

CURRICULUM VITA

Michael Woodroofe

May 2006

Address

Statistics Department
University of Michigan
Ann Arbor Michigan 48103

(734) 763-3495
michaelw@umich.edu
www.stat.lsa.umich.edu/~michaelw/

Education

Ph.D, Mathematics, University of Oregon, 1965
M.S., Mathematics, University of Oregon, 1964
B.S., Mathematics, Stanford University, 1962.

Permanent Employment

L.J. Savage Professor of Mathematics and Statistics, University of Michigan, 1994-
Chair of Statistics, University of Michigan, 1977-1983
Professor of Mathematics and Statistics, University of Michigan, 1973-
Associate Professor of Mathematics and Statistics, University of Michigan, 1969-1973
Assistant Professor of Mathematics, University of Michigan, 1968
Assistant Professor of Statistics, Carnegie-Mellon University, 1966-68

Temporary Employment

Professor II of Statistics, Rutgers University, 1983-84
Visiting Professor of Mathematics, Massachusetts Institute of Technology, 1976-77
Visiting Associate Professor of Statistics, Columbia University, 1970-71
Research Associate, Stanford University, 1965-66

Memberships

Phi Beta Kappa
Institute of Mathematical Statistics (Fellow)
International Statistical Institute.

Activities and Service

Editorial Service

Advisory Editor, *J. Statist. Plan. Inf.*, 1998-
Editor, *Annals of Statistics*, 1992-1994
Associate Editor, *Annals of Statistics*, 1983-1991 & 1998-
Associate Editor, *Annals of Probability*, 1982-1990
Associate Editor, *J. Statist. Plan. Inf.*, 1985-1997
Associate Editor, *Sequential Analysis*, 1982-

Selected Profession Activities

Council, Institute of Mathematical Statistics, 1982-1985 and 2001-2004.
National Security Agency Panel, 2001-2003.
Short course on Isotonic Methods, Case Western Reserve University, May 2001.
External Review Committee for Statistics, Purdue University, Jan.-June, 1994
National Academy of Sciences Workshop on Statistical Issues in Defense Analysis, September 1992.
Advisory Member, National Institute of the Statistical Sciences, 1990-92
Scientific Organizing Committee for *Statistical Challenges in Astronomy*, Penn. State, August, 1990.
NSF Cosmology Panel, Feb.-Mar. 1988.
Program Chair, Tenth Midwest Probability Colloquium, 1987-88.
Principal Lecturer, NSF-CBMS Regional Conference in Statistics, Stillwater OK, June 1980.

Selected University Service

L.S.&A. Divisional Review Committee, 1990-1993
Actuarial Science Search Committee, 1992.
Statistical Instruction Committee, 1978-1983.
Engineering, Mathematics, Statistics Committee, 1978-1982.
Rackham Divisional Board, 1975-1977.
L.S.&A. Curriculum Committee, 1972-1973

Recent Curriculum Development

Philosophy/Statistics 553, Conceptual Foundations of Statistical Inference, 2003. (With Jim Joyce).
Statistics 816, Interdisciplinary Seminar on Statistical Issues in the Physical Sciences, 2003.
Statistics 631, Time Series, 1998.

Research Articles

In Press and Under Review

Law of the iterated logarithm for stationary processes. Submitted to the Annals of Probability. (With Ou Zhao). d

Estimating a Polya frequency function. Submitted to the I.M.S. Monograph Series. (With Mary Meyer and Jayanta Pal).

A non-linear renewal theorem with stationary and slowly changing perturbations. To appear in the I.M.S. Monograph Series. (With Dong Yun Kim).

A restricted minimax determination of the initial sample size in Stein's and related two-stage procedures. To appear in the I.M.S. Monograph Series. (With Joon Sang Lee).

On the distance between cumulative sum diagram and its greatest convex minorant for unequally spaced design points. To appear in the *Scandinavian Journal of Statistics*. (With Jayanta Pal).

