

CURRICULUM VITAE

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Leonid Mytnik

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Work address: Faculty of Industrial Engineering and Management,
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ACADEMIC DEGREES

- 1993–1996 PhD in Statistics, Faculty of Industrial Engineering and Management, Technion, Haifa, Israel. Completed August 1996.
Ph.D. thesis: *Superprocesses in Random Environments*.
Supervisor: Professor R. Adler.
- 1990–1993 MSc in Operations Research, Faculty of Industrial Engineering and Management, Technion, Haifa, Israel. Completed July 1993.
MSc thesis: *Interacting Branching Diffusions*.
Supervisor: Professor R. Adler.
- 1984-1986, 1988-1990 Studies towards B.Sc degree. Faculty of Engineering Cybernetics, St. Petersburg State Polytechnic University (former Leningrad Polytechnic Institute), St. Petersburg, Russia. Left Russia before formally completing B.Sc. degree.

ACADEMIC APPOINTMENTS

- 2011- Full Professor,
Faculty of Industrial Engineering and Management,
Technion, Haifa, Israel.
- 2004-2011 Associate Professor,
Faculty of Industrial Engineering and Management,
Technion, Haifa, Israel.
- 1999- 2004 Senior Lecturer,
Faculty of Industrial Engineering and Management,
Technion, Haifa, Israel.
- 1998–1999 Postdoctoral Fellow,
Laboratoire de Probabilités et Modèles Aléatoires
Universités Paris 6,
Paris, France.
- 1996–1998 Postdoctoral Fellow,
Department of Mathematics,
The University of British Columbia,
Vancouver, B.C., Canada.

VISITING APPOINTMENTS (Month or longer)

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| September 2004—June 2005 | Fields Institute for Research in Mathematical Sciences, Toronto. |
| 2000 (summer) | Weierstrass Institute for Applied Analysis and Stochastics |
| 2008 | UPMC - University Pierre and Marie Curie (P6). |
| 2015 | UPMC - University Pierre and Marie Curie (P6). |

RESEARCH INTERESTS

- **Measure and distribution valued processes.** Superprocesses with interactions. Regularity of superprocesses.
- **Stochastic partial differential equations (SPDEs).** Uniqueness for SPDEs. SPDEs driven by stable noise.
- **Interacting particle systems.**
- **Fractal properties of stochastic processes.**

PROFESSIONAL ACTIVITIES

Editorial Board

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| <i>The Annals of Applied Probability,</i> | 2003—2009, Associate Editor. |
| <i>Stochastic Processes and Their Applications,</i> | 2005—2012, Associate Editor. |
| <i>Annales de l'Institut Henri Poincaré,</i> | 2011—, Associate Editor. |
| <i>Electronic Journal of Probability,</i> | 2012—, Associate Editor. |
| <i>Electronic Communications in Probability,</i> | 2012—, Associate Editor. |

Conferences

1. Organizer (with A. Klenke) of workshop (spring school) "Discrete structures and related methods from stochastic analysis" at the Technion, Haifa, Israel, on March 4-8, 2013.
2. Organizer of an invited session on "Stochastic Partial Differential Equations" at 36th Conference on Stochastic Processes and their Applications, University of Colorado, Boulder, July 29 — August 2, 2013,
3. Member of Organizing Committee of the workshop "Stochastic Processes and Random Fields: Geometry and Fine properties" (in honor of Robert Adler and Haya Kaspi), at the Technion, Haifa, Israel, on June 29 — July 3, 2015.
4. Organizer (with L. Döring, L. Zambotti) of workshop "Workshop on Stochastic Differential Equations 2016" at the University of Mannheim, Germany, on June 23-24, 2016.
5. Member of the Scientific Program Committee of 40th Conference on Stochastic Processes and Their Applications (SPA 2018), at the Chalmers University of Technology in Gothenburg, Sweden, June 11-15, 2018.

