OLIVIER LÉVÊQUE

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born in Geneva, October 2nd, 1971
married, two children
swiss

Avenue de Jurigoz 8
1006 Lausanne, Switzerland
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Professional Experience

2001 – present **Senior researcher** with the Laboratory of Information Theory at EPFL
Co-supervision of a PhD student (Ayfer Özgür) since July 2005

2005 – 2006 **Swiss NSF post-doctoral fellow** with the Electrical Engineering Department at Stanford University
Lecturer at Stanford University for spring quarter 2006

1995 – 2001 **Research and teaching assistant** with the Mathematics Department at EPFL

Education

1997 – 2001 **PhD thesis** at the Mathematics Department of EPFL, entitled
"Hyperbolic Stochastic Partial Differential Equations Driven by Boundary Noises"
and performed under the supervision of Prof. R. C. Dalang

1990 – 1995 **Diploma degree in physics** at EPFL
Diploma thesis performed during an ERASMUS exchange program at the
Free University of Brussels, in the field of foundations of quantum mechanics

1985 – 1990 **Swiss maturity** at Collège Calvin, Geneva
orientation: greek-latin

Awarded Grants

August 2007 Swiss NSF project Nr. 200020-118076 (co-applicant):
"Scalable Wireless Networks"

September 2005 Swiss NSF post-doctoral grant Nr. PA002-108976:
"Information Theory and Communication Networks"

August 2005 Swiss NSF project Nr. 200021-108089 (co-applicant):
"Random Matrices in Communications"

Research Interests

Information Theory
Communications (Ad Hoc Networks, Multiple Antenna Systems)
Random Matrix Theory
Stochastic Calculus and Mathematical Finance

Teaching activities

2003 – present	**Random Matrices and Communication Systems** class taught to the students of the Doctoral School of Computer, Communication and Information Sciences at EPFL and at Stanford University during spring quarter 2006
2002 – 2005	**Probability and Stochastic Calculus** class taught to the students of the Doctoral School of Mathematics at EPFL
2001 – present	**Supervision of student projects at EPFL** in the field of information theory and mathematical finance
1995 – 2001	**Teaching assistant** for classes of mathematics given at EPFL

Conference organization

2008 TPC Member for the WiOpt Conference, Berlin, April 2008

References

Prof. R. C. Dalang
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PUBLICATIONS LIST

The most significant publications are highlighted with a (*).

Journal Papers and Preprints

A. Özgür, R. Johari, D. Tse, O. Lévêque, "Information Theoretic Operating Regimes of Large Wireless Networks", submitted to the IEEE Transactions on Information Theory, February 2008.

A. Özgür, O. Lévêque, "Throughput-Delay Tradeoff for Hierarchical Cooperation in Ad Hoc Wireless Networks", submitted to the IEEE Transactions on Information Theory, December 2007.

G. Fraidenraich, O. Lévêque, J. M. Cioffi, "On the MIMO Channel Capacity for the Nakagamim Channel", submitted to the IEEE Transactions on Information Theory, March 2007.

(*) A. Özgür, O. Lévêque, D. Tse, "Hierarchical Cooperation Achieves Optimal Capacity Scaling in Ad Hoc Networks", IEEE Transactions on Information Theory 53 (10), October 2007, 3549–3572.

(*) A. Özgür, O. Lévêque, E. Preissmann, "Scaling Laws for One and Two-Dimensional Random Wireless Networks in the Low Attenuation Regime", IEEE Transactions on Information Theory 53 (10), October 2007, 3573–3585.

G. Fraidenraich, O. Lévêque, J. Cioffi, "On the MIMO Channel Capacity for the Dual and Asymptotic Cases over Hoyt Channels", IEEE Communications Letters 11 (1), January 2007.

O. Lévêque, E. Preissmann, "Scaling Laws for One-Dimensional Ad Hoc Wireless Networks", IEEE Transactions on Information Theory 51 (11), November 2005, 3987–3991.

(*) O. Lévêque, E. Telatar, "Information Theoretic Upper Bounds on the Capacity of Large Extended Ad Hoc Wireless Networks", IEEE Transactions on Information Theory 51 (3), March 2005, 858–865.

(*) R. C. Dalang, O. Lévêque, "Second Order Hyperbolic Equations Driven by Homogeneous Gaussian Noise on a Hyperplane", Transactions of the American Mathematical Society 358, 2006, 2123–2159.

(*) R. C. Dalang, O. Lévêque, "Second Order Linear Hyperbolic Equations Driven by Isotropic Gaussian Noise on a Sphere", Annals of Probability 32 (1B), 2004, 1068–1099.

D. Aerts, S. Aerts, T. Durt, O. Lévêque, "Classical and Quantum Probability in the Epsilon Model", International Journal of Theoretical Physics 38 (1), 1999, 407–429.

PhD Thesis

O. Lévêque, "Hyperbolic Stochastic Partial Differential Equations Driven by Boundary Noises", PhD Thesis Nr 2452 (2001), EPFL.

Conference Papers

A. Özgür, O. Lévêque, "Throughput-Delay Tradeoff for Hierarchical Cooperation in Ad Hoc Wireless Networks", submitted to the MACOM Workshop, St Petersburg, May 2008.

