Vita

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Eric S. Key
Professor of Mathematics
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Degrees

BA magna cum laude in mathematics and with distinction in all subjects 1977, MA 1980, PhD 1983, Cornell University.

Employment

University of Wisconsin-Milwaukee. Assistant Professor of Mathematics, 1983-1989. Associate Professor of Mathematics, 1989-2005. Professor of Mathematics, 2005- . Medical College of Wisconsin, Associate Adjunct Professor in Biostatistics, 1995- . Current Positions: University of Wisconsin-Milwaukee, Professor of Mathematics. Medical College of Wisconsin, Associate Adjunct Professor in Biostatistics.

Memberships

Personal Information

Born 22 December, 1954, Hackensack, New Jersey

Teaching Experience

- College Algebra
- Analytic Geometry
- Trigonometry
- Calculus/Precalculus
- Calculus with Physics
- Calculus
- Advanced Calculus
- Real Analysis
- Measure Theory
- Linear Algebra and Differential Equations
- Introductory Abstract Algebra
- Advanced Linear Algebra
- Probability Theory (undergraduate, calculus prerequisite)
- Probability Theory (graduate, measure theory)

- Stochastic Processes (undergraduate, calculus prerequisite)
- Stochastic Processes (graduate, advanced calculus prerequisite)
- Statistics (undergraduate, calculus prerequisite)
- Vector Analysis

PhD Theses Directed

- A. Abeyratne. May, 1991. Limiting Distributions for Multitype Branching Processes with Immigration in a Random Environment.
- S. Karmakar. August 1992. Compositions of Random Mobius Transformations and Their Applications.
- G. Vachadze. May 2003. Finite Mixture Models and Their Applications in Finance.
- J. Wood. May 2012. Modeling Processes with Heavy Tails.

Publications

1. Recurrence and Transience Criteria and a Limit Law for Generalized Random Walk in a Random Environment. PhD thesis, Cornell University, 1983.
2. Recurrence and transience criteria for random walk in a random environment. The Annals of Probability Volume 12, Number 2: 529-560, 1984.
3. Using random matrices to give recurrence and transience criteria for random walk in a random environment. In Richard Durrett, editor, Particle Systems, Random Media and Large Deviations, pages 253-258. Contemporary Mathematics Volume 41, American Mathematical Society, 1985. Revised and reprinted in Joel E. Cohen, Harry Kesten and Charles Newman, Editors, Random Matrices and Their Applications, pages 255-261. Contemporary Mathematics Volume 50, American Mathematical Society, 1986.
4. Limiting distributions and regeneration times for multitype branching processes with immigration in a random environment. The Annals of Probability Volume 15, Number 1: 344-353, 1987.
5. Computable examples of the maximal Lyapunov exponent. Probability Theory and Related Fields 75: 97-107, 1987.
6. Lyapunov exponents for matrices with invariant subspaces. The Annals of Probability Volume 16, Number 4: 1721-1728, 1988.
7. A probabilistic approach to a conjecture of Ramanujan. The Journal of the Ramanujan Mathematical Society, Volume 4, Number 2: 109 - 119, 1989.
8. Lower bounds for the maximal Lyapunov exponent. Journal of Theoretical Probability, Volume 3, Number 3: 477 - 488, 1990.
9. Rare numbers. Journal of Theoretical Probability, Volume 5, Number 2: 375 - 389, 1992.
10. Disks, shells and integrating Inverses. The College Mathemetics Journal, Volume 25, Number 2: 136 - 138, 1994.
11. On entire characteristic functions of order 2. Sankhya, Series A, Volume 56, Part 3: 431 - 437, 1994.

12. Divergence rates for the number of rare numbers. Journal of Theoretical Probability, Volume 9, Number 2: 413 - 428, 1996.

13. Symmetric measure-preserving systems. Real Analysis Exchange, Volume 24, Number 1: 411 - 422, 1998-1999.

14. Some characterizations of the normal distribution. With N. Bansal, J. Behboodian, G. G. Hamedani, H. Volkmer and H. Zhang. Statistics and Probability Letters 42: 393 - 400, 1999

15. Perturbation of orthonormal bases in L^2-Spaces. With X. He and H. Volkmer. Integral Equations and Operator Theory Volume 41, Number 4: 396 - 409 (2001)

16. Eigenvalue multiplicities of products of companion matrices. With H. Volkmer. Electronic Journal of Linear Algebra, Volume 11, pp 103 - 114. 2004.

17. Compositions of random mobius transformations. With S. Karmakar. Stochastic Analysis and Applications, Vol. 22, No. 3 pp 525 - 557. 2004

18. Solution to a functional equation and its application to stable and stable-type distributions. With G. G. Hamedani and H. Volkmer. Statistics and Probability Letters 69, pp 1 - 9. 2004

19. A characterization of discrete uniform distributions based on orderings. Journal of Statistical Theory and Applications 3, No. 1, pp 1 - 4, 2004.

20. A Painless Approach to Least Squares. The College Mathematics Journal 36, No. 1, pp 65 - 67, 2005.

21. On the Number of Records in an IID Discrete Sequence. Journal of Theoretical Probability 18, No. 1, pp 99 - 108, 2005.

22. On Parrondo's paradox: How to construct unfair games by composing fair games. With D. Abbott and M. M. Klosek. ANZIAM Journal 47, pp 495-511, 2006.

23. Differentiating arctangent directly. College Mathematics Journal, Volume 40, Number 4, pp 287-288, 2009.

24. A Note on the spectral radius of a product of companion matrices. With H. Volkmer. Electronic Journal of Linear Algebra. Volume 27. pp 879 - 881. 2014.

25. A recipe for bivariate copulas. Communications in Statistics. To appear. 2015.

Conference Proceedings

1. Development of a targeted engineering application course to improve retention. With Dale N. Buechler, Christopher M. Papadopoulos, and Todd R. Johnson. American Society for Engineering Education ANNUAL CONFERENCE; 112th:; the changing landscape of engineering and technology education in a global world: final conference program & proceedings: June 12-15, 2005.