

Roger L. Berger

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University Address

Department of Statistics, Box 8203
North Carolina State University
Raleigh, NC 27695-8203

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Degrees

1977 Ph.D. in Statistics, Purdue University
1975 M.S. in Statistics, Purdue University
1973 B.A. in Mathematics, University of Kansas

Experience

July 1990 – present Professor at North Carolina State University
Department of Statistics
July 1993 – Dec 1993 Senior Fellow at National Institute of Statistical Sciences
July 1983 – June 1990 Associate Professor at North Carolina State University
Department of Statistics
Aug 1982 – June 1983 Visiting Associate Professor at North Carolina State University
Department of Statistics
Aug 1982 – June 1983 Associate Professor at Florida State University
Department of Statistics (on leave)
Sept 1977 – Aug 1982 Assistant Professor at Florida State University
Department of Statistics
Nov 1975 – June 1976 Computer programmer at Purdue University Computation Center
Sept 1975 – Sept 1977 Teaching and Research Assistant at Purdue University

Honors and awards

1999 Elected Fellow of the American Statistical Association
1993 Delta Zeta Professor Recognition honoree
1991 Elected Fellow of the Institute of Mathematical Statistics
1982 Frank Wilcoxon Prize, awarded by ASQC for best applications paper
in *Technometrics*
1979 Elected to Sigma Xi
1977 Irving Burr Award, Purdue University
1973 – 1975 Purdue University Fellowship
1973 Graduated summa cum laude, University of Kansas
1972 Elected to Phi Beta Kappa
1969 – 1973 Summerfield Scholar, University of Kansas

Professional societies

American Statistical Association
Institute of Mathematical Statistics
Eastern North American Region of the
International Biometric Society
Phi Beta Kappa
Sigma Xi

Publications

- Casella, George, and Berger, Roger L. (2002). *Statistical Inference, Second Edition*. Duxbury Press, Belmont, CA.
- Casella, George, Berger, Roger L., and Santana, Damaris (2002). *Solutions Manual on CD-ROM for Casella and Berger's Statistical Inference, Second Edition*. Duxbury Press, Belmont, CA.
- Saikali, Khalil G., and Berger, Roger L. (2002). "More powerful tests for the sign testing problem." *Journal of Statistical Planning and Inference*, to appear.
- Berger, Roger L., and Sidik, Kurex (2001). "Exact unconditional tests for a 2×2 matched-pairs design." Institute of Statistics Mimeo Series No. 2535. Submitted.
- Shear, Theodore H., Berger, Roger L., Vepraskas, Michael J., and Fontaine, Julie E. (2001). "Use of equivalence testing to evaluate a created wetland soil." Technical report. Submitted.
- Casella, George, and Berger, Roger L. (2001). "Estimation: point and interval." *International Encyclopedia of the Social and Behavioral Sciences*, **7**, 4744–4749.
- Casella, George, and Berger, Roger L. (2001). "Hypothesis testing in statistics." *International Encyclopedia of the Social and Behavioral Sciences*, **10**, 7118–7121.
- Berger, Roger L., and Doi, Jimmy (2001). "Letter to the Editor" on "Letter to the Editor" by Lehr (2000, *The American Statistician*). *The American Statistician*, **55**, 373–374.
- Berger, Roger L., and Coutant, Basil W. (2001). "Letter to the Editor" on "Small-sample interval estimation of Bernoulli and Poisson parameters" by Wardell (1997, *The American Statistician*). *The American Statistician*, **55**, 85.
- Berger, Roger L. (1999). "Comment on 'The emperor's new tests' by Perlman and Wu." *Statistical Science*, **14**, 370–373.
- Hsu, Jason C., and Berger, Roger L. (1999). "Stepwise confidence intervals without multiplicity adjustment for dose response and toxicity studies." *Journal of the American Statistical Association*, **94**, 468–482.
- Berger, Roger L., and Boos, Dennis D. (1999). "Confidence limits for the onset and duration of treatment effect." *Biometrical Journal*, **41**, 517–531.
- Sierra-Cavazos, Jorge H., and Berger, Roger L. (1999). "Intersection-union tests in dissolution profile testing." Institute of Statistics Mimeo Series No. 2521.
- Berger, Roger L. (1998). "Using computer algebra systems to teach graduate mathematical statistics: Potential and pitfalls." *Statistical Education - Expanding the Network: Proceedings of the Fifth International Conference on Teaching of Statistics*, L. Pereira-Mendoza et al., eds. International Statistical Institute, Voorburg, Netherlands. Volume 1, 189–195.
- Kopit, Justin S., and Berger, Roger L. (1998). "A more powerful exact test for a practical difference between binomial proportions." *Proceedings of the Biopharmaceutical Section of the American Statistical Association*, 251–256.
- Berger, Roger L. (1997). "Likelihood ratio tests and intersection-union tests." *Advances in Statistical Decision Theory*, S. Panchapakesan and N. Balakrishnan, eds. Birkhäuser, Boston. 225–237.

