proceedings ITC 18*, Berlin, Germany, pp. 631-640.
- (52) P. Lassila, H. van den Berg, M. Mandjes, and R. Kooij (2003). An integrated packet/flow model for TCP performance analysis. *Proceedings ITC 18*, Berlin, Germany, pp. 651-660.
- (53) R. van de Meent, A. Pras, M. Mandjes, H. van den Berg, and L. Nieuwenhuis (2003). Traffic measurements for link dimensioning - a case study. In: M. Brunner and A. Keller (eds.): *Self-managing distributed systems*. 14th IFIP/IEEE International Workshop on Distributed Systems Operations and Management, DSOM 2003. Heidelberg, Germany, October 2003. Lecture Notes in Computer Science (LNCS) Series, 2867, pp. 106-117.
- (54) M. Mandjes (2003). Pricing strategies under heterogeneous service requirements. *Computer Networks*, Vol. 42, pp. 231-249.
- (55) M. Mandjes (2003). Pricing strategies under heterogeneous service requirements. *Proceedings Infocom 2003*, San Francisco, US.
- 2004:
- (56) B. Zwart, S. Borst, and M. Mandjes (2004). Exact asymptotics for fluid queues fed by multiple heavy-tailed on-off sources. *Annals of Applied Probability*, Vol. 14, pp. 903-957.
- (57) K. Dębicki and M. Mandjes (2004). Traffic with an fBm limit: convergence of the stationary workload process. *Queueing Systems*, Vol. 46, pp. 113-127.
- (58) M. Mandjes (2004). A note on the benefits of buffering. *Stochastic Models*, Vol. 20, pp. 43-54.
- (59) M. Mandjes and N.K. Boots (2004). The shape of the loss curve, and the impact of long-range dependence on network performance. *AEÜ International Journal on Electronics and Communications*, Vol. 58, pp. 101-117.

- (60) M. Mandjes (2004). Pricing strategies and service differentiation. *Netnomics*, Vol. 6, pp. 59-81.
- (61) M. Mandjes (2004). Packet models revisited: tandem and priority systems. *Queueing Systems*, Vol. 47, pp. 363-377.
- (62) P. Lassila and M. Mandjes (2004). A multi-level TCP model with heterogeneous RTTs. In: N. Mitrou, K. Kontovasilis, G. Rouskas, I. Iliadis, L. Merakos (eds.): *Networking Technologies, Services, and Protocols; Performance of Computer and Communication Networks; Mobile and Wireless Communications*. Third International IFIP-TC6 Networking Conference (Networking 2004), Athens, Greece. Lecture Notes in Computer Science (LNCS) Series, 3042, pp. 52-63.
- (63) R. van de Meent, A. Pras, M. Mandjes, H. van den Berg, F. Roijers, P. Venemans, and L. Nieuwenhuis (2004). Burstiness predictions based on rough network traffic measurements. *Proceedings WTC/ISS 2004*, Seoul, South Korea.

2005:

