Mark Brown

Professor

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Contact Information

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Higher Education

BS, City College, CUNY, June 1964

MS, Stanford University, June 1965

PhD, Stanford University, June 1968

Work Experience

Since January 2014; Professor of Statistics, Columbia University

1979-2013: Professor of Mathematics, City College, CUNY; (Tenured)

Fall 2012 Semester; Visiting Professor, Columbia University

September 2004-December 2013; Adjunct Professor of Statistics, Columbia University

1992-1993: Visiting Professor, Columbia University

1983-1984: Visiting Professor, New York University

1979-1980: Professor, Florida State University; (Tenured)

1973-1979: Associate Professor of Mathematics, City College, CUNY

1978-1979: Visiting Investigator, Sloan-Kettering Cancer Center, under a National Science Foundation Faculty Development Award.

1976, Summer: National Science Foundation Faculty Fellow, IBM Thomas J. Watson Research Laboratory.

1975-1977: Summers: Visiting Associate Professor, Stanford University

1974, Summer: Visiting Associate Professor, George Washington University

1968-1973: Assistant Professor, Cornell University.

Membership in Professional Societies

Institute of Mathematical Statistics

American Statistical Association

Informs

Academic and Professional Honors

Fellow of the IMS, Elected, 1980

Fellow of the ASA, Elected 1975.

National Science Foundation Faculty Development Award, 1977-1979

National Science Foundation Faculty Fellow, IBM, 1976.

Jessie Douglas Award, Department of Mathematics, City College, 1985.

Fellowships, Grants and Contracts

1979-1991: Air Force Office of Scientific Research. Mathematical Reliability Theory. Averaged $50,000 per year.

1992-1994: National Science Foundation. Probability Theory. Averaged $20,000 per year.

1994-2008: National Security Agency. Problem Solving in Probability and Statistics. Averaged $95,000 per year.

From 1968-1973 at Cornell University I had small NSF grants.

Publications

An Invariance Property of Poisson Processes. *Journal of Applied Probability,* **6**,453-458 (1969)

Some Results on a Traffic Model of Renyi. *Journal of Applied Probability,* **6**,293-390, (1969).

Radioactive Growth Decay Data: Analysis by the Method of Least Squares. With S. Yamamoto. *International Journal of Applied Radiation and Isotopes,***20**, 209-222, (1969).

Some Results for Infinite Server Poisson Queues. With S.M.Ross. *Journal of Applied Probability,* **6**, 604-611, (1969).

Multiple Linear Regression Analysis of Scintillation Gamma-Ray Spectra, Theoretical and Practical Considerations. With D.V. Covell and S. Yamamoto. *Nuclear Instruments and Methods,* **80**, 55-60, (1969).

A Property of Poisson Processes and its Application to Macroscopic Equilibrium of Particle Systems. *Annals of Mathematical Statistics,* **41,** 1935-1941, (1970).

Convergence in Distribution of Stochastic Integrals. *Annals of Mathematical Statistics,* **41**, 829-842, (1970).

An M/G/infinity Estimation Problem. *Annals of Mathematical Statistics,* **41**, 651-654, (1970).

Discrimination of Poisson Processes. *Annals of Mathematical Statistics,* **42**, 773-776, (1971).

Low Density traffic Streams. *Advances in Applied Probability,* **4**, 177-192, (1972).

Asymptotic Properties of Cumulative Processes. With S.M.Ross. *Siam Journal of Applied Mathematics,* **22**, 83-105, (1972).

Invariant Traffic Streams. *Cahiers du Centre d'Estudes de Recherche Operationelle, (1972).*

Optimal Evacuation of a Yule Process. With S.M. Ross and R. Shorrock. *Journal of Applied Probability,* **12,** 807-811, (1974).

Some Results for Secondary Processes Generated by a Poisson Process. With H. Solomon. *Stochastic Processes and Their Applications*,**2**, 337-348, (1974).

The First Passage Time Distribution for a Parallel System With Repair. *Reliability and Fault Tree Analysis,* edited by R.E.Barlow, et al, SIAM, 365-396, (1975).

A second Order Approximation for the Variance of a Renewal Reward Process. With H. Solomon. *Stochastic Processes and Their Applications,* **3**, 301-314, (1975).

Estimation of Parameters of Zero-One Processes by Interval Sampling, with H. Solomon and M.A. Stephens. *Operations Research,* **25**, 493-505. (1977).

Estimation of Parameters of Zero-One Processes by Interval Sampling: An Adaptive Strategy. With H. Solomon and M.A. Stephens. *Operations Research,* **27**, 606-615, (1979).

On Combining Pseudo-Random Number Generators. With H. Solomon. *Annals of Statistics,* **3,** 691-695, (1979).