Large sample properties of restricted regression estimators with smoothness adjustments. To appear *Statistica Sinica*.

A Kiefer Wolfowitz comparison theorem for Wicksell's problem. Submitted to *Ann Statist*. (With Xiao Wang)

Published Research Articles

Kinematic substructure in the Sextans dwarf spheroidal galaxy. To appear in *Astrophysical Journal*, **642** (2006), L41-L44. (With Matthew Walker, Mario Mateo, Ed Olsszewski, Jayanta Pal, and Bodhisattva Sen).

Internal kinematics of the Fornax Dwarf Spheroidal Galaxy. *The Astrophysical Journal*, ?? (2006), 2114-2139. (With Matthew Walker, Mario Mateo, Ed Olsszewski, Rebecca Bernstein, and Xiao Wang).

Approximate confidence sets for a stationary AR(p) model. *J. Statist. Plan. Inf.*, **136** (2006), 2719-2745. (With Ruby Weng).

Estimating dark matter distributions. *Astrophysical Journal*, **626**, 145-158. (With Xiao Wang, Matthew Walker, Mario Mateo, and Ed Olsszewski).

Admissible minimax prediction of the signal with known background. *Statistica Sinica*, **15**(2005), 59-72. (With Tonglin Zhang).

Martingale approximations for sums of stationary processes. *Ann. Prob.* **32**(2004), 1674-1690. (With Wei Biao Wu).

Shrinkage estimation for convex polyhedra. *Statistics and Probability Letters*, **70**(2004), 87-94. (With Anna Amirdjanova).

Testing for a change in the hazard rate with staggered entry. *Comm. Stat.*, **33**(2004), ... (Special issue for Z. Govindurajulu) (With Dong Yun Kim and Y. Wu).

- Consistent maximum likelihood density estimation using shape restrictions. *The Canadian Journal of Statistics*, **32**(2004), 85 – 100 (With Mary Meyer.)
- Corrected confidence intervals for adaptive non-linear regression models. *J. Statist. Plan. Inf.*, **130** (2004), 63-83. (Special issue in honor of Herman Chernoff.) (With D. S. Coad).
- An asymptotic minimax determination of the initial sample size in a two-stage sequential procedure. IMS Lecture Notes-Monograph Series, **45**(2004), 228-237.
- Non-linear renewal theory with stationary perturbations. *Sequential Analysis*, **22** (2003), 55-74. (With Dong Yun Kim).
- Credible and confidence sets for restricted parameter spaces. *J. Statist. Plan. Inf.*, **115** (2002), 479-490. (With Tonglin Zhang)
- Discussion of “Setting confidence intervals for bounded parameters,” by Mark Mandelkern. *Statistical Science*, **17** (2002), 168-171, (With Tonglin Zhang).
- Credible and confidence sets for the ratio of variance components in the balanced one-way model. *Sanhkya, Series A* (Special issue for D. Basu), **64** (2002), 545-560 (With Tonglin Zhang).
- Sequential confidence intervals for a population size with fixed proportional accuracy. *Sequential Analysis*, **20** (2001), 25-44. (With KiHeon Choi and Ruby Weng)
- Isotonic regression: another look at the change point problem. *Biometrika*, **88** (2001), 793-804. (With Wei Biao Wu and Graciela Mentz)
- Asymptotic analysis of isotonic estimation for grouped data. *J. Statist. Plan. Inf.*, **98** (2001), 107-117. (With Rong Zhang and Jean Kim)
- The problem of low counts in a signal plus noise model. *Annals of Statistics*, **28** (2000), 1561-1569. (With Hsiuying Wang)
- A central limit theorem for iterated random functions. *Journal of Applied Probability*, **37** (2000), 748-755. (With Wei-Biao Wu).
- On Degrees of freedom in shape restricted regression. *Ann. Statist.*, **28** (2000), 1083-1104. (With Mary Meyer)
- Setting confidence belts. *Physical Reviews, D*, **63** (2000), 013009-01 - 013009-09. (With Byron Roe)
- Central limit theorems for additive functionals of Markov Chains. *Ann. Prob.*, **28** (2000), 713-724. (With Michael Maxwell)
- Integrable expansions for posterior distributions for multiparameter exponential families with applications to sequential confidence levels. *Statistica Sinica*, **10** (2000), 693-713. (With Ruby Weng)
- Discussion of “Hybrid Methods for Confidence Intervals,” by C.S. Chuang and T.L. Lai. *Statistica Sinica*, **10** (2000), 33-37. (With Ruby Weng)
- Improved probability method for estimating signal in the presence of background. *Physical Reviews, Series D*, **60**(1999), 053009. (With Byron Roe)
- Isotonic estimation for grouped data. *Statistics and Probability Letters*, **45** (1999), 41-47. (With Rong Zhang)
- Testing uniformity vs. a non-increasing density. *Ann. Statist.*, **27** (1999), 338-360. (With Jiayang Sun).
- Corrected confidence sets for sequentially designed experiments, II: Examples. In *Multivariate Design and Sampling* (Subir Ghosh, ed.), 135-162. (With Steve Coad)
- Approximate bias calculations for sequentially designed experiments. *Sequential Analysis*, **17** (1998), 1-32. (With Steve Coad)
- Approximate confidence intervals after a sequential clinical trial comparing two exponential survival curves. *J. Statist. Plan. Inf.*, **63** (1997), 79-96. (With Steve Coad)
- Semi-parametric estimates under biased sampling. *Statistica Sinica*, **7** (1997), 545-574. (With Jiayang Sun)
- Local limit theorems for hidden Markov chains. *Statistics and Probability Letters*, **32** (1997), 125-131. (With Michael Maxwell)