Publications (continued)

- Berger, Roger L., and Hsu, Jason C. (1996). "Bioequivalence trials, intersection-union tests, and equivalence confidence sets," with discussion. *Statistical Science*, **11**, 283–319.
- Berger, Roger L. (1996). "More powerful tests from confidence interval p values." *The American Statistician*, **50**, 314–318.
- Liu, Huimei, and Berger, Roger L. (1995). "Uniformly more powerful, one-sided tests for hypotheses about linear inequalities." *Annals of Statistics*, **23**, 55–72.
- Berger, Roger L. (1994). "Power comparison of exact unconditional tests for comparing two binomial proportions." Institute of Statistics Mimeo Series No. 2266.
- Casella, George, and Berger, Roger L. (1994). "Estimation with selected binomial information or do you really believe that Dave Winfield is batting .471?" *Journal of the American Statistical Association*, **89**, 1080–1090.
- Berger, Roger L., and Boos, Dennis D. (1994). "P values maximized over a confidence set for the nuisance parameter." *Journal of the American Statistical Association*, **89**, 1012–1016.
- Berger, Roger L. (1994). "Letter to the Editor" on "Exact power of conditional and unconditional tests: going beyond the 2X2 table" by Mehta and Hilton (1993, *The American Statistician*). *The American Statistician*, **48**, 175.
- Berger, Roger L., and Boos, Dennis D. (1994), "Letter to the Editor" on "The difference between two normal means" by Sprott and Farewell (1993, *The American Statistician*). *The American Statistician*, **48**, 268.
- Casella, George, and Berger, Roger L. (1993). *Solutions Manual for Statistical Inference*. Duxbury Press, Belmont, CA.
- Berger, Roger L. (1993). "Studies of Air Pollution and the Weather at the National Institute of Statistical Sciences." Technical Report, National Institute of Statistical Sciences, Research Triangle Park, NC.
- Berger, Roger L., and Casella, George (1992). "Deriving generalized means as least squares and maximum likelihood estimates." *The American Statistician*, **46**, 279–282.
- Berger, Roger L. (1991). "A remark on algorithm AS 152: Cumulative hypergeometric probabilities." *Journal of the Royal Statistical Society, Series C*, **40**, 374–375.
- Casella, George, and Berger, Roger L. (1990). *Statistical Inference*. Duxbury Press, Belmont, CA.
- Berger, Roger L. (1989). "Uniformly more powerful tests for hypotheses concerning linear inequalities and normal means." *Journal of the American Statistical Association*, **84**, 192–199.
- Berger, Roger L. (1988). "A nonparametric, intersection-union test for stochastic order." *Statistical Decision Theory and Related Topics IV*, S. S. Gupta and J. O. Berger, eds. Springer-Verlag, New York. Volume 2, 253–264.
- Berger, Roger L., Boos, Dennis D., and Guess, Frank M. (1988). "Tests and confidence sets for comparing two mean residual life functions." *Biometrics*, **44**, 103–115.

Publications (continued)

