

**Vita**

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Eric S. Key	Professor Emeritus of Mathematics
Department of Mathematical Sciences	Home Address:
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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, 2005-2016. Professor Emeritus of Mathematics 2016 - Present. Medical College of Wisconsin, Associate Adjunct Professor in Biostatistics, 1995- . Current Positions: Medical College of Wisconsin, Associate Adjunct Professor in Biostatistics.

**Personal Information**

Born 22 December, 1954, Hackensack, New Jersey

**Teaching Experience**

College Algebra	Analytic Geometry
Trigonometry	Calculus with Precalculus
Calculus with Physics	Calculus I, II, III
Advanced Calculus	Real Analysis
Vector Analysis	Complex Analysis
Measure Theory	Linear Algebra and Differential Equations
Advanced Linear Algebra	Introductory Abstract Algebra
Probability Theory (calculus prerequisite)	Probability Theory (measure theory prerequisite)
Stochastic Processes (graduate level)	Stochastic Processes (undergraduate level)
Statistics for High School Teachers	Mathematical Statistics (calculus prerequisite)

**PhD Theses Directed**

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

**Publications**

1. A geometric approach to the natural exponential function. With A. Gasparini and D. Radcliffe. The College Mathematics Journal, 50:5. pp 357 - 363. 2019.

2. A recipe for bivariate copulas. *Communications in Statistics - Theory and Methods*. Volume 45, Issue 21, pp 6416-6420. 2016.
3. 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.
4. Differentiating arctangent directly. *College Mathematics Journal*, Volume 40, Number 4, pp 287-288, 2009.
5. 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.
6. On the number of records in an iid discrete sequence. *Journal of Theoretical Probability* 18, No. 1, pp 99 - 108, 2005.
7. A painless approach to least squares. *The College Mathematics Journal* 36, No. 1, pp 65 - 67, 2005.
8. Eigenvalue multiplicities of products of companion matrices. With H. Volkmer. *Electronic Journal of Linear Algebra*, Volume 11, pp 103 - 114. 2004.
9. Compositions of random mobius transformations. With S. Karmakar. *Stochastic Analysis and Applications*, Vol. 22, No. 3 pp 525 - 557. 2004
10. 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
11. A characterization of discrete uniform distributions based on orderings. *Journal of Statistical Theory and Applications* 3, No. 1, pp 1 - 4, 2004.
12. 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)
13. Some characterizations of the normal distribution. With N. Bansal, J. Behboodan, G. G. Hamedani, H. Volkmer and H. Zhang. *Statistics and Probability Letters* 42: 393 - 400, 1999
14. Symmetric measure-preserving systems. *Real Analysis Exchange*, Volume 24, Number 1: 411 - 422, 1998-1999.
15. Divergence rates for the number of rare numbers. *Journal of Theoretical Probability*, Volume 9, Number 2: 413 - 428, 1996.
16. On entire characteristic functions of order 2. *Sankhya*, Series A, Volume 56, Part 3: 431 - 437, 1994.
17. Disks, shells and integrating inverses. *The College Mathematics Journal*, Volume 25, Number 2: 136 - 138, 1994.
18. Rare numbers. *Journal of Theoretical Probability*, Volume 5, Number 2: 375 - 389, 1992.
19. Lower bounds for the maximal Lyapunov exponent. *Journal of Theoretical Probability*, Volume 3, Number 3: 477 - 488, 1990.
20. A probabilistic approach to a conjecture of Ramanujan. *The Journal of the Ramanujan Mathematical Society*, Volume 4, Number 2: 109 - 119, 1989.
21. Lyapunov exponents for matrices with invariant subspaces. *The Annals of Probability* Volume 16, Number 4: 1721-1728, 1988.

22. Computable examples of the maximal Lyapunov exponent. *Probability Theory and Related Fields* 75: 97-107, 1987.
23. 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.
24. 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.
25. Recurrence and transience criteria for random walk in a random environment. *The Annals of Probability* Volume 12, Number 2: 529-560, 1984.
26. Recurrence and Transience Criteria and a Limit Law for Generalized Random Walk in a Random Environment. PhD thesis, Cornell University, 1983.