

# CURRICULUM VITAE

**Richard S. Ellis, Professor**  
**Department of Mathematics and Statistics**  
**Lederle Graduate Research Towers**  
**University of Massachusetts**  
**Amherst, MA 01003**

## Education

- B.A., 1969, Harvard University, summa cum laude in Mathematics and German Literature
- M.S., 1971, New York University, Mathematics
- Ph.D., 1972, New York University, Mathematics

## Academic Appointments at the University of Massachusetts

- Professor, Department of Mathematics and Statistics
- Adjunct Professor, Department of Judaic and Near Eastern Studies

## Research-Level Monographs

- *Entropy, Large Deviations, and Statistical Mechanics*. Grundlehren der mathematischen Wissenschaften, Volume 271, 364 pages. New York: Springer-Verlag, 1985. Reprinted in *Classics of Mathematics*, 2006. A standard reference, this monograph has educated a generation of researchers in mathematics, physics, and engineering concerning the theory of large deviations.
- *A Weak Convergence Approach to the Theory of Large Deviations* (with Paul Dupuis). Wiley Series in Probability and Statistics, 479 pages. New York: John Wiley & Sons, 1997. This monograph develops a new and original approach to the theory of large deviations that is applicable to key 21<sup>st</sup> century problems, including the design of high-speed communication and computer networks.

## Book on Buddhist Meditation

- My book titled *Blinding Pain, Simple Truth: Changing Your Life Through Buddhist Meditation* was published in 2011. This book describes how Buddhist teachings and daily meditation can empower readers to heal the suffering caused by physical and emotional pain. See [RichardSEllis.com](http://RichardSEllis.com) for detailed information.

## Overview of Publications

- Besides my two research-level monographs, I have published almost 80 papers in mathematics and applications. Online copies of these papers are available at <http://people.math.umass.edu/~rsellis/math-publications.html>. A list of selected publications appears on pages 3–5 of this document.
- I have published 11 articles on the Torah, literature, the Holocaust, and meditation. Online copies of these articles are available at

<http://people.math.umass.edu/~rsellis/judaic-publ.html>. A list of these publications appears on pages 5–6 of this document.

### **Invited Scientific Lectures and Conference Talks**

- I have given more than 100 invited scientific lectures and conference talks in the U.S. and around the world.

### **Research Grants**

- Almost continuous funding from the National Science Foundation 1973–2011.
- Grant from the Department of Energy 1999–2002.

### **Honors and Awards**

- Recipient of 2001–2002 Outstanding Faculty Award for Research in the College of Natural Sciences and Mathematics at the University of Massachusetts Amherst. Quote from citation: “As important and impressive as Richard’s scientific accomplishments are, his intellectual activities extend beyond science. *UMass Magazine* recently highlighted his numerous contributions to the field of Judaic studies.”
- Fellow in the Institute of Mathematical Statistics, May 1999–present. In the words of the award letter, dated May 1, 1999, “Fellowship is a way of honoring outstanding research contributions of our members . . .”
- Lady Davis Fellowship and an appointment as a Visiting Professor in the Faculty of Industrial Engineering and Management at the Technion–Israel Institute of Technology, Haifa, Israel, April–July 1989.
- I gave an invited postgraduate course (Troisième Cycle de la Physique) at Université de Lausanne, Lausanne, Switzerland, June 27–July 15, 1988: “Large Deviations and Applications to Statistical Mechanics” (four lectures of three hours each).
- Lady Davis Fellowship and an appointment as a Visiting Professor in the Department of Mathematics at the Technion–Israel Institute of Technology, Haifa, Israel, January–June 1982.
- Alfred P. Sloan Research Fellow, September 1977–September 1981.
- Broadened Faculty Research Grant, University of Massachusetts, Fall Semester 1976.
- Summa Cum Laude, Harvard University, 1969 (in Mathematics and German Literature).
- Phi Beta Kappa, Harvard University, 1968.

### **Visiting Professorships**

- Department of Mathematics, Technion–Israel Institute of Technology, Haifa, Israel, January–June 1982.
- Department of Statistics and Department of Mathematics, Hebrew University, Jerusalem, Israel, January–June 1986.
- Division of Applied Mathematics, Brown University, Providence, Rhode Island, fall semester 1988 (two days per week).

- Department of Industrial Engineering and Management, Technion–Israel Institute of Technology, Haifa, Israel, April–July 1989.
- Division of Applied Mathematics, Brown University, Providence, Rhode Island, spring semester 1996 (two days per week).

### Further Information

- Further information on my work is available on my personal web page <http://people.math.umass.edu/~rsellis/>.