- Casella, George, and Berger, Roger L. (1987). "Comment on 'Testing precise hypotheses' by Berger and Delampady." *Statistical Science*, **2**, 344–347.
- Casella, George, and Berger, Roger L. (1987). "Reconciling Bayesian and Frequentist evidence in the one-sided testing problem," with discussion. *Journal of the American Statistical Association*, **82**, 106–111.
- Berger, Roger L., and Kim, Jee Soo (1985). "Ranking and subset selection procedures for exponential populations with type-I and type-II censored data." *The Frontiers of Modern Statistical Inference Procedures*, E. J. Dudewicz, ed. American Sciences Press, Columbus. 425–455.
- Berger, Roger L. (1984). "Testing whether one regression function is larger than another." *Communications in Statistics – Theory and Methods*, **13**, 1793–1810.
- Berger, Roger L., and Langberg, Naftali A. (1984). "Linear least squares estimates and nonlinear means." *Journal of Statistical Planning and Inference*, **10**, 277–288.
- Berger, Roger L. (1984). "Testing for the same ordering in several groups of means." *Design of Experiments: Ranking and Selection*, T. S. Santner and A. C. Tamhane, eds. Marcel Dekker, New York. 241–249.
- Berger, Roger L., and Proschan, Frank (1984). "Applications of a unified theory of monotonicity in selection problems." *Inequalities in Statistics and Probability*, Y. L. Tong, ed. Institute of Mathematical Statistics, Hayward, CA. 199–205.
- Berger, Roger L., and Proschan, Frank (1984). "Monotonicity in selection problems: a unified approach." *Annals of Statistics*, **12**, 387–391.
- Berger, Roger L., and Sinclair, Dennis F. (1984). "Testing hypotheses concerning unions of linear subspaces." *Journal of the American Statistical Association*, **79**, 158–163.
- Berger, Roger L. (1982). "Multiparameter hypothesis testing and acceptance sampling." *Technometrics*, **24**, 295–300.
- Berger, Roger L. (1982). "A minimax and admissible subset selection rule for the least probable multinomial cell." *Statistical Decision Theory and Related Topics III*, S. S. Gupta and J. O. Berger, eds. Academic Press, New York. Volume 1, 143–156.
- Berger, Roger L. (1981). "A necessary and sufficient condition for reaching a consensus using DeGroot's method." *Journal of the American Statistical Association*, **76**, 415–418.
- Berger, Roger L. (1981). "Selecting all treatments better than a control using existing tables." *Communications in Statistics – Theory and Methods*, **A10**, 2025–2037.
- Berger, Roger L. (1980). "Minimax subset selection for the multinomial distribution." *Journal of Statistical Planning and Inference*, **4**, 391–402.
- Berger, Roger L., and Gupta, Shanti S. (1980). "Minimax subset selection with applications to unequal variance (unequal sample size) problems." *Scandinavian Journal of Statistics*, **7**, 21–26.
- Berger, Roger L. (1979). "Gamma minimax robustness of Bayes rules." *Communications in Statistics – Theory and Methods*, **A8**, 543–560.

Publications (continued)

- Berger, Roger L. (1979). "Minimax subset selection for loss measured by subset size." *Annals of Statistics*, **7**, 1333–1338.
- Berger, Roger L. (1978). "An alternative method for partitioning a group of units into subgroups." Florida State University Statistics Department Technical Report M451.
- Berger, Roger L. (1977). "Robust hypothesis testing." Florida State University Statistics Department Technical Report M441.

Talks presented

- Minimax subset selection for loss measured by subset size (1977). Joint regional meetings of ASA/IMS/ENAR. Chapel Hill, NC.
- Robust hypothesis testing (1978). Joint regional meetings of ASA/IMS/ENAR. Lexington, KY.
- Gamma minimax robustness of Bayes rules (1978). Purdue University Statistics Department Colloquium.
- Minimax subset selection for the multinomial distribution (1979). Joint regional meetings of ASA/IMS/ENAR. New Orleans, LA.
- Minimax and admissible subset selection for the multinomial distribution (1980). Joint statistical meetings. Houston, TX.
- Minimax and admissible subset selection for the multinomial distribution (1981). Third Purdue Symposium on Statistical Decision Theory and Related Topics. Invited paper.
- Linear least squares estimates and nonlinear means (1982). University of Georgia Statistics Department Colloquium.
- Linear least squares estimates and nonlinear means (1982). North Carolina State University Statistics Department Colloquium.
- Multiparameter hypothesis testing and acceptance sampling (1982). Annual Fall Technical Conference. Atlantic City, NJ. Invited paper in *Technometrics* session.
- Monotonicity in population selection: a unified approach (1982). Symposium on Inequalities in Statistics and Probability. Lincoln, NE. Invited paper.
- Testing whether one regression function is everywhere larger than another (1982). Regional meetings of IMS. Tallahassee, FL.
- Intersection-union tests: theory and applications (1983). North Carolina State University Statistics Department Seminar.
- Intersection-union tests: theory and applications (1983). Purdue University Statistics Department Colloquium.
- Testing whether one regression function is everywhere larger than another (1983). Joint statistical meetings. Toronto, Canada.
- Multiparameter hypothesis testing and acceptance sampling (1983). North Carolina Chapter of the American Statistical Association Meeting.
- Intersection-union tests: theory and applications (1983). Ohio State University Statistics Department Colloquium.
- Intersection-union tests: theory and applications (1983). East Carolina University Mathematics Department Colloquium.
- Testing whether one regression function is larger than another (1984). Computer Science and Statistics: 16th Symposium on the Interface. Atlanta, GA.
- Children's recognition of historic and contemporary costumes (1985). East Carolina University School of Home Economics Research Seminar (with Vicki L. Berger).