ADMINISTRATIVE DUTIES

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| 2001—2003 | Organizer of the Probability Seminar at the Technion |
| 2005—2008 | Head of the Probability and Statistics Area at IE&M. |
| 2008—2012 | Assistant Dean for Student Affairs. |
| 2012—2015 | Member of the Technion Preparatory Committee. |

TEACHING EXPERIENCE

1999– Faculty of Industrial Engineering and Management, Technion.
1997–1998 Department of Mathematics, The University of British Columbia.
1992–1996 Teaching Assistant, Faculty of Industrial Engineering
and Management, Technion.
Undergraduate courses: Introductory Probability, Stochastic Models,
Calculus, Digital Simulation
Graduate courses: Advanced Stochastic Processes,
Stochastic Calculus for Finance,
Levy Processes, SPDEs,
Measure-valued Branching Processes.

GRADUATE STUDENTS

Former students

Roman Berezin M.Sc. in Statistics. Graduated in 2008.
M.Sc. thesis: *Limiting Behavior of Contact Random Walk.*
Eyal Neuman M.Sc. in Statistics. Graduated in 2010.
M.Sc. thesis: *Sample Path Properties of Volterra Processes.*
Rustam Mamin M.Sc. in Applied Math. Graduated in 2014.
M.Sc. thesis: *Superprocesses with Infinite Mean.*
Alexandra Fugenfirov M.Sc. in Applied Math. Graduated in 2015.
M.Sc. thesis: *Branching Particle Systems with Interactions.*
Roman Berezin Ph.D. Graduated in 2013.
Ph.D. thesis: *Limiting Behaviour of Some Interacting
Particle Systems.*
Eyal Neuman Ph.D. Graduated in 2014.
Ph.D. thesis: *Pathwise Uniqueness of the Stochastic Heat Equations
with Spatially Inhomogeneous White Noise.*

Current students

Segev Shlomov M.Sc. thesis: *Interacting Partical Systems with Rapid Stirring*
Expected graduation in 2017.

HONORS

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| 1994 | Miriam and Aaron Gutwirth Memorial Fellowship. |
| 2004 | The Henry Taub Prize for Excellence in Research. |
| 2013 | Fellow of the Institute of Mathematical Statistics (IMS). |
| 2016 | Research Award of the Alexander von Humboldt Foundation. |

POSTDOCTORAL FELLOWS

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| 2002 | Dr. Kai-Nan Xiang (joint supervision with R. Adler) |
| 2004 | Dr. José Villa Morales |
| 2013—2016 | Dr. Patric Karl Glöde |
| 2013—2016 | Dr. Oleg Butkovsky (joint supervision with H. Kaspi) |
| 2014—2016 | Dr. Paul Balança |
| 2016— | Dr. Dominic Yeo (joint supervision with O. Louidor) |

RESEARCH GRANTS

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| 2001-2004 | BSF, \$60,000, R. Adler, R. Durrett, L. Mytnik, “Interacting particle systems and superprocesses”. |
| 2001-2005 | ISF, \$101,000, L. Mytnik. “Interactive superprocesses”. |
| 2002-2003 | GIF (Young Scientists’ Program), EURO 40,000, L. Mytnik. “Stochastic Partial Differential Equations and Related Topics”. |
| 2005-2008 | GIF, EURO 215,600, K. Fleischmann, A. Klenke, L. Mytnik, “Supeprocesses and Stochastic Partial Differential Equations”. |
| 2006-2010 | ISF, \$90,000, L. Mytnik. “Stochastic Partial Differential Equations with non-Lipschitz Coefficients”. |
| 2010-2014 | ISF, \$160,000, L. Mytnik. “Infinite Dimensional Stochastic Differential Equations and Related Topics”. |
| 2013-2015 | GIF, EURO 180,000, A. Klenke, L. Mytnik, “Two-type population models with infinite rate interaction”. |
| 2014-2018 | ISF, \$180,000, L. Mytnik. “Regularity and fractal properties of superprocesses”. |
| 2014-2017 | ISF-UGC, \$160,000 (for Israeli part), S. Athreya, L. Mytnik. “Uniqueness for Stochastic Partial Differential Equations”. |
| 2015-2019 | BSF, \$108,000, L. Ryzhik, L. Mytnik, “Stochastic front propagation”. |

PUBLICATIONS

Theses

MSc thesis

Interacting Branching Diffusions, Technion, July 1993.