- Corrected confidence sets for sequentially designed experiments. *Statistica Sinica*, **7** (1997), 53-74. (With Steve Coad)
- Corrected confidence intervals for censored sequential survival data. *Biometrika*, **83** (1996), 763-777. (With Steve Coad)
- Nonparametric estimation and consistency for renewal processes. *J. Statist. Plan. Inf.*, **53** (1996), 171-195. (With G. Soon)
- Adaptive smoothing for a penalized NPMLE of a non-increasing density. *J. Statist. Plan. Inf.*, **52** (1996), 143-160. (With J. Sun)
- A uniform renewal theorem. *Sequential Analysis*, **15** (1996), 21-36, (With Mei Wang).
- A non-linear parking problem. *Sequential Analysis*, **14** (1995), 247-272. (With R. Keener and H.R. Lerche)
- Central limit theorems for doubly adaptive biased coin designs. *Ann. Statist.*, **23** (1995), 234-254. (With J. Eisele)
- Isotonic smoothing splines under sequential designs. *J. Statist. Plan. Inf.*, **38**, 75-88. (With Chim Tantiyaswadikul)
- A penalized maximum likelihood estimate of $f(0+)$ when f is non-increasing, *Statistica Sinica*, **3** (1993), 505-515. (With Jiayang Sun)
- Expansions for the moments of randomly stopped averages. *Ann. Statist.*, **21** (1993), 503-519. (With G. Aras)
- A generalized parking problem. In *Proceedings of the Fifth Purdue Symposium*, (1993), 523-533. (With Bob Keener and H.R. Lerche)
- Estimation following sequential testing: a simple approach for a truncated S.P.R.T., *Biometrika*, **79** (1992), 347-353.
- A central limit theorem for functions of a Markov chain with applications to shifts. *Stoch. Proc. Appl.*, **41** (1992), 33-44.
- Corrected confidence intervals for adaptively designed experiments. *Amer. J. of Math. and Manag. Sci.* (Special Issue in honor of Herbert Robbins)
- Integrable expansions for posterior distributions for one parameter exponential families, *Statistica Sinica*, **2** (1991), 91-112.
- Minimax estimation in non-parametric regression, *Ann. Statist.*, **19** (1991), 2003-2014. (With Nancy Heckman)
- On stopping times and stochastics monotonicity. *Sequential Analysis*, **9** (1991), 335-342.
- Discussion of "Luminosity Function of Flux Limited Samples," by V. Petrosian. In *Statistical Challenges in Modern Astronomy* (J. Babu and E. Feigelson, eds., 1991), 196-200.
- Discussion of "Eddington-Malmquist bias, streaming motions, and the distribution of galaxies," by D. Lynden-Bell. In *Statistical Challenges in Modern Astronomy* (J. Babu and E. Feigelson, eds., 1991), 217-220.
- On the non-linear renewal theorem, *Ann. Prob.*, **18** (1990), 1790-1805.
- Estimation with ethical costs. *Ann. Statist.*, **18** (1990), 1358-1377. (With J. Hardwick)
- Local limit theorems for sums of dependent random variables. *Statistics and Probability Letters*, **9** (1990). (With Mei Wang)
- Very weak expansions for sequentially designed experiments: linear models, *Ann. Statist.*, **17** (1989), 1087-1102.
- Fixed proportional accuracy in three stages. *Proc. Fourth Purdue Symposium*, **2** (1988), 209-222.
- Singh's theorem in the discrete case. *Statistics and Probability Letters*, **7** (1988), 201-205. (With M. Jhun)
- Asymptotic expansions for first passage times. *Stoch. Proc. Appl.*, **28**, 310-315.

