

NATHANAËL BERESTYCKI

*Lecturer – University of Cambridge
Fellow of King’s college*

Webpage: <http://www.statslab.cam.ac.uk/~beresty>

Academic appointments

University Lectureship, Cambridge University	since 2007
Fellow of King’s college, Cambridge	since 2009
Postdoctoral fellow, University of British Columbia & PIMS	2005-2007

Research interests

Probability theory: branching and coalescing systems, Brownian motion, random walks, self-interacting stochastic systems, random geometry, stochastic models in population genetics.

Education

Joint PhD (Cornell 2005 and ENS Paris 2006). Advisors: R. Durrett and J.F. Le Gall. [Jury: J. Bertoin, R. Durrett, M. Ledoux, J.F. Le Gall, Y. Le Jan, and W. Werner.]	
DEA, Paris VI	2002
Maîtrise de Mathématiques (B.Sc.), <i>Summa cum laude</i> , Paris VII.	2001
Ecole Normale Supérieure (Cachan)	2000-2004

Selected invited lectures

Plenary speaker, Stochastic Processes and Applications, Oaxaca (Mexico)	June 2011
Branching processes and coalescent processes, Beijing,	April 2011
Random Structure and Dynamics, Oxford	April 2011
Northeast Probability Seminar, New York,	November 2010
Biodiversity modelling day, Musée de l’homme (Paris)	March 2010
Discrete probability and geometry: the mathematics of Oded Schramm, Jerusalem,	December 2009
Above the critical dimension, IHP Paris,	December 2009
New mathematical challenges from molecular biology and genetics, Banff,	September 2009
Probabilistic models of evolutionary biology, Luminy,	May 2009
Combinatorics, algorithms, randomness and probability, Montréal,	May 2009
Mini-course at Young European Probabilists, Eindhoven,	March 2009
Mini-course at IMPA, Rio de Janeiro,	January 2009
Phenomena in high dimensions, Seville,	June 2008
AMS meeting, Bloomington,	April 2008
Combinatorics and statistical mechanics, Newton Institute,	March 2008
Random systems from physics to biology, Berlin,	March 2008
Inhomogeneous random systems, IHP, Paris,	January 2008
Random walks, particle systems and random media, Santiago de Chile,	January 2008
Coalescence and fragmentation, Oberwolfach,	September 2007
Random Sorting Networks, focussed research group at Banff,	May 2006
Mathematical population genetics, Edinburgh	March 2006
7 th Pacific Northwest Probability Seminar	October 2005
Mathematical population genetics, Oberwolfach,	August 2005

Invited seminars

Orsay (10/11), Polytechnique (10/11), ENS Lyon (04/11), ETH Zürich (10/10), Warwick (06/10), Cambridge (05/10), Paris VI (03/10), Bath (03/10), UBC (09/09), Warwick (02/09), UCL (colloquium) (01/09), ETH Zürich (11/08), Bristol (10/08), Microsoft Research (08/08), Weizmann Institute of Science (06/08), Oxford (Stochastic Analysis Seminar) (05/08), Toronto, (04/08), Cambridge (10/07), Weizmann Institute of Science (06/07), Technion (05/07), Ecole Polytechnique (02/07), Oxford (Math. Genetics) (02/07), Indiana U. (colloquium) (01/09), U.C. Davis (colloquium) (01/07), Wisconsin (12/06), UCSD (colloquium and seminar) (12/06), UBC (11/06), Chicago (10/06), Cornell (Summer School) (07/06), Wisconsin (10/06), Berkeley (03/06), Oregon State (colloquium and seminar) (02/06), ENS Lyon (01/06), Marseille (01/06), UBC (10/05), Pittsburgh (colloquium) (03/05), Wisconsin (02/05), Microsoft Research (02/05), UCSD (01/05), Paris X (01/05), Marseille Provence (01/05), Delaware (12/04), NYU Courant Institute (02/04).

Teaching

Schramm-Loewner Evolutions (Part III)	Lent 2011
Probability and measure (Part II)	Michaelmas 2010
Concentration of Measure (Part III course)	Michaelmas 2009
Mixing Times of Markov Chains (Part III course)	Lent 2009
Stochastic Calculus and Applications (Part III course).	Lent 2008 – 2010
Introduction to Probability (Mphil).	Michaelmas 2007 – 2009
Introduction to probability (UBC)	Fall 2005 – 2006
Calculus for Engineers (Cornell, TA)	Fall 2004

Services

Member of the Editorial Board, *Theoretical Population Biology*.

Refereeing for: Transactions of AMS, Annals of Probability, J. Theoretical Probability, EJP, PTRF, J. Stat. Physics, Annals of Applied Probability, Bernoulli, Electronic J. Combinatorics, Discrete Mathematics, Random Structures and Algorithms, Bulletin of Math Biology, Annales de l'IHP.