- (64) D. Abendroth, H. van den Berg, and M. Mandjes (2005). A multiple time-scale model for TCP bandwidth sharing under user heterogeneity. In: R. Boutaba et al. (eds.): *Networking Technologies, Services, and Protocols; Performance of Computer and Communication Networks; Mobile and Wireless Communication Systems*. Fourth International IFIP-TC6 Networking Conference (Networking 2005), Waterloo, Canada. Lecture Notes in Computer Science (LNCS) Series, 3462, pp. 561-573.
- (65) M. Mandjes and R. van de Meent (2005). Inferring traffic burstiness by sampling the buffer occupancy. In: R. Boutaba et al. (eds.): *Networking Technologies, Services, and Protocols; Performance of Computer and Communication Networks; Mobile and Wireless Communication Systems*. Fourth International IFIP-TC6 Networking Conference (Networking 2005), Waterloo, Canada. Lecture Notes in Computer Science (LNCS) Series, 3462, pp. 303-315.
- (66) R. van de Meent and M. Mandjes (2005). Evaluation of ‘user-oriented’ and ‘black-box’ traffic models for link provisioning. *Proceedings 1st EuroNGI Conference on Next Generation Internet Networks - Traffic Engineering*, Rome, Italy.
- (67) R. Malhotra, R. van Haalen, M. Mandjes, and R. Núñez-Queija (2005). Modeling the interaction of IEEE 802.3x hop-by-hop flow control with TCP end-to-end flow control. *Proceedings 1st EuroNGI Conference on Next Generation Internet Networks - Traffic Engineering*, Rome, Italy.
- (68) N. van Foreest, M. Mandjes, J.C. van Ommeren, and W. Scheinhardt (2005). A tandem network with server slow-down and blocking. *Stochastic Models*, Vol. 21, pp. 695-724.
- (69) W. Scheinhardt, N. van Foreest, and M. Mandjes (2005). Continuous feedback fluid queues. *Operations Research Letters*, Vol. 33, pp. 551-559.
- (70) T. Dieker and M. Mandjes (2005). On asymptotically efficient simulation of large deviation probabilities. *Advances in Applied Probability*, Vol. 37, pp. 539-552.
- (71) M. Mandjes and M. Nuyens (2005). Sojourn times in the M/G/1 FB queue with light-tailed service times. *Probability in the Engineering and Informational Sciences*, Vol. 19, pp. 351-361.
- (72) M. Mandjes and M. van Uitert (2005). Sample-path large deviations for tandem and priority queues with Gaussian inputs. *Annals of Applied Probability*, Vol. 15, pp. 1193-1226.
- (73) M. Mandjes and M. van Uitert (2005). Sample-path large deviations for Generalized Processor Sharing queues with Gaussian inputs. *Performance Evaluation*, Vol. 61, pp. 225-256.
- (74) A. Pras, R. van de Meent, and M. Mandjes (2005). QoS in hybrid networks: an operator’s perspective. In: H. de Meer and N. Bhatti (eds.). *Proceedings IW-QoS workshop 2005*. Passau, Germany. Lecture Notes in Computer Science (LNCS) Series, 3552, pp. 388-391.
- (75) M. Mandjes, I. Saniee, and A. Stolyar (2005). Load characterization, overload prediction, and load anomaly detection for voice over IP traffic. *IEEE Transactions on Neural Networks*, Vol. 16, pp. 1019-1028.
- (76) M. Mandjes, P. Mannersalo, and I. Norros (2005). Priority queues with Gaussian input: a path-space approach to loss and delay asymptotics. *Proceedings ITC 19*, Beijing, China, pp. 1135-1144.

- (77) D. Abendroth, H. van den Berg, and M. Mandjes (2005). A versatile model for TCP bandwidth sharing in networks with user heterogeneity. In: B.D. Choi (ed.): Proceedings Korea-Netherlands Joint Conference on Queueing Theory and its Applications to Telecommunication Systems, Seoul, South Korea, pp. 173-188.

2006:

- (78) M. Mandjes (2006). Large deviations for complex buffer architectures: the short-range dependent case. *Stochastic Models*, Vol. 22, pp. 99-128.
- (79) M. Mandjes and B. Zwart (2006). Large deviations for sojourn times in processor sharing queues. *Queueing Systems*, Vol. 52, pp. 237-250.
- (80) H. van den Berg, M. Mandjes, R. van de Meent, A. Pras, F. Roijers, and P. Venemans (2006). QoS-aware bandwidth provisioning of IP links. *Computer Networks*, Vol. 50, pp. 631-647.
- (81) D. Abendroth, H. van den Berg, and M. Mandjes (2006). A versatile model for TCP bandwidth sharing in networks with heterogeneous users. *AEÜ International Journal on Electronics and Communications*, Vol. 60, pp. 267-278.
- (82) M. Mandjes, P. Mannersalo, I. Norros, and M. van Uitert (2006). Large deviations of infinite intersections of events in Gaussian processes. *Stochastic Processes and their Applications*, Vol. 116, pp. 1269-1293.
- (83) O. Kella, O. Boxma, and M. Mandjes (2006). A Lévy process reflected at a Poisson age process. *Journal of Applied Probability*, Vol. 43, pp. 221-230.
- (84) M. Mandjes and P. Mannersalo (2006). Queueing systems fed by many exponential on-off sources: an infinite-intersection approach. *Queueing Systems*, Vol. 54, pp. 5-20.
- (85) T. Dieker and M. Mandjes (2006). Fast simulation of overflow probabilities in a queue with Gaussian input. *ACM Transactions on Modeling and Computer Simulation*, Vol. 16, pp. 119-151.
- (86) T. Dieker and M. Mandjes (2006). Efficient simulation of random walks exceeding a nonlinear boundary. *Stochastic Models*, Vol. 22, pp. 459-481.
- (87) P. Lieshout, M. Mandjes, and S. Borst (2006). GPS scheduling: Selection of optimal weights and comparison with strict priorities. *Proceedings ACM Sigmetrics/Performance. Performance Evaluation Review*, Vol. 34, pp. 75-86.
- (88) R. van de Meent, M. Mandjes, and A. Pras (2006). Gaussian traffic everywhere? *Proceedings IEEE International Conference on Communications*, Istanbul, Turkey, pp. 573-578.
- (89) H. van den Berg, M. Mandjes, and F. Roijers (2006). Performance modeling of a bottleneck node in an IEEE 802.11 ad-hoc network. In: T. Kunz and S.S. Ravi (eds.): *Ad Hoc Now 2006*. 5th International Conference on Ad hoc Networks & Wireless 'Ad Hoc Now', Ottawa, Canada. Lecture Notes in Computer Science (LNCS) Series, 4104, pp. 321-336.
- (90) N. Degrande, D. De Vleeschauwer, R. Kooij, and M. Mandjes (2006). Modeling ping times in first person shooter games. *Proceedings ACM CoNEXT '06*, Lisbon, Portugal, pp. 162-170.
- (91) P. Lieshout, S. Borst, and M. Mandjes (2006). Heavy-traffic approximations for linear networks operating under alpha-fair bandwidth-sharing policies. *Proceedings ValueTools*, Pisa, Italy.
- (92) H. van den Berg, M. Mandjes, and F. Roijers (2006). Performance modeling of a bottleneck node in an IEEE 802.11 ad-hoc network. In: M. Mandjes, A. Ridder, and H. Tijms (eds.): *Proceedings second Korea-Netherlands Joint Conference on Queueing Theory and its Applications to Telecommunication Systems*, Amsterdam, the Netherlands, pp. 1-15.
- (93) O. Boxma, M. Mandjes, and O. Kella (2006). On a queueing model with service interruptions. In: M. Mandjes, A. Ridder, and H. Tijms (eds.): *Proceedings second Korea-Netherlands Joint Conference on Queueing Theory and its Applications to Telecommunication Systems*, Amsterdam, the Netherlands, pp. 33-43.
- (94) M. Mandjes and F. Roijers (2006). A fluid system with coupled input and output, and its application to bottlenecks in ad hoc networks. In: M. Mandjes, A. Ridder, and H. Tijms (eds.): *Proceedings second Korea-Netherlands Joint Conference on Queueing Theory and its Applications to Telecommunication Systems*, Amsterdam, the Netherlands, pp. 186-206.