### Selected Papers in Mathematics

1. Limit Theorems for Model Boltzmann Equations with Several Conserved Quantities (with Mark Pinsky). *Indiana University Mathematics Journal*, Volume 23, Number 4, 287–307 (1973).
2. The Asymptotic Behavior of the First Real Eigenvalue of Second Order Elliptic Operators with a Small Parameter in the Highest Derivatives, II (with Allen Devinatz and Avner Friedman). *Indiana University Mathematics Journal*, Volume 23, Number 11, 991–1011 (1974).
3. The First and Second Fluid Approximations to the Linearized Boltzmann Equation (with Mark Pinsky). *Journal de Mathématiques Pures et Appliquées* 54:125–156 (1975).
4. The Projection of the Navier-Stokes Equations upon the Euler Equations (with Mark Pinsky). *Journal de Mathématiques Pures et Appliquées* 54:157–182 (1975).
5. Necessary and Sufficient Conditions for the GHS Inequality with Applications to Analysis and Probability (with Charles Newman). *Transactions of the American Mathematical Society*, Volume 237, 83–99 (March, 1978).
6. Limit Theorems for Sums of Dependent Random Variables Occurring in Statistical Mechanics (with Charles Newman). *Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete* 44:117–139 (1978).
7. Limit Theorems for Sums of Dependent Random Variables Occurring in Statistical Mechanics, II: Conditioning, Multiple Phases, and Metastability (with Charles Newman and Jay Rosen). *Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete*, Volume 51, Number 2, 153–169 (1980).
8. Asymptotic Expansions of Gaussian Integrals (with Jay Rosen). *Bulletin (New Series) of the American Mathematical Society*, Volume 3, Number 1, 705–709 (1980).
9. Symmetry Breaking and Random Waves for Magnetic Systems on a Circle (with Theodor Eisele). *Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete* 63:297–348 (1983).

10. Large Deviations for a General Class of Random Vectors. *Annals of Probability* 12:1–12 (1984). This paper generalizes a large deviation theorem proved by J. Gärtner, giving a result that is now standard and that is known as the Gärtner-Ellis Theorem. This theorem, one of the fundamental tools in the theory of large deviations, has been applied extensively and has inspired important, new generalizations.
11. Large Deviations for the Empirical Measure of a Markov Chain with an Application to the Multivariate Empirical Measure. *Annals of Probability* 16:1496–1508 (1988).
12. Uniform Large Deviation Property of the Empirical Process of a Markov Chain (with Aaron Wyner). *Annals of Probability*, Volume 17, Number 3, 1147–1151 (1989).
13. Limit Theorems for the Empirical Vector of the Curie-Weiss-Potts Model (with Kongming Wang). *Stochastic Processes and Their Applications*, Volume 35, Number 1, 59–79 (1990).
14. Large Deviations for Markov Processes with Discontinuous Statistics, II: Random Walks (with Paul Dupuis). *Probability Theory and Related Fields* 91:153–194 (1992).
15. The Large Deviation Principle for Measures with Random Weights (with John Gough and Joseph V. Pulé). *Reviews in Mathematical Physics*, Volume 5, Number 4, pages 659–692 (1993).
16. The Large Deviation Principle for a General Class of Queueing Systems, I (with Paul Dupuis). *Transactions of American Mathematical Society*, Volume 347, Number 8, pages 2689–2751 (1995).
17. Large Deviations for Small Noise Diffusions with Discontinuous Statistics (with Michelle Boué and Paul Dupuis). *Probability Theory and Related Fields*, Volume 116, Number 1, pages 125–149 (2000).
18. Derivation of Maximum Entropy Principles in Two-Dimensional Turbulence via Large Deviations (with Christopher Boucher and Bruce Turkington). *Journal of Statistical Physics* 98:1235–1278 (2000).
19. Large Deviation Principles and Complete Equivalence and Nonequivalence Results for Pure and Mixed Ensembles (with Kyle Haven and Bruce Turkington). *Journal of Statistical Physics* 101:999–1064 (2000).
20. Nonequivalent Statistical Mechanical Ensembles and Refined Stability Theorems for Most Probable Flows (with Kyle Haven and Bruce Turkington). *Nonlinearity* 15:239–255 (2002).
21. A Statistical Approach to the Asymptotic Behavior of a Class of Generalized Nonlinear Schrödinger Equations (with Richard Jordan, Peter Otto, and Bruce Turkington). *Communications in Mathematical Physics* 244:187–208 (2004).
22. Analysis of Phase Transitions in the Mean-Field Blume-Emery-Griffiths Model (with Peter Otto and Hugo Touchette). *Annals of Applied Probability*, Volume 15, Number 3, pages 2203–2254 (2005).

