

## CURRICULUM VITAE

Leonid Koralov

**I. PERSONAL INFORMATION**

## EDUCATION

<u>Institution</u>	<u>Degree</u>	<u>Date Awarded</u>
SUNY at Stony Brook	PhD	1998
Moscow State University	BSc	1991

## EXPERIENCE IN HIGHER EDUCATION

<u>Institution</u>	<u>Rank</u>	<u>Dates</u>
University of Maryland	Associate Professor	2008 - present
University of Maryland	Assistant Professor	2005 - 2008
Princeton University	Assistant Professor	2000 - 2006
Institute for Advanced Study	Member	1998 -2000

## PROFESSIONAL EXPERIENCE NOT IN HIGHER EDUCATION

Visiting Graduate Student, Center for Nonlinear Studies, Los Alamos National Laboratory (Oct 1997 - Jan 1998).

**II. RESEARCH, SCHOLARLY AND CREATIVE ACTIVITY**

## PUBLICATIONS

## RESEARCH ARTICLES

A. Articles published, or accepted for publication, in research journals

1. (with S. Nechaev and Y. Sinai) Limiting Probability Distribution for a Random Walk with Topological Constraints, Chaos 1 (1991), no 2, 131-133.
2. (with S. Nechaev and Y. Sinai) Limit Behavior of a two-dimensional Random Walk with Topological Constraints, Theory Probab. Appl 38 (1993), no 2, 296-306.
3. Effective Diffusivity of Stationary Vector Fields with Short Time Correlations, Random Operators and Stochastic Equations, no 4, Vol 5, pp 303-324 (1997).
4. Transport by Time Dependent Stationary Random Flow, Communications in Mathematical Physics, 199, pp 649-681 (1999).
5. Transport by Vector Fields with Kolmogorov Spectrum, Journal of Statistical Physics, Vol 98, Issue 1/2, pp 405-418 (2000).
6. (with R. Carmona and S. Molchanov) Asymptotics for the Almost Sure Lyapunov Exponent for the Solution of the Parabolic Anderson Problem, Random Operators and Stochastic Equations, Vol 9, No. 1, pp 77-86 (2001).

7. (with D. Dolgopyat and V. Kaloshin) Hausdorff Dimension in Stochastic Dispersion, *Journal of Statistical Physics*, Vol 108, Nos 5/6, pp 943-972 (2002).
  8. (with D. Dolgopyat and V. Kaloshin) A Limit Shape Theorem for Periodic Stochastic Dispersion, *Communications in Pure and Applied Mathematics*, 57 (2004), no 9, pp 1127-1158.
  9. (with D. Dolgopyat and V. Kaloshin) Sample Path Properties of the Stochastic Flows, *Annals of Probability*, 32 (2004) no 1A, pp 1-27.
  10. Random Perturbations of 2-Dimensional Hamiltonian Flows, *Probability Theory and Related Fields* 129, pp 37-62 (2004).
  11. The Existence of Pair Potential Corresponding to Specified Density and Pair Correlation, *Letters in Mathematical Physics* (2005), 71, pp 135-148.
  12. An Inverse Problem for Gibbs Fields, *Proceedings and Lecture Notes*, 49 (2007)
  13. An Inverse Problem for Gibbs Fields with Hard Core Potential, *Journal of Mathematical Physics* , 48 No 5 (2007)
  14. (with D. Dolgopyat) Averaging of Hamiltonian Flows with an Ergodic Component, *Annals of Probability*, Vol. 36, No. 6, 1999-2049 (2008)
  15. (with D. Dolgopyat) Motion in a Random Force Field, *Nonlinearity*, 22 (2009), pp 187-211.
  16. (with M. Cranston, S. Molchanov, B. Vainberg) Continuous Model for Homopolymers, *Journal of Functional Analysis* 256 (2009), no 8, pp 2656-2696.
  17. (with M. Freidlin) Nonlinear Stochastic Perturbations of Dynamical Systems, *Probability Theory and Related Fields* (2010), 147, pp 273-301.
  18. (with M. Cranston, S. Molchanov, B. Vainberg) A solvable model for homopolymers and self-similarity near the critical point, *Random Operators and Stochastic Equations* 18 (2010), no. 1, 7395.
  19. (with M. Freidlin) Metastability for Nonlinear Random Perturbations of Dynamical Systems, *Stochastic Processes and Applications* 120 (2010), no. 7, 11941214
  20. (with D. Dolgopyat, M. Freidlin) Deterministic and Stochastic Perturbations of Hamiltonian Systems on a 2-dimensional torus, to appear in *Ergodic Theory and Dynamical Systems*.
  21. (with M. Freidlin) Averaging Principle for quasi-linear parabolic PDE's and related diffusion processes, to appear in *Stochastics and Dynamics*.
- B. Articles in proceedings of symposia, conferences, etc.
22. (with D. Dolgopyat and V. Kaloshin) Long time behaviour of periodic stochastic flows, *International Congress on Mathematical Physics*, 290-295, World Sci Publ. (2005).
- C. Articles Submitted for publication
23. (with D. Dolgopyat) Averaging of incompressible flows on two-dimensional surfaces, submitted to *Journal of American Mathematical Society*.
- D. Research Announcements
- E. Technical reports not included above