Asymptotic expansions in boundary crossing problems. *Ann. Prob.*, **15** (1987), 102-114. (With Bob Keener)

Sequential confidence intervals with fixed proportional accuracy. *J. Statist. Plan. and Inf.*, **15** (1987), 131-146.

Asymptotically optimal sequential point estimation in three stages. In *New Perspectives in Theoretical and Applied Statistics* (M.L. Puri, ed., 1987), 397-411.

Very weak expansions for sequential confidence levels. *Ann. Statist.*, **14** (1986), 1049-1067.

Asymptotic optimality in sequential interval estimation. *Adv. Appl. Math.*, **7**, 70-79.

Estimating a distribution function with truncated data, *Ann. Statist.*, **13** (1985), 163-177. Correction: *Ann. Statist.*, **15**, 883.

Asymptotic local minimaxity in sequential estimation. *Ann. Statist.*, **13** (1985), 676-688. Correction: *Ann. Statist.*, **17**, 452.

Likelihood ratio tests with ranks. *Sankhya, Ser. A*, **45** (1984), 233-252.

The Cramer-Rao Inequality holds almost everywhere. In *Recent Advances in Statistics* (The Chernoff Festschrift, 1983), 69-92. (With G. Simons)

On sequential rank tests. In *Recent Advances in Statistics* (The Chernoff Festschrift, 1983), 115-140.

Empirical Bayes estimation of a normal mean with convex loss. *Proc. Third Purdue Symposium* (1982), 465-484.

On the expansion of expected sample size in non-linear renewal theory. *Ann. Prob.*, **10** (1982), 844-848.

Asymptotic expansions for the error probabilities of some repeated significance tests. *Ann. Statist.*, **10** (1982), 895-908. (With H. Takahashi)

Model selection and the generalized arc sine laws. *Ann. Statist.*, **10** (1982), 1182-1194.

Sequential allocation with covariates. *Sankhya, Ser. A*, **44**, 403-414.

Convergence to a stable distribution: a new approach. *Ann. Prob.*, **9** (1981), 624-632. (With R. Lepage and J. Zinn)

Asymptotic expansions in non-linear renewal theory. *Comm. Stat.*, **A13** (Special Issue on Sequential Analysis, 1981), 2113-2136. (With H. Takahashi)

A.P.O. rules are asymptotically non-deficient for estimation with squared error loss. *Zeit. Wahr. ver. Geb.*, **58** (1981), 331-341.