Grant proposal refereeing: NSA (United states), ISF (Israel), ANR (France), NWO (Netherlands).

Co-organizer of the probability seminar at Cambridge since 2008

Co-organizer of reading group on Determinantal point processes, UBC 2007

Organizer of the weekly probability seminar at UBC 2006-2007

Mentoring

Postdoc: Ariel Yadin (2009-2010), Arnab Sen (since 2010)

PhD: Richard Pymar (since 2008), Lee Zhuo Zhao (since 2010), Bati Senghul (since 2011), Ed Mottram (since 2011).

Mphil: Helen Jordan (Bartlett prize for applied probability) (2010), Giorgos Ioannou (2009), Josh Abramson (Bartlett prize for applied probability) (2009), Sam Lees (Bartlett prize for applied probability) (2008).

Awards, grants

EPSRC Programme grant, “New frontiers in Random Geometry”. Co-PI with Geoffrey Grimmett and James Norris, value £1.65M. 2011

Fellow of King's college, Cambridge since 2009

EPSRC First grant EP/G055068/1 (ranked top), value £290,000 2009

PIMS fellowship 2006

IMS Laha Travel award 2004

Research Assistantship, funded by NSF-NIGMS 2002-2005

National Olympiad (Concours Général) in Philosophy and Biology 1998

Publications

1. N. Berestycki and R. Durrett, (2006). A phase transition in the random transposition random walk. *Probab. Theory Rel. Fields*, 136, 203–233.
2. N. Berestycki (2006). The hyperbolic geometry of random transpositions. *Ann. Probab.*, Vol. 34(2), 429–467.
3. N. Berestycki and J. Pitman. Gibbs distributions for random partitions generated by a fragmentation process. *J. Stat. Phys.* **127**(2), 381–418 (2007).
4. J. Berestycki, N. Berestycki and J. Schweinsberg. Beta-coalescents and continuous stable random trees. *Ann. Probab.*, 35, 1835–1887 (2007).
5. J. Berestycki, N. Berestycki and J. Schweinsberg. Small-time behavior of beta-coalescents. *Ann. Inst. H. Poincaré (B): Probab. Stat.* 44(2), 214–238 (2008).
6. N. Berestycki and R. Durrett, (2008). Limiting behavior for the distance of a random walk. *Electr. J. Probab.* 13, 374–395.
7. N. Berestycki. *Recent progress in coalescent theory*. Ensaos Matematicos, Vol. 16 (2009).
8. J. Berestycki and N. Berestycki. Kingman’s coalescent and Brownian motion. *Alea*, **6**, 239–259 (2009).
9. J. Berestycki, N. Berestycki and V. Limic. The Λ -coalescent speed of coming down from infinity. *Ann. Probab.*, 38, 207–233 (2010).
10. N. Berestycki, A. Etheridge, and M. Hutzenthaler. Survival, extinction and ergodicity in a spatially continuous population model. *Markov Proc. Rel. Fields*, 15, 265–288 (2009). Special issue “Inhomogeneous random systems”.
11. I. Benjamini and N. Berestycki. Random paths with bounded local time, *J. Eur. Math. Soc.* 12(4), 819–854 (2010).
12. I. Benjamini and N. Berestycki. An integral test for the transience of Brownian paths with limited local time. *Ann. Inst. H. Poincaré (B): Probab. Stat.*, to appear.
13. N. Berestycki, O. Schramm and O. Zeitouni. Mixing times of random k -cycles and coagulation-fragmentation chains. arXiv:1001.1894. *Ann. Probab.*, to appear.
14. O. Angel, N. Berestycki, and V. Limic. Global divergence of spatial coalescents. arXiv:0909.4859. *Probab. Theory Rel. Fields*, to appear.
15. J. Berestycki, N. Berestycki and J. Schweinsberg. Survival of near-critical branching Brownian motion. To appear in *J. Stat. Phys.*
16. J. Berestycki, N. Berestycki and J. Schweinsberg. The genealogy of branching Brownian motion with absorption. arXiv:1001.2337
17. N. Berestycki. Emergence of giant cycles and slowdown transition in random transpositions and k -cycles. *Electr. J. Probab.*
18. N. Berestycki, R. Pymar. Effect of scale on long-range random graphs and chromosomal inversions. To appear in *Ann. Appl. Probab.*
19. J. Berestycki, N. Berestycki, and V. Limic. Asymptotic sampling formulae and particle system representations for Λ -coalescents. arXiv:1101.1875
20. N. Berestycki, P. Mörters and N. Sidorova. A conditioning principle for Galton–Watson trees. arXiv:1006.2315.
21. N. Berestycki, A. Etheridge and A. Veber. Large-scale behaviour of the spatial Λ -Fleming-Viot process. arXiv:1107.4254

Last modified: September 2011