23. The Generalized Canonical Ensemble and Its Universal Equivalence with the Microcanonical Ensemble (with Marius Costeniuc, Hugo Touchette, and Bruce Turkington). *Journal of Statistical Physics* 119: 1283–1329 (2005).
24. Multiple Critical Behavior of Probabilistic Limit Theorems in the Neighborhood of a Tricritical Point (with Marius Costeniuc and Peter Otto). *Journal of Statistical Physics*, Volume 127, Number 3, pages 495–552 (2007).
25. Asymptotic Behavior of the Magnetization Near Critical and Tricritical Points via Ginzburg-Landau Polynomials (with Jonathan Machta and Peter Tak-Hun Otto). *Journal of Statistical Physics*, Volume 133, Number 1, pages 101–129 (2008).
26. The Theory of Large Deviations and Applications to Statistical Mechanics. *Long-Range Interacting Systems: Les Houches 2008 Session XC*, pp. 227–277. Edited by T. Dauxois, S. Ruffo, and L. F. Cugliandolo. Oxford University Press (New York), 2010. This article is based on lectures that I gave during Session XC, 4–29 August 2008 at École d'Été de Physique Théorique in Les Houches, France.
27. Asymptotic Behavior of the Finite-Size Magnetization as a Function of the Speed of Approach to Criticality (with Jonathan Machta and Peter Tak-Hun Otto). *Annals of Applied Probability*, Volume 20, Number 6, pages 2118–2161 (2010).
28. Monte Carlo Methods for Rough Free Energy Landscapes: Population Annealing and Parallel Tempering (with Jonathan Machta). *Journal of Statistical Physics*, Volume 144, pages 541–553 (2011).
29. Conditional Gaussian Fluctuations and Refined Asymptotics of the Spin in the Phase-Coexistence Region (with Jingran Li). *Journal of Statistical Physics*, Volume 149, pages 803–830 (2012).
30. Large Deviation Analysis of a Droplet Model Having a Poisson Equilibrium Distribution (with Shlomo Ta'asan). *International Journal of Stochastic Analysis*, Volume 2015 (2015), Article ID 287450, 15 pages, <http://dx.doi.org/10.1155/2015/287450>.
31. Asymptotic Behavior of the Invariant Density of the Random Logistic Model (with Alan Hastings, Jonathan Machta, and Andrew Noble). In preparation (2015).

### Publications on the Torah, Literature, the Holocaust, and Meditation

1. Translation of a stanza of Hermann Hesse's poem Buchstaben. In: Yu. I. Manin, *A Course in Mathematical Logic*, translated by Neal Koblitz (New York: Springer-Verlag, 1977), page 3.
2. Torah Talk: Terumah. *Jewish Weekly News*, January 26, 1995, page 12.
3. The Book of Leviticus and the Fractal Geometry of Torah. *Conservative Judaism*, Volume 50, Number 1, pages 27–34 (1997).

4. "A little East of Jordan": Human-Divine Encounter in Dickinson and the Hebrew Bible. *The Emily Dickinson Journal*, Volume 8, Number 1, pages 36–58 (1999).
5. Human Logic, God's Logic, and the Akedah. *Conservative Judaism*, Volume 52, Number 1, pages 28–32 (1999).
6. A Jew in Rome: Christian Antisemitism and the Holocaust (Part 1). *Midstream*, Volume 47, Number 4, pages 14–16 (2001).
7. A Jew in Rome: Christian Antisemitism and the Holocaust (Part 2). *Midstream*, Volume 47, Number 5, pages 5–7 (2001).
8. "A little East of Jordan": Human-Divine Encounter in Dickinson and the Hebrew Bible. *Emily Dickinson at Home*, edited by Gudrun M. Grabher and Martina Antretter (Trier, Germany: Wissenschaftlicher Verlag Trier, 2001), pages 123–142. Proceedings of the Third International Conference of the Emily Dickinson International Society in South Hadley, Mount Holyoke College, 12–15 August 1999.
9. Images at Work Versus Words at Play: Michelangelo's Art and the Artistry of the Hebrew Bible. *Judaism*, Volume 51, Number 2, 162–174 (2002).
10. *Blinding Pain, Simple Truth: Changing Your Life Through Buddhist Meditation*. Highland City, FL: Rainbow Books, 2011. Detailed information on this book is available at <http://RichardSEllis.com>.
11. Bringing Mindfulness into Higher Education. ACMHE Winter 2013 Newsletter, 13–14. Published online by The Association for Contemplative Mind in Higher Education <<http://people.math.umass.edu/~rsellis/ACMHE-Winter-2013-Newsletter-My-Article.pdf>>.
12. Jewish Journeys: Decoding the Torah's Wisdom Through Buddhist Meditation. Published online by *Jewish Currents* on May 27, 2014 <<http://jewishcurrents.org/jewish-journeys-decoding-torahs-wisdom-buddhist-meditation-29011>>.
13. *Blessings from the Dead*. A novel.