On the Analysis of Repairable Systems. *Modeling and Simulations*, **10,** 551-555, (1979).

Bounds, Inequalities and Monotonicity Properties for Specialized Renewal Processes. *Annals of Probability*, **8**, 227-240, (1980).

Further Monotonicity Properties for Specialized Renewal Processes. *Annals of Probability*,**9**, 891-895, (1981).

Monte-Carlo Simulation of the Renewal Function. With H. Solomon and M.A. Stephens. *Journal of Applied Probability*, **18**, 426-434, (1981).

Imperfect Maintenance. With F. Proschan. *Survival Analysis*, edited by J.Crowley, et al, IMS Monograph Series, Volume II, 179-188, (1982).

Approximating IMRL Distributions by Exponential Distributions with Applications to First Passage Times, *Annals of Probability,***11**, 419-427, (1983).

On the First Passage Time Distribution for a Class of Markov Chains, with N. R. Chaganty, *Annals of Probability*,**11**, 100-1008, (1983).

Imperfect Repair. With F.Proschan. *Journal of Applied Probability,***20**, 851-859, (1983).

On the Choice of Variance for the Log Rank Test. *Biometrika,***71,** 65-74, (1984).

On the Reliability of Repairable Systems. *Operations Research,***32**, 607-615, (1984).

Proximity Between Distributions: An Inequality and its Applications. *Reliabilty Theory and Models.* Academic Press, New York, 267-272, (1984).

Exponential Approximation for Two Classes of Aging Distributions. With G. Ge. *Annals of Probability,***12**, 869-875, (1984).

On the Waiting Time for the First Occurrence of a Pattern. With G.Ge. *Reliability Theory and Models*, Academic Press, New York, 267-272, (1984).

A Measure of Variability Based on the Harmonic Mean and its Use in Approximations. *The Annals of Statistics*, **13**, 1239-1243, (1985).

Inequalities for Distributions with Increasing Failure Rate. *Contributions to the Theory and Application of Statistics*. Academic Press, New York, 3-17, (1987).

Identifying Coefficients in the Spectral Representation for First Passage Time Distributions. With Y. Shao. *Probability in the Engineering and Informational Sciences*, **1**, 69-74, (1987).

On Two Problems Involving Partial Sums. *Probability Theory in the Engineering and Informational Sciences*, **3**, (1989).

Error Bounds for Exponential Approximation of Geometric Convolutions. *Annals of Probability,* **18**, 1388-1402, (1990).

Weighted Sup Norm Inequalities and Their Applications. *Communications in Statistics: Theory and Methods,* **19**, 4061-4082, (1990).

On a Correlation Inequality and its Applications. *Topics in Statistical Dependence*. Edited by H. W. Block, et al, IMS Monograph Series, **16**, 111-120, (1990).

Spectral Analysis Without Eigenvalues for Markov Chains. *Probability in the Engineering Sciences and Informational Sciences,* **5**, 131-144, (1991).

Chi-Square Goodness of Fit: A Failure Rate Perspective. With M.H. Flicker. *Probability in the Engineering and Informational Sciences*, **5**, 273-284, (1991).

Inequalities for Rare Events in Time Reversible Markov Chains, I. With D. J. Aldous. *Stochastic Inequalities*, edited by M. Shaked, et al. IMS Lecture Notes Monograph Series, **22**, 1-16, (1992).

Inequalities for Rare Events in Time Reversible Markov Chains, II. With D. J. Aldous. *Stochastic Processes and their Applications*, **44**, 15-25, (1993).

The Distribution of Total Variation Distance, with Applications to Simultaneous Confidence Intervals. *Computers and Operations Research*, **22**, 373-381, (1995).

Estimation of an Exponential Distribution. *Probability in the Engineering and Informational Sciences*, **11,** 341-360, (1997).

Comparing the Variability of Random Variables and Point Processes. With J. G. Shantikumar. *Probability in the Engineering and Informational Sciences,* **12,** 425-444, (1998).

Some Aspects of Complete Monotonicity in Time Reversible Markov Chains. *Applied Probability and Stochastic Processes,* edited by J. G. Shantikumar, et al., 17-24. Kluwer Academic Publishers, Norwell Ma., (1999).

Interlacing Eigenvalues in Time Reversible Markov Chains. *Mathematics of Operations Research*,**24**, 847-864, (1999).

Variance Estimation for the Normal Distribution under Log Symmetric Loss. *Probability in the Engineering and Informational Sciences*, **15**, 351-368, (2001).

A Useful Isometry for Time Reversible Markov Chains. *Uncertainty and Optimality,* edited by J.C. Misra, World Scientific, New Jersey, (2002).