A. Özgür, R. Johari, D. Tse, O. Lévêque, "Capacity of Wireless Networks: Fundamental Operating Regimes and Optimal Schemes", submitted to the IEEE International Symposium on Information Theory, Toronto, July 2008.

E. Akuiyibo, O. Lévêque, C. Vignat, "High SNR Analysis of the MIMO Interference Channel", submitted to the IEEE International Symposium on Information Theory, Toronto, July 2008.

E. Akuiyibo, O. Lévêque, "Diversity-Multiplexing Tradeoff for the Slow Fading Interference Channel", to appear in the Proceedings of the International Zurich Seminar, March 12–14, 2008.

S. Yeh, O. Lévêque, J. M. Cioffi, "Asymptotic Capacity of Orthogonal Multi-Level Amplify-and-Forward Relay Networks", Proceedings of the Asilomar Conference, November 2007.

G. Fraidenraich, O. Lévêque, J. M. Cioffi, "On the MIMO Channel Capacity for the Nakagami-m Channel", Proceedings of the IEEE Globecom Conference, Washington DC, November 26–30, 2007.

A. Özgür, O. Lévêque, D. Tse, "Exact Capacity Scaling of Extended Wireless Networks", Proceedings of the IEEE International Symposium on Information Theory, Nice, France, June 24–29, 2007.

S. Yeh, O. Lévêque, "Asymptotic Capacity of Multi-Level Amplify-and-Forward Relay Networks", Proceedings of the IEEE International Symposium on Information Theory, Nice, France, June 24–29, 2007.

A. Özgür, O. Lévêque, D. Tse, "How does the Information Capacity of Ad Hoc Networks Scale?", Proceedings of the Forty-fourth Annual Allerton Conference on Communication, Control and Computing, September 27–29, 2006.

A. Özgür, O. Lévêque, D. Tse, "Hierarchical Cooperation Achieves Linear Capacity Scaling in Ad Hoc Networks", Proceedings of the IEEE Infocom Conference, May 6–12, 2007.

O. Lévêque, R. K. Madan, D. Shah, "Uniform Multi-Commodity Flow in Wireless Networks with Gaussian Fading Channels", Proceedings of the IEEE International Symposium on Information Theory, Seattle, USA, July 9–14, 2006.

A. Özgür, O. Lévêque, "Scaling Laws for Two-Dimensional Random Ad Hoc Wireless Networks", Proceedings of the International Zurich Seminar, ETH Zurich, Switzerland, February 22–24, 2006.

O. Lévêque, E. Preissmann, "Scaling Laws for One-Dimensional Ad Hoc Wireless Networks", Proceedings of the IEEE International Symposium on Information Theory, Adelaide, Australia, September 4–9, 2005.

O. Lévêque, E. Telatar, "Information Theoretic Upper Bounds on the Capacity of Large Extended Ad Hoc Wireless Networks", Proceedings of the IEEE International Symposium on Information Theory, Chicago, USA, June 27 – July 2, 2004.

R. C. Dalang, O. Lévêque, "Second Order Hyperbolic Equations driven by Boundary Noises", Proceedings of the Seminar on Stochastic Analysis, Random Fields and Applications IV, Ascona, Switzerland, May 2002.

Invited Talks

"Throughput-Delay Tradeoff for Hierarchical Cooperation in Ad Hoc Wireless Networks" RAWNET Workshop, Berlin, April 2008.
"Determinants of Random Cauchy Matrices and Capacity of Wireless Neworks", Young European Probabilists Workshop, Eindhoven, Netherlands, and invited talks at Massachussetts Institute of Technology and Boston University, March 2006.

"Scaling Laws for One and Two-Dimensional Wireless Networks", invited talks at Stanford University and University of California at Berkeley, November 2005.

"Random Matrices and Communication Networks", Sixth World Congress of the Bernoulli Society, University of Barcelona, Spain, July 2004.

"Information Theoretic Upper Bounds on the Capacity of Large Ad Hoc Wireless Networks", IEEE Communication Theory Workshop, Capri, Italy, May 2004.

"Hyperbolic SPDE's Driven by Boundary Noises", Workshop on Stochastic Partial Differential Equations, Banff International Research Station, Canada, September 2003.

"Information Theoretic Upper Bounds on the Capacity of Large Ad Hoc Wireless Networks", Workshop on Probability and Statistical Mechanics in Information Sciences, Scuola Normale Superiore di Pisa, Italy, June 2003.

"Hyperbolic SPDE's Driven by Boundary Noises", Fourth Seminar on Stochastic Analysis, Random Fields and Applications, Ascona, Switzerland, May 2002.

"Ad Hoc Wireless Networks and Random Matrices", 12th Joint Conference on Communications and Coding, Saas-Fee, Switzerland, March 2002.

"Hyperbolic SPDE's Driven by Boundary Noises", Annual Meeting of the Swiss Mathematical Society, Yverdon-les-Bains, Switzerland, October 2001.

"Wave Equation Driven by Noise on a Sphere", Equadiff 10, Praha, Czech Republic, and invited talk at GSF Institute, München, Germany, August 2001.

"Wave Equation Driven by Noise on a Hyperplane", Symposium on Stochastic Partial Differential Equations, University of Warwick, United Kingdom, July 2001.

"Wave Equation Driven by Noise on a Hyperplane", invited talk at University of Barcelona, Spain, October 2000.