PhD thesis

Superprocesses in Random Environments, Technion, August 1996.

Books

1. Mytnik L., Wachtel V., *Regularity and Irregularity of Superprocesses with $(1 + \beta)$ -stable Branching Mechanism*. To appear in SpringerBriefs in Probability and Mathematical Statistics. Springer, 2017. ISBN: 978-3-319-50085-0.

Refereed papers in professional journals

Papers (published and in press)

1. Adler R., Mytnik L., Bisexual branching diffusions, *Advances in Applied Probability*, 27, 980-1018, 1995.
2. Mytnik L., Superprocesses in random environments, *The Annals of Probability*, 24, 1953-1978, 1996.
3. Mytnik L., Collision measure and collision local time for (α, d, β) superprocesses, *Journal of Theoretical Probability*, 11, 733-763, 1998.
4. Mytnik L., Weak uniqueness for the heat equation with noise, *The Annals of Probability*, 26, 968-984, 1998.
5. Mytnik L., Uniqueness for a mutually catalytic branching model, *Probability Theory and Related Fields*, 112(2), 245-253, 1998.
6. Mytnik L., Uniqueness for a competing species model, *Canadian Journal of Mathematics*, 51(2), 372-448, 1999.
7. Mytnik L., Stochastic partial differential equation driven by stable noise, *Probability Theory and Related Fields*, 123(2), 157-201, 2002.
8. Dawson D.A., Etheridge A.M., Fleischmann K., Mytnik L., Perkins E.A., Xiong J., Mutually catalytic branching in the plane: finite measure states, *The Annals of Probability*, 30, 1681-1762, 2002.
9. Dawson D.A., Etheridge A.M., Fleischmann K., Mytnik L., Perkins E.A., Xiong J., Mutually catalytic branching in the plane: infinite measure states, *Electronic Journal of Probability*, 7(15), 1-61, 2002.
10. Dawson D.A., Fleischmann K., Mytnik L., Perkins E.A., Xiong J., Mutually catalytic branching in the plane: uniqueness, *Annales de l'Institut Henry Poincaré*, 39(1), 135-191, 2003.
11. Fleischmann, K., Mytnik L., Competing species superprocesses with infinite variance, *Electronic Journal of Probability*, 8(8), 1-59, 2003.
12. Mytnik L., Perkins E.A., Regularity and irregularity of $(1 + \beta)$ -stable super-Brownian motion, *The Annals of Probability*, 31, 1413-1440, 2003.
13. Mytnik L., Xiang K.-N., Tanaka formulae for (α, d, β) -superprocesses. *Journal of Theoretical Probability*, 17, 483-502, 2004.
14. Le Gall J.-F., Mytnik L., Regularity and irregularity of the exit measure density for $(1 + \beta)$ -stable super-Brownian motion. *The Annals of Probability*, 33, 194-222, 2005.
15. Durrett, R., Mytnik L., Perkins, E., Competing super-Brownian motions as limits of interacting particle systems, *Electronic Journal of Probability*, 10, 1147-1220, 2005.