On the Bayes risk incurred by using asymptotic shapes. *Comm. Stat.*, **A12** (Special Issue on Sequential Analysis, 1980), 1727-1748.

Repeated likelihood ratio tests. *Biometrika*, **66** (1979), 454-463.

A one-armed bandit problem with a concomitant variable. *J. Amer. Statist. Assn.*, **74** (1979), 799-805.

Large deviations of the likelihood ratio statistic with applications to sequential testing. *Ann. Statist.*, **6** (1978), 72-84.

Second order approximations for sequential point and interval estimation. *Ann. Statist.*, **5** (1977), 984-995.

On the one-armed bandit problem. *Sankhya, Ser. A*, **38** (1976), 79-91.

A renewal theorem for curved boundaries and moments of first passage times. *Ann. Prob.*, **63** (1976), 67-80.

Frequentist properties of Bayesian sequential tests. *Biometrika*, **63** (1976), 101-110.

Estimating a mean from delayed observations. *Zeit. Wahr. ver. Geb.*, **35** (1976), 103-113.

Stronger forms of Zipf's Law. *J. Amer. Statist. Assn.*, **70** (1975), 212-219. (With Bruce Hill)

On Zipf's Law. *J. Appl. Prob.*, **12** (1975), 425-435. (With Bruce Hill)

Maximum likelihood estimation of a translation parameter of a truncated distribution II. *Ann. Statist.*, **2** (1974), 474-488.

- On large sample ranking and selection. *Sankhya, Ser. B*, **36** (1974), 400-405. (With Norman Starr)
- Normal approximation and large deviations of the Robbins-Munro process. *Zeit. Wahr. ver. Geb.*, **21** (1972), 329-338.
- A Cramer-von Mises type statistic for testing symmetry. *Ann. Math. Statist.*, **43** (1972), 2035-2038. (With Ed Rothman)
- Further remarks on sequential point estimation: the exponential case. *Ann. Math. Statist.*, **43** (1972), 1147-1154. (With Norman Starr).
- Maximum likelihood estimation of a translation parameter of a truncated distribution. *Ann. Math. Statist.*, **43** (1972), 113-122.
- On the first time $|S_n| > c\sqrt{n}$. *Ann. Math. Statist.*, **41** (1970), 2179-2183.
- On choosing a delta-sequence. *Ann. Math. Statist.*, **41** (1970), 1665-1671.
- Some non-parametric tests for stochastic processes. In *Non-parametric Techniques in Statistical Inference* (M.L. Puri, ed., 1970), 215-258. (With C.B. Bell and T.V. Avadhani)
- Discussion of M. Rosenblatt's paper. In *Non-parametric techniques in statistical inference* (M.L. Puri, ed., 1970), 211-213.
- [7] Remarks on sequential point estimation. *Proc. Nat. Acad. Sci.*, **63** (1969), 285-288. (With Norman Starr)
- [6] Consistent estimates of the parameters of a linear system. *Ann. Math. Statist.*, **40** (1969), 2064-2075. (With W. Anderson, B. Kleindorfer, and P. Kleindorfer)
- [5] On the weak convergence of stochastic processes without discontinuities of the second kind. *Zeit. Wahr. ver. Geb.*, **11**, 18-25.
- [4] Remarks on a stopping time. *Proc. Nat. Acad. Sci.*, **61** (1968), 1215-1218. (With Norman Starr)
- [3] On the maximum deviation of sample spectral densities. *Ann. Math. Statist.*, **38** (1967), 1558-1569. (With John Van Ness)
- [2] On the maximum deviation of the sample density. *Ann. Math. Statist.*, **38** (1967), 475-481.
- [1] Statistical properties of the number of positive sums. *Ann. Math. Statist.*, **37** (1966), 1295-1304.