Talks presented (continued)

- Children's recognition of historic and contemporary costumes (1985). American Home Economics Association Annual Meeting. Philadelphia, PA (with Vicki L. Berger).
- Testing for stochastic ordering (1985). Joint statistical meetings. Las Vegas, NV.
- Testing whether a set of normal means are in a specified order (1985). Order Restricted Inference Conference. Iowa City, IA.
- Children's recognition of historic and contemporary costumes (1985). Home Economics Research Conference. Rock Hill, SC.
- Reconciling Bayesian and Frequentist evidence in the one-sided testing problem (1986). NBER-NSF Seminar on Bayesian Inference in Econometrics. Mexico City, Mexico.
- A nonparametric, intersection-union test for stochastic order (1986). Fourth Purdue Symposium on Statistical Decision Theory and Related Topics. Invited paper.
- Some inadmissible likelihood ratio tests concerning normal means (1987). Joint statistical meetings. San Francisco, CA.
- Tests that are uniformly more powerful than LRTs for some problems concerning linear inequalities on normal means (1988). Purdue University Statistics Department Colloquium.
- UMP tests for testing whether all normal means are positive (1988). Joint statistical meetings. New Orleans, LA.
- Exact p-values for Fisher's exact test (1990). North Carolina State University Statistics Department Seminar.
- Exact p-values for Fisher's exact test (1990). Duke University Institute of Statistics and Decision Sciences Seminar.
- Testing whether two regression functions cross (1990). Annual meeting of the IMS. Uppsala, Sweden.
- Exact p-values for Fisher's exact test (1991). University of North Carolina at Charlotte Mathematics Department Colloquium.
- Exact p-values for Fisher's exact test (1991). University of South Carolina Statistics Department Colloquium.
- Improving on likelihood ratio tests for qualitative interactions (1992). Joint regional meetings of ASA/IMS/ENAR. Cincinnati, OH. Invited paper.
- Problems with tests that are uniformly more powerful than the LRT (1992). Second Eugene Lukacs Symposium. Bowling Green, OH. Invited paper.
- Exact p-values for Fisher's exact test (1992). Virginia Polytechnic Institute and State University Statistics Department Colloquium.
- P-values maximized over a confidence set for the nuisance parameter (1993). Cornell University Biometrics Unit Student Seminar.
- Improving upon likelihood ratio tests using the intersection-union method (1993). Cornell University Statistics Center Seminar.

Talks presented (continued)

- P-values maximized over a confidence set for the nuisance parameter (1994). Florida State University Statistics Department Colloquium.
- P-values maximized over a confidence set for the nuisance parameter (1994). University of Florida Statistics Department Colloquium.
- Improving upon likelihood ratio tests using the intersection-union method (1994). University of Florida Statistics Department Colloquium.
- P-values maximized over a confidence set for the nuisance parameter (1994). Ohio State University Statistics Department Colloquium.
- Improving upon likelihood ratio tests using the intersection-union method (1994). Ohio State University Statistics Department Colloquium.
- P-values maximized over a confidence set for the nuisance parameter (1994). Bowling Green State University Statistics Department Colloquium.
- Maximizing binomial expectations (1994). Cornell University Statistics Center Seminar.
- Maximizing binomial expectations (1995). North Carolina State University Statistics Department Seminar.
- More powerful unconditional tests for contingency tables (1995). Joint regional meetings of ASA/IMS/ENAR. Birmingham, AL. Invited paper.
- Improving upon likelihood ratio tests using the intersection-union method (1995). Conference on Multiple Decision Theory and Related Topics. Lafayette, IN. Invited paper.
- Improving bioequivalence tests (1996). Joint statistical meetings. Chicago, IL.
- Intersection-union method and bioequivalence tests (1996). North Carolina Chapter of the American Statistical Association Meeting.
- Testing for bioequivalence with intersection-union tests (1997). University of North Carolina at Chapel Hill Biostatistics Department Colloquium.
- The intersection-union method and equivalence testing (1997). Joint statistical meetings. Anaheim, CA. Invited paper.
- Improved tests for binary data from matched pairs experiments (1998). Joint regional meetings of ASA/IMS/ENAR. Pittsburgh, PA. Invited paper.
- Using computer algebra systems to teach graduate mathematical statistics: Potential and pitfalls (1998). Fifth International Conference on Teaching of Statistics. Singapore. Invited paper.
- Confidence interval p-values and comparing binomial proportions (1999). Wright State University Mathematics and Statistics Department Colloquium.
- Improved equivalence tests for the ratio of normal means (1999). Joint regional meetings of ASA/IMS/ENAR. Atlanta, GA. Invited paper.
- Applications of intersection-union tests in biostatistics (2000). University of Arizona Division of Epidemiology and Biostatistics Colloquium.