16. Burdzy K., Mytnik L., Super-Brownian motion with reflecting historical paths. II. Convergence of approximations. *Probability Theory and Related Fields*, 133(2), 145-174, 2005.
17. Mueller C., Mytnik L., Stan A., The heat equation with time-independent multiplicative stable Lévy noise. *Stochastic Processes and Applications*, 116(1), 70-100, 2006.
18. Mytnik L., Perkins, E., Sturm A., On pathwise uniqueness for stochastic heat equations with non-Lipschitz coefficients. *The Annals of Probability*, 34, 1910-1959, 2006.
19. Mytnik L., Villa J., Self-Intersection local time of (α, d, β) -superprocess. *Annales de l'Institut Henry Poincaré*, 43(4), 481-507, 2007.
20. Mytnik L., Xiong J., Local extinction for superprocesses in random environments, *Electronic Journal of Probability*, 12, 1349-1378, 2007.
21. Mueller C., Mytnik L., Quastel J., Small noise asymptotics of traveling waves, *Markov Processes and Related Fields*, 14, 333-342, 2008.
22. Fleischmann K., Mytnik L., Wachtel V., Optimal Hölder index for density states of superprocesses with $(1 + \beta)$ -branching mechanism. *The Annals of Probability*, 38, 1180-1220, 2010.
23. Klenke A., Mytnik L., Infinite rate mutually catalytic branching. *The Annals of Probability*, 38, 1690-1716, 2010.
24. Mytnik L., Perkins E., Pathwise uniqueness for stochastic heat equations with Hölder continuous coefficients: the white noise case. *Probability Theory and Related Fields*, 149, 1-96, 2011
25. Li Z., Mytnik L., Strong solutions for stochastic differential equations with jumps. *Annales de l'Institut Henry Poincaré*, 47(4), 1055-1067, 2011.
26. Mueller C., Mytnik L., Quastel J., Effect of noise on front propagation in reaction-diffusion equations of KPP type. *Inventiones mathematicae*, 184, 405-453, 2011.
27. Fleischmann K., Mytnik L., Wachtel V., Hölder index at a given point for density states of super- α -stable motion of index $1 + \beta$. *Journal of Theoretical Probability*, 24, 66-92, 2011.
28. Mytnik, L., Xiong, J. and Zeitouni, O., Snake representation of a superprocess in random environment. *ALEA, Latin American Journal of Probability and Mathematical Statistics*, 8 (2011), 335-378.
29. Klenke A., Mytnik L., Infinite Rate Mutually Catalytic Branching in Infinitely Many Colonies: The Longtime Behaviour. *Annals of Probability*, 40, 103-129, 2012.
30. Klenke A., Mytnik L., Infinite rate mutually catalytic branching in infinitely many colonies: construction, characterization and convergence. *Probability Theory and Related Fields*, 154, 533-584, 2012.
31. Döring, L., Mytnik, L., Mutually catalytic branching processes and voter processes with strength of opinion. *ALEA, Latin American Journal of Probability and Mathematical Statistics*, 9 (2012), 1-51.
32. Fleischmann K., Mytnik L., Wachtel V., Properties of states of super- α -stable motion with branching of index $1 + \beta$. *Springer Proceedings in Mathematics* 11, 409-421, 2012.

33. Döring L., Mytnik L., Longtime behavior of mutually catalytic branching with negative correlations (in Advances in Superprocesses and Non-linear PDEs) *Springer Proceedings in Mathematics & Statistics* 38, 93–112, 2013.
34. Mytnik L., Neuman E., Sample Path Properties of Volterra Processes. *Communications on Stochastic Analysis*, 6(3), 359-377, 2012.
35. Berezin R., Mytnik, L., Asymptotic behaviour of the critical value for the contact process with rapid stirring. *Journal of Theoretical Probability* 27, 1045–1057, 2014.
36. Mueller C., Mytnik L., Perkins E., Nonuniqueness for a parabolic SPDE with $3/4 - \epsilon$ -Hölder diffusion coefficients. *Annals of Probability*, 42, 2032–2112, 2014.
37. Berestycki J., Döring L., Mytnik L., Zambotti L. On exceptional times for generalized Fleming-Viot processes with mutations. *Stoch. Partial Differ. Equ. Anal. Comput.*, 84–120, 2014.
38. Berestycki J., Döring L., Mytnik L., Zambotti L. Hitting properties and non-uniqueness for SDEs driven by stable processes *Stochastic Processes and Applications*, 125(3), 918–940, 2015.
39. Mytnik L., Neuman E., Pathwise uniqueness for the stochastic heat equation with Hölder continuous drift and noise coefficients. *Stochastic Processes and their Applications*, 125(9), 3355–3372, 2015.
40. Mytnik L., Wachtel V., Multifractal analysis of superprocesses with stable branching in dimension one. *Annals of Probability*, 43(5), 2763-2809, 2015.
41. Mytnik L., Xiong J., Well-posedness of the martingale problem for superprocess with interaction. *Illinois Journal of Mathematics*, 59(2), 485-497, 2015.
42. Mueller C., Mytnik L., Perkins E., On the Boundary of the Support of Super-Brownian Motion. To appear in *Annals of Probability*, 2017.
43. Hu Y., Le K., Mytnik L., Stochastic differential equation for Brox diffusion. To appear in *Stochastic Processes and Applications*, 2017.
44. Döring L., Klenke, A., Mytnik L., Finite System Scheme for Mutually Catalytic Branching with infinite branching rate. To appear in *Annals of Applied Probability*, 2017.