F. Research articles in preparation

24. Diffusion in Rayleigh-Benard Convection.

25. Branching diffusion processes.

#### EXPOSITORY ARTICLES

#### MONOGRAPHS, PRINTED LECTURE NOTES, ETC.

(with Ya. Sinai) Theory of Probability and Random Processes, Springer-Verlag, Universitext (2007), 353 pp + xi.

#### GRANTS, CONTRACTS, AWARDS AND PRIZES

2008-2011 — Focused Research Group grant.

2007-2010 — NSF Research Grant (principal investigator).

2004-2007 — NSF Research Grant (principal investigator).

1999-2002 — NSF Postdoctoral Fellowship.

1998-1999 academic year — Institute for Advanced Study Fellowship.

#### INVITED TALKS (recent)

Interacting Processes in Random Environment (Fields Institute), Feb 2011; Random Media: Homogenization and Beyond (IPAM), Jan 2011; Workshop in Dynamical Systems and Related Topics (PSU), Oct 2010; Stochastic Dynamics opening workshop (SAMSI), 2009; AMS meeting (Penn State), 2009; Stochastic Processes and Applications (Berlin), 2009; Turbulent Mixing and Beyond (Trieste), 2009, AMS meeting (Raleigh), 2009; Workshop on Random Walks, Particle Systems and Random Media (Santiago, Chile, 2008); Stochastic Dynamical Systems and Control, (March 2007, MSRI); Stochastic Processes and Applications (Urbana-Champaign, 2007)

Seminar talks in: University of Toronto (Dec 2010), UMBC (Oct 2010), CIMAT (summer 2010), University of Illinois at Urbana-Champaign, University of Chicago, CIMAT (Guanajuato), UNC Charlotte, UMD, Penn State University, Georgia Tech.

### III. TEACHING AND ADVISING

#### COURSES TAUGHT IN THE LAST FIVE YEARS

<u>Semester</u>	<u>Course</u>
Spring 2011	STAT 410
Fall 2010	STAT 600 and MATH 410
Spring 2010	STAT 601
Fall 2009	STAT 600 and STAT 400
Spring 2009	STAT 601
Fall 2008	STAT 600
Spring 2008	STAT 601
Fall 2007	STAT 600
Spring 2007	STAT 601
Fall 2006	STAT 600
Prior to 2007	Various courses at Princeton University

## IV. SERVICE

### SERVICE TO THE UNIVERSITY

### SERVICE TO THE DEPARTMENT OTHER THAN TEACHING

Co-organizer of the Probability Seminar (currently)

Co-organizer of the Workshop “Stochastics and Dynamics, Asymptotic Problems” (May 2010).

Serving on the High School Mathematics Competition Committee (currently) advising one and co-advising another PhD student.

### SERVICE TO THE MATHEMATICAL COMMUNITY

Served on Math in Moscow Committee of the AMS (2008-2010).