Books and Monographs

- Probability with Applications*. Mc Graw Hill, 1974.
- Non-linear renewal theory in sequential analysis*. S.I.A.M., 1982.

Expository Articles and Book Reviews

- Discussion of "Sequential Analysis" by T.L. Lai. *Statistica Sinica*, **11** (2001), 380-382.
- Local limit theorems. *Encyclopedia of Statistical Sciences, Update*, **2**, 363-367.
- The role of renewal theory in sequential analysis. *The Handbook of Sequential Analysis*. (B.K. Ghosh and P.K. Sen, eds., 1988).
- Non-linear renewal theory. *Encyclopedia of Statistical Science*, **6** (N.L. Johnson and S. Kotz, eds), 312-314.
- Repeated significance tests. *Encyclopedia of Statistical Science*, **7** (N.L. Johnson and S. Kotz, eds),
- Review of *Sequential Analysis*, by David Siegmund. *J. Amer. Statist. Assn.*
- Review of *Approximate Computation of Expectations*, by Charles Stein. *Mathematical Reviews*
- Discussion of paper [16]. In *Jack Carl Kiefer: Collected Papers, Supp.*, (L. Brown and J. Sacks, eds.)

Conference Reports

- Statistical issues for the Mini-BooNe experiment. *Proc. Durham Conf. on High Energy Physics*. (2002) (With Byron Roe)

A radial velocity dispersion profile for the Fornax dwarf galaxy. To appear in the *ASP Conference Series* (With Matt Walker, Mario Mateo, E. Olszewski, Xiao Wang, and J. Joyce).

Former Doctoral Students

Dong Yun Kim. *Sequential Tests and Change Point Problems with Staggered Entry*. The University of Michigan, 2003.

Tonglin Zhang. *Problems in Restricted Parameter Spaces*. The University of Michigan, 2002.

Mark Stuff. *Derivation and Estimation of Euclidean Invariants of Far Field Range Data*. The University of Michigan, 2002. (With Bob Keener)

Wei Biao Wu. *Studies in Time Series and Random Dynamics*. The University of Michigan, 2001.

Rong Zhang. *Isotonic Density Estimation with Smoothing*, The University of Michigan, 2000.

Chui-Hsing Weng. *Very Weak Expansions for Sequentially Designed Experiments*, The University of Michigan, 1999.

Mike Maxwell. *Local and Global Central Limit Theorems for Stationary Ergodic Sequences*, The University of Michigan (Mathematics), 1997.

Mary Meyer. *Shape Restricted Inference with Applications to Nonparametric Regression, Smooth Nonparametric Function Estimation, and Density Estimation*, The University of Michigan, 1996.

Guoxing Soon. *Large Sample Theory of Empirical Distributions in a Windows Censoring Model for Renewal Processes*, 1995.

Mauro Gasparini, *Bayes Nonparametrics for Biased Sampling and Density Estimation*, The University of Michigan, 1992.

Kaithong Jiang, *Tests of Independence and Confidence intervals for Truncated Data*, The University of Michigan, 1992 (Biostatistics).

Chim Tantiyaswasdikul. *Isotonic Regression under Sequential Designs*. The University of Michigan, 1992.

Jeffrey Eisele. *The Doubly Adaptive Biased Coin Design*. The University of Michigan, 1991.

Vince Melfi. *Nonlinear Markov Renewal Theory with Applications to Sequential Analysis*. The University of Michigan, 1991.

Mei Wang. *Local Limit Theorems and Occupation Times for Perturbed Random Walks*. The University of Michigan (Mathematics), 1990.

Jyoti Sarkar. *Bandit Problems with Covariates: Sequential Allocation of Experiments*. The University of Michigan, 1990.

Ki-Heon Choi. *An Adaptive Sequential Probability Ratio Test for Autoregressive Process*. The University of Michigan, 1988.