CONFERENCES

Invited talks

1. *Superprocesses in random environments.*
4th World Congress of the Bernoulli Society, Vienna, August 26-31, 1996.
2. *Weak uniqueness for the heat equation with noise.*
Workshop on SPDE, UBC, Vancouver, 11-15 August 1997. (Opening lecture.)
3. *Weak uniqueness for the heat equation with noise.*
Workshop on SPDE, MSRI, Berkeley, September 15-19, 1997.

4. *Uniqueness for a competing species model.*
Workshop on Interactive Measure-Valued Processes, The Fields Institute for Research in Mathematical Sciences, Toronto, Canada, March 8-12, 1999.
5. *A duality approach to proving uniqueness.*
Seminar on Stochastic Processes — 1999, The Fields Institute for Research in Mathematical Sciences, Toronto, Canada, March 18-20, 1999.
6. *Mutually catalytic branching in the plane.*
Israel Mathematical Union Meeting — 2000, Haifa University, Haifa, Israel, May 17, 2000.
7. *SPDE driven by stable noise*
Workshop on Topics in Modern Stochastic Analysis, The Fields Institute for Research in Mathematical Sciences, Toronto, Canada, September 21-22, 2000.
8. *SPDE driven by stable noise*
Workshop on Stochastic Partial Differential Equations, The University of Warwick, July 16-27, 2001. (Opening lecture.)
9. *Regularity and irregularity of beta-stable super-Brownian motion*
Meeting on Stochastic Analysis, Oberwolfach, October 27 — November 2, 2002.
10. *Some properties of super-Brownian motion with stable branching mechanism*
Workshop on Interacting Stochastic Systems, Technical University of Berlin, April 7-11, 2003.
11. *Regularity and irregularity of beta-stable super-Brownian motion*
Meeting on Branching Processes, Oberwolfach, July 6-12, 2003. *SPDEs driven by stable noise*
Workshop on Stochastic Partial Differential Equations and related topics, The University of Warwick, August 4-15, 2003.
12. *SPDEs driven by stable noise*
Workshop on Stochastic Partial Differential Equations, Banff, Canada, September 27 — October 2, 2003.
13. *On pathwise uniqueness for stochastic heat equations with non-Lipschitz coefficients*
The Sixth World Congress of the Bernoulli Society, Barcelona, July 26-31, 2004.
14. *On uniqueness for stochastic heat equations with non-Lipschitz coefficients*
30th Conference on Stochastic Processes and their Applications, Santa Barbara, California, June 26 - July 1, 2005. (Plenary talk.)
15. *On uniqueness for stochastic heat equations with non-Lipschitz coefficients*
Workshop on Stochastic Partial Differential Equations, Centro di Ricerca Matematica Ennio De Giorgi, April 3-7, 2006.
16. *Uniqueness for a Volterra-type stochastic equation*
Conference on SPDEs, Cornell University, April 22 - April 25, 2007.