Exploiting the Waiting Time Paradox: Applications of the Renewal Length transformation. *Probability in the Engineering and Informational Sciences*, **20** , 195-230, (2006).

A Random Permutation Model Arising in Chemistry. With E. Pekoz, and S. M. Ross. *Journal of Applied Probability,* **45**, 1060-1070.

Coupon Collecting. With E.Pekoz and S.M.Ross. *Probability in the Engineering and Informational Sciences*, **22,** 221-229, (2008).

Order Statistics from Dependent Completely Monotone Distributions. *Probability in the Engineering and Informational Sciences*, **23**, 449-455, (2009).

Sharp 2-Sided Bounds for Distributions Under a Hazard Rate Constraint. With J.H.B. Kemperman. *Probability in the Engineering and Informational Sciences*, **23**, (2009).

An Improved LRMC Method for NCAA Basketball Prediction. With Joel Sokol. Journal of Quantitative Analysis in Sports, Volume 6, Issue 3, Article 4, (2010).

Some Results for Skip-Free Random Walk. With E.Pekoz and S.M.Ross. Probability in the Engineering and Informational Sciences, 24, (2010), 1-17.

A New Method for Estimating Threshold Crossing Times with Applications to Reliability. With Victor de la Pena and Tony Sit. Proceedings of the 2011 NY Workshop on Computer, Earth and Space Science; pp8-12, (2011).

Finding Expectations of Monotone Functions of Binary Random Variables by Simulation with Applications to Reliability, Finance, and Round Robin Tournaments, with Erol Pekoz and Sheldon M. Ross. Stochastic Analysis, Stochastic Systems, and Application to Finance. World Press, Singapore, 2011.

Sharp Bounds for NBUE Distributions. Annals of Operations Research, DOI:10.1007/s10479-012-1151-0 (2012).

Insights from the LRMC Method for NCAA Tournament Predictions, with P. Kvam, G. Nemhauser and J. Sokol, Proceedings of the MIT Sloan Sports Analytics Conference, 2012.

On a Balance Scale Problem. Probability in the Engineering and Informational Sciences, 27, 2013, 141-146.

Variance Bounds under a Hazard Rate Constraint. Probability in the Engineering and Informational Sciences, 28, 2014, 203-208.

Sharp Bounds for Exponential Approximations under a Hazard Rate Upper Bound. Journal of Applied Probability, 2015, pp841-850.

From Boundary Crossing of Non-Random Functions to Boundary Crossings of Stochastic Processes, with Victor de la Pena, and Tony Sit. Probability in the Engineering and Informational Sciences, 29, 2015, pp345-359.

Optimality Results for Coupon Collection, with S.M Ross. Journal of Applied Probability, Voluma 53, Issue 2, p 930-937, (2016).

On an Approach to Boundary Crossings by Stochastic Processes, with Michael Klass, Victor de la Pena, and Tony Sit. The Journal of Stochastic Processes and their Applications, 126, Number 2, p 3843-3853, (2016).

Sharp Bounds for Exponential Approximations of NWUE Distributions, with Shaungning Li. Accepted for Publication, Methodology and Computing in Applied Probability.

Taylor's Law, via Ratios, for Some Distributions with Infinite Mean, with Joel E. Cohen and Victor de la Pena. Journal of Applied Probability, 54, 657-669, (2017).

Squared Coefficient of Variation of Taylor's Law for Random Absolute Differences, with Joel Cohen. Accepted for publication, Probability in the Engineering and Informational Sciences.

Professional Activities

Invited seminar speaker at Stanford, UC Berkeley, Carnegie Mellon, Yale, Princeton, Columbia, Cornell, Bell Labs, IBM Research Center, Northwestern University, Syracuse University, University of Pennsylvania, Rutgers, University of Connecticut, Florida International University, University of Illinois at Chicago Circle, University of Rochester, CUNY Graduate Center, Florida State University, Cornell University, National Security Agency, Sloan-Kettering Cancer Center, Cornell University Medical College, Daniel Wagner Associates, Hunter College, University of Southern California, Hong Kong University and other institutions.

In the last 10 years I have given invited talks at conferences in Brest France, Compiegne, France, Chania, Crete,Greece, Santa Fe, NM, Minneapolis, Mn, Storrs, Ct, Rome, Italy, Tallahassee, Fla, Miami, Fla., Boston, Ma, Antalya,Turkey, Toronto, Canada, Prague, Czech Republic, London, England, and Grenoble France. I also have given recent invited seminar talks at USC, Columbia University, CUNY, Hong Kong University, City University, Hong Kong, and Rutgers Business School.

I am an Associate Editor of PEIS, a former Associate Editor of NRLQ, and have and continue to referee numerous journal articles.