Taoufik Zoubedi. *Bounded Deficiency in the Comparison of the Means of Two Normal Populations*. The University of Michigan, 1988. (With Bob Keener.)

Kamel Rekab. *Asymptotic Efficiency in Sequential Designs for Estimation*. The University of Michigan, 1988. (With Bob Keener.)

Mohamed Tahir. *Asymptotically Optimal Bayesian and Minimax Sequential Estimation*. The University of Michigan, 1987.

Abdelhakim Meslem. *Asymptotic Expansions for Confidence Intervals with Fixed Proportional Accuracy*. The University of Michigan, 1987.

Djamel Bellout. *Order Restricted Inference of a Distribution with Censored Data and Application to a Stopping Problem*. The University of Michigan, 1987.

Martha Aliaga. *A Problem in Sequential Analysis*. The University of Michigan, 1986.

Mohammed Daghel. *Asymptotic Minimax Point Estimation with Compact Parameter Space*. The University of Michigan, 1984.

- David Bednarz. *Open Ended Tests of Composite Hypotheses*. The University of Michigan, 1984. (With Bob Keener.)
- Mohammed Rehalia. *Asymptotic Expansions for Posterior Moments*. The University of Michigan, 1983.
- Vincent Tsang. *Density Estimation with Censored Data*. The University of Michigan, 1983.
- Nancy Heckman. *Two Treatment Comparisons with Random Allocation Rules*. The University of Michigan (Mathematics), 1982.
- Charles Hagwood. *A Non-Linear Renewal Theorem for Discrete Random Variables*. The University of Michigan (Mathematics), 1979.
- Shelley Bartold. *Bayesian Sequential Estimation*. The University of Michigan, 1976.
- Lih Wen Huang. *Asymptotic Distribution and Application of the Maximum Likelihood Estimator in the Independent, Non-Identically Distributed Case*. The University of Michigan, 1976.
- Mark Finster. *Optimal Stopping for Stationary Processes*. The University of Michigan (Mathematics), 1976.
- Ray Faith. *Bayesian Credible Sets for the Mean of Multivariate Normal Distribution*. The University of Michigan, 1975. (With Richard Olshen.)
- Robert Fortus. *Approximations to Bayesian Sequential Tests of Composite Hypotheses*. The University of Michigan, 1975.
- Howard Fetell. *Maximum Likelihood Estimation with Censored Data in a Non-Regular Case*. The University of Michigan, 1973.
- Connie Page. *Bayesian Classification*. The University of Michigan, 1972.
- Mayer Alvo. *Bayesian Sequential Estimates*. Columbia University, 1972.
- Allen Foy. *Expectations of a Stopping Time for Random Sums with Non-Zero Mean*. The University of Michigan (Mathematics), 1971.

Current Doctoral Students: Joon Sang Lee, Jayanta Pal, Bodhisattva Sen, Xiao Wang, and Ou Zhao.

Research Grants

- 2004-2007, National Science Foundation. *Inference For Restricted Parameters*, project director, \$287,000
- 2002-2005, U.S. Army Research Office. *Topics in Sequential and Related Methods*, project director, \$100,000.
- 2002-2005, Rackham Graduate School (Interdisciplinary Grant). *Dark Matter and the formation of galaxies*; principal investigator, \$250,000. (With James Joyce and Mario Mateo).
- 2001-2004, National Science Foundation. *Limit Theorems and Statistical Inference for Ergodic Processes*; project director, \$240,000.
- 1998-2001, U.S. Army – *Adaptive Design of Experiments and Markovian Models*; project director, \$169,500.
- 1998-2000, National Security Agency. *Adaptive Designs, Biased Samples, and The Central Limit Theorem*. Project director, \$55,000.
- 1996-1999, N.S.F. – *Biased Sampling and Confidence*; project director, project director, \$189,000. (With J. Sun)
- 1995-1997, N.S.F. – *Biased Sampling, Bump Hunting, and Confidence*; project director, \$60,000. (With Jiayang Sun)
- 1992-1996, N.S.F. – *Nonparametric Inference and Sequential Design*; project director, \$215,000. (With Jiayang Sun)
- 1989-1992, N.S.F. – *Stopping and Allocation*; project director, \$250,000. (With Bob Keener)
- 1988-1991, U.S. Army – *Sequentially Designed Experiments*.
- 1984-1989, N.S.F. – *Estimation in Large Samples*. (Special two-year creativity extension.)