- (95) D. Miretskiy, W. Scheinhardt, and M. Mandjes (2006). Efficient simulation of a tandem queue with server slowdown. *Proceedings 6th International Workshop on Rare Event Simulation*, Bamberg, Germany, pp. 132-143.

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- (96) R. Egorova, M. Mandjes, and B. Zwart (2007). Sojourn-time asymptotics in processor-sharing queues with varying service rate. *Queueing Systems*, Vol. 56, pp. 169-181.
- (97) M. Mandjes and F. Roijers (2007). A fluid system with coupled input and output, and its application to bottlenecks in ad hoc networks. *Queueing Systems*, Vol. 56, pp. 79-92.
- (98) R. van de Meent, M. Mandjes, and A. Pras (2007). Smart dimensioning of IP network links. Smart dimensioning of IP network links. In: A. Clemm, G. Zambenedetti, and R. Stadler (eds.): *Managing Virtualization of Networks and Services. 18th IFIP-IEEE International Workshop on Distributed Systems: Operations and Management*, DSOM 2007. San Jose, US. Lecture Notes in Computer Science (LNCS) Series, 4785, pp. 86-97.
- (99) M. Mandjes and J. Timmer (2007). A duopoly model with heterogeneous congestion-sensitive customers. *European Journal of Operational Research*, Vol. 176. pp. 445-467.
- (100) M. Mandjes, P. Mannersalo, and I. Norros (2007). Gaussian tandem queues with an application to dimensioning of switch fabrics. *Computer Networks*, Vol. 51, pp. 781-797.
- (101) M. Mandjes (2007). Analysis of jitter due to call-level fluctuations. *European Transactions on Telecommunications*, Vol. 18, pp. 97-108.
- (102) K. Debicki, M. Mandjes, and M. van Uitert (2007). A tandem queue with Lévy input: a new representation of the downstream queue length. *Probability in the Engineering and Informational Sciences*, Vol. 21, pp. 83-107.
- (103) N. van Foreest, B. Haverkort, M. Mandjes, and W. Scheinhardt (2007). Versatile Markovian models for networks of asymmetric TCP sources. *Performance Evaluation*, Vol. 64, pp. 507-523.
- (104) H. van den Berg, M. Mandjes, and R. Núñez-Queija (2007). Pricing and distributed Quality of Service control for elastic traffic. *Operations Research Letters*, Vol. 35, pp. 297-307.
- (105) F. Roijers, M. Mandjes, and H. van den Berg (2007). Analysis of congestion periods in an M/M/ ∞ queue. *Performance Evaluation*, Vol. 64, pp. 737-754.
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