17. *Uniqueness for a Volterra-type stochastic equation*
Probability and Stochastic Processes, Symposium in honour of Donald A. Dawson's work, Carleton University, Canada, June 5 - June 8, 2007.
18. *Uniqueness for a Volterra-type stochastic equation*
5th Workshop on Markov Processes and Related Topics 2007, Beijing, China, July 14-18, 2007.
19. *On uniqueness for stochastic partial differential equations with non-Lipschitz coefficients*
Equadiff 2007 - International Conference on Differential Equations, Vienna, Austria, August 5-11, 2007.
20. *Uniqueness for a Volterra-type stochastic equation*
8th International Meeting on Stochastic Partial Differential Equations and Applications, Trento, Italy, January 6-12, 2008.
21. *Pathwise uniqueness for stochastic heat equations with Hölder continuous coefficients.*
7th World Congress of the Bernoulli Society, Singapore, July 14 - 19, 2008.
22. *Pathwise uniqueness for stochastic heat equations with Hölder continuous coefficients.*
Workshop on Stochastic Partial Differential Equations, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, January 4 - 8, 2010.
23. *Infinite rate mutually catalytic branching.*
Brazilian School of Probability (Escola Brasileira de Probabilidade, EBP), Buzios, Brazil, August 1 - 7, 2010. (Plenary talk.)
24. *Infinite rate mutually catalytic branching.*
73rd Annual Meeting of the IMS, Gothenburg, Sweden, August 9 - 13, 2010.
25. *Infinite rate mutually catalytic branching.*
ICM Satellite Conference on Probability and Stochastic Processes Indian Statistical Institute, Bangalore August 13 - 17, 2010.
26. *Regularity properties of superprocesses with $1 + \beta$ -stable branching mechanism.*
35th Conference on Stochastic Processes and their Applications, Oaxaca, Mexico, June 19 - June 24, 2011.
27. *Regularity properties of superprocesses with $1 + \beta$ -stable branching mechanism.*
Seventh Seminar on Stochastic Analysis, Random Fields and Applications, Ascona, Switzerland, May 23 - May 27, 2011.
28. *Multifractal analysis of superprocesses with stable branching in dimension one.*
Stochastic Analysis and Stochastic Partial Differential Equations, Banff, Canada, April 1 — April 6, 2012.

29. *Multifractal analysis of superprocesses with stable branching in dimension one.*
EPSRC Symposium Workshop - Stochastic Analysis and Stochastic PDEs Partial Differential Equations, The University of Warwick, April 16 - April 20, 2012.
30. *Generalized Fleming-Viot Processes with Mutations.*
Workshop on Stochastic Partial Differential Equations (SPDEs), Follow-up Meeting, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, September 10 - 14, 2012.
31. *SDEs driven by stable processes.*
7th Conference on Lévy Processes, Wrocław, Poland, July 15 - 19, 2013.
32. *Uniqueness and non-uniqueness for stochastic heat equations with Hölder continuous coefficients.*
29th European Meeting of Statisticians (EMS), Budapest, Hungary, July 20 - 25, 2013.
33. *Regularity and irregularity of superprocesses with $1 + \beta$ -stable branching mechanism.*
Recent Trends in Stochastic Analysis, UBC, Vancouver, July 23 - 27, 2013.
34. *Multifractal analysis of superprocesses.*
9th International Meeting on Stochastic Partial Differential Equations and Applications, Trento, Italy, January 6-11, 2014.
35. *Uniqueness and non-uniqueness for stochastic heat equations with Hölder continuous coefficients.*
Rough Paths: Theory and Applications, IPAM, USA, January 27-31, 2014.
36. *Mutually catalytic branching models.*
38th Conference on Stochastic Processes and their Applications, University of Oxford, 13th - 17th July 2015.
37. *On the boundary of the support of super-Brownian motion.*
Workshop: Stochastic Partial Differential Equations at the Simons Center for Geometry and Physics, May 16 - 20, 2016.
38. *On the boundary of the support of super-Brownian motion.*
10th International Meeting on Stochastic Partial Differential Equations and Applications, Trento, Italy, May 30 - June 4, 2016.
39. *Super Brownian motions with stable branching mechanism and their regularity properties.*
Mini-course at Summer School on Lévy Processes, Lille, France, July 18 - July 22, 2016.
40. *Regularity of superprocesses with stable branching mechanism.*
Stable Processes, CMO-BIRS workshop at Oaxaca, November 6 - November 11, 2016.