1984-1987, U.S. Army – *Estimation in Large Samples*.
 1981-1984, N.S.F. – *Large Sample Approximations in the Sequential Design of Experiments*.
 1978-1981, N.S.F. – *Sequential Allocation with Covariates*. (With Norm Starr.)
 1975-1977, U.S. Army – *Statistical Inference with Delayed Data*. (With Norm Starr.)
 1974-1976. N.I.H. – *Topics in Sequential Medical Trials*. (With Norm Starr.)
 1973-1974, N.S.F. – *Stopping and Inference Based on Failure Times*. (With Norm Starr.)
 1969-1971, N.S.F. – *Statistical Inference and Control*. (With C. B. Bell and Norm Starr.)

Invited Talks, 2000-

The unified method with nuisance parameters. Samsi, March 2006.
 Estimating a Polya frequency function. Auburn, December 2005.
 A restricted minimax determination of the initial sample size in Stein's and related tow-stage procedure, Case Western, November 2005.
 A restricted minimax determination of the initial sample size in Stein's and related tow-stage procedure, Rutgers, October, 2005.
 A Kiefer Wolfowitz comparison theorem for Wicksell's Problem. Ann Arbor, September 2005.
 "Estimating Dark Matter Distributions." Beijing, July 2005.
 "Estimating Dark Matter Distributions." Saskatoon, June 2005. Annual meeting of the Canadian Statistical Society.
 "Estimating Dark Matter Distributions." Stanford University, May 2005.
 "The Central Limit Question for a Stationary Process." Stanford University, May 2005.
 "Estimating Dark Matter Distributions." The University at Dallas, April 2005. (Plenary talk).
 "Estimating Dark Matter Distributions." Purdue University, April 2005.
 "Estimating Dark Matter Distributions." Cornell University, March 2005.
 "The Central Limit Question for a Stationary Process." University of Delaware, Dec. 2004.
 "The Central Limit Question for a Stationary Process." University of Georgia, May 2004. Invited talk for the Indian Statistical Association.
 "Inference with a restricted parameter space." Rutgers University, March 2004.
 "Inference with a restricted parameter space." Michigan State University, October 2003.
 "Shrinkage estimation for shape restricted regression." Purdue Symposium, July 2003.
 "Estimating a unimodal density." Annual Meeting of the Canadian Statistical Society, June 2003.
 "Sequentially designed experiments and confidence intervals." Harvard University, June 2003.
 "Estimating a unimodal density, "Workshop on "Challenges in Mixture Models, Bump Hunting, and Measurement Error Models," Case Western Reserve University, June 2002.
 "Inference with a restricted parameter space," The University of Chicago, February 2002.
 "Inference with a restricted parameter space," The University of Michigan, January 2002.
 "Isotonic regression: another look at the change point problem," John Hopkins University, March 2001.
 "Isotonic regression: another look at the change point problem," The University of Turin, February 2001.
 "Isotonic regression: another look at the change point problem," The University of Georgia, November 2000.
 "Inference in the presence of a monotone bias," ICSA Symposium on Applied Statistics, Piscataway NJ, June 2000.
 "A central limit theorem for additive functionals of Markov Chains," Purdue University, May 2000

“A central limit theorem for additive functionals of Markov Chains,” Michigan State University, April 2000

“On the Problem of Low Counts in a Signal Plus Noise Model.” Invited talk at the CERN Workshop on Confidence Limits, January 2000.