# Selected Proceedings of the Sheffield Symposium on Applied Probability

edited by I. V. Basawa & R. L. Taylor

Proceedings of the Symposium on Applied Probability, Sheffield, August 1989. The purpose of the Sheffield Symposium on Applied Probability was to focus attention on some of the prominent directions in applied probability. This volume contains several major papers covering models in epidemiology, genetics, random fields, branching processes, random walks, directed polymers and evolution time-scales. The reader will find a broad array of interesting problems discussed in the eighteen technical articles included in this volume.

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Some aspects of the Sheffield Symposium by I. V. Basawa & R. L. Taylor; Some remarks on recent developments in applied probability by J. Gani; The promotion and development of applied probability: A note on the contributions of Joe Gani by C. C. Heyde; Applications of random walks on finite graphs by D. Aldous; Analysis of infections disease data from a sample of households by N. G. Becker; On directed polymers in a random environment by E. Bolthausen; A look at perturbation approximations for epidemics by H. E. Daniels; A central limit theorem for evolving random fields by P. E. Greenwood & M. Ossiander; The two-locus ancestral graph by R. C. Griffiths; When did Joe's great...grandfather live? Or: On the time scale of evolution by P. Jagers, O. Nerman, & Z. Taib; Point processes and inference for rainfall fields by M. J. Phelan: A construction for processes with history-dependent transition intensities by P. Whittle; Accumulation points of a particular normalized random walk by A. Adler: Uniform convergence of martingales in the one-dimensional branching random walk by J. D. Biggins; An urn model and the coalescent in neutral infinite-alleles genetic processes by D. Branson; The genealogy of patterns of ESS's by C. Cannings & G. T. Vickers; Extinction probabilities of branching processes in random environments by D. R. Grey & L. Zhunwei; Measure-valued processes: Techniques and applications by K. J. Hochberg; Saddlepoint approximations in the case of intractable cumulant generating functions by J. E. Kolassa; U-statistics and double stable integrals by J. Mijnheer; Gene conversion and the infinite-sites model by S. A. Sawyer

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edited by K. Mosler & M. Scarsini

A selection of papers presented at the International Workshop on Stochastic Orders and Decision Under Risk, Hamburg, May 1989. The aim of this workshop was to contribute to the theory and applications of stochastic orders and to gather scientists from different disciplines who are using similar mathematical tools in their fields. The workshop gathered individuals from probability theory, statistics, reliability, queueing, economics, finance, insurance, and mathematical physics. The twenty-three papers in this volume represent a selection of those presented in Hamburg.

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Remarks on a random surface by D. B. Abraham & C. M. Newman: Stochastic order and martingale dynamics in multivariate life length models: A review by E. Arjas & I. Norros; Preservation and attenuation of inequality as measured by the Lorenz order by B. C. Arnold; Lorenz ordering of order statistics by B. C. Arnold & J. A. Villasenor; Stochastic orders and their application to a unified approach to various concepts of dependence and association by R. Bergmann; Second order Bonferroni-type, product-type and setwise probability inequalities by H. W. Block, T. Costigan, & A. R Sampson; Optimal stopping of life testing: Use of stochastic orderings in the case of conditionally exponential lifetimes by C. Costantini & F. Spizzichino: Multivariate probability inequalities: Convolution theorems, composition theorems, and concentration inequalities by M. L. Eaton & M. D. Perlman; Stochastic orderings in reliability by K.-W. Gaede; Representation theorems for measures of location and for measures of dispersion by A. Giovagnoli & G. Regoli; Orderings of risks and their actuarial applications by W.-R. Heilmann & K.-J. Schroter; Applications of likelihood orderings in economics by I. Jewitt; Stochastic orders in welfare economics by M. Le Breton; Ordering regression models of Gaussian processes by H. Luschgy; Multivariate stochastic orderings and generating cones of functions by A. W. Marshall; Stochastic ordering for Markov processes on partially ordered spaces with applications to queueing networks by W. A. Massey: Some theory of stochastic dominance by K. Mosler & M. Scarsini; Bounds for distributions with multivariate marginals by L. Ruschendorf; Repair policies and stochastic order by T. H. Savits; Regular, sample path and strong convexity: A review by M. Shaked & J. G. Shanthikumar; Stochastic orders and comparison of experiments by E. Torgersen; Expectation inequalities from convex geometry by R. A. Vitale; Concentration indices and concentration curves by S. Yitzhaki & I. Olkin

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# Weighted Empiricals and Linear Models

by Hira L. Koul

An empirical process that assigns possible different non-random (random) weights to different observations is called a *weighted* (randomly weighted) empirical process. These processes are as basic to linear regression and autoregression models as the ordinary process is to one sample models. However, their usefulness in studying linear regression and autoregression models has not been fully exploited. This monograph addresses this question to a large extent.

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