Teaching summary

Courses taught at NCSU August 1982 – May 2002

		Number of Sections	Number of Students
ST/EB 350	Economics & Business Statistics	5	347
ST 361	Intro. to Statistics for Engineers	4	197
ST 371	Intro. to Prob. & Dist. Theory	1	89
ST 372	Intro. to Stat. Inf. & Regression	5	257
ST 421	Intro. to Math. Statistics I	1	53
ST 422	Intro. to Math. Statistics II	1	52
ST 493	Industrial Statistics	1/2	31
ST 511-501	Experimental Stat. for Biol. Sci. I	8	577
ST 521-741	Statistical Theory I	12	475
ST 522-742	Statistical Theory II	8	226
ST 550-744	Categorical & Censored Data	9	235
ST 583	Intro. to Decision Theory	1	8
ST 591-595	Statistical Consulting	13	114
ST 637-794	Advanced Statistical Inference	3	35
ST 681	Linear Models & Variance Comp.	4	143

Ph.D. dissertations directed

- Jee Soo Kim (1982). Ranking and Selection Procedures for Exponential Populations with Censored Observations. Florida State University.
- Jorge Homero Sierra-Cavazos (1992). Tests of Hypotheses Defined by Linear Inequalities for Elliptically Contoured Families. North Carolina State University.
- Huimei Liu (1992). Uniformly More Powerful Tests of Hypotheses Determined by Linear Inequalities for a Bivariate Normal Mean. North Carolina State University.
- Khalil Saikali (1996). Uniformly More Powerful Tests for Linear Inequalities. North Carolina State University.
- Kurex Sidik (1997). Exact Unconditional Tests for Discrete Data. North Carolina State University.
- Heuiju Kim (1999). Probabilistic and Statistical Modeling for Geometric Structure of Nonwoven Fabrics.
- Justin S. Kopit (1999). More Powerful Exact Tests from Confidence Set p Values and Interim Analysis when the Data Are Subject to Delay.
- Three students currently writing dissertations under my direction.

Professional activities

Editor, *Statistical Science* (2001–present)

COPSS Elizabeth B. Scott Award Committee (2001–present)

IMS Committee to Select Administrative Officers (2002–present)

Associate Editor, *Journal of the American Statistical Association* (1988–1990, 1996–2001)

Associate Editor, *Biometrics* (2000–2001)

SRCOS Program Co-Chair, Summer Research Conference, St. Augustine (2001)

IMS Program Committee Chair, Joint Statistical Meetings, Indianapolis (2000)

ASA Constitution Committee (1996–1999)

IMS Program Committee, Joint Spring Meetings with ENAR and ASA, Atlanta (1999)

IMS Program Committee, Joint Statistical Meetings, Dallas (1998)

Local Organization Committee, IMS & Bernoulli Society Meeting, Chapel Hill (1994)

Managing Editor, *Annals of Statistics* (1989–1992)

Managing Editor, *Statistical Science* (1989–1992)

IMS Council Member (1989–1992)

Editorial Board Member, *Communications in Statistics* (1988–1989)

IMS Program Chairman, Joint Spring Meetings with ENAR and ASA, Boston (1988)

Local Organization Committee, ENAR Meeting, Raleigh (1985)

Judge for Wilcoxon and Youden Prizes (1983–1986)

ASA Ad Hoc Committee on Policy Regarding Gifts and Awards (1981)