

THE ANNALS
of
PROBABILITY

AN OFFICIAL JOURNAL OF THE
INSTITUTE OF MATHEMATICAL STATISTICS

VOLUME 17

1989

CONTENTS OF VOLUME 17

Memorial Articles and Articles

AARONSON, JON, GILAT, DAVID, KEANE, MICHAEL AND DE VALK, VINCENT. An algebraic construction of a class of one-dependent processes	128–143
ALDOUS, DAVID. Stopping times and tightness. II	586–595
ALEXANDER, KENNETH S. Characterization of the cluster set of the LIL sequence in Banach space	737–759
ALEXANDER, KENNETH S. Unusual cluster sets for the LIL sequence in Banach space	1170–1185
ALPERN, S. AND PRASAD, V. S. Coding a stationary process to one with prescribed marginals	1658–1663
ARRATIA, R., GOLDSTEIN, L. AND GORDON, L. Two moments suffice for Poisson approximations: The Chen–Stein method	9–25
ARRATIA, R. AND WATERMAN, M. S. The Erdős–Rényi strong law for pattern matching with a given proportion of mismatches	1152–1169
BACCELLI, FRANÇOIS AND MAKOWSKI, ARMAND M. Dynamic, transient and stationary behavior of the $M/GI/1$ queue via martingales	1691–1699
BAI, Z. D. A theorem of Feller revisited	385–395
BALDI, PIERRE AND RINOTT, YOSEF. On normal approximations of distributions in terms of dependency graphs	1646–1650
BÉLISLE, CLAUDE. Windings of random walks	1377–1402
BEQUILLARD, A. L. A sufficient condition for two Markov semigroups to commute	1478–1482
BERBEE, H. C. P. AND DEN HOLLANDER, W. TH. F. Tail triviality for sums of stationary random variables	1635–1645
BERBEE, HENRY. Uniqueness of Gibbs measures and absorption probabilities	1416–1431
BERMAN, SIMEON M. AND KÔNO, NORIO. The maximum of a Gaussian process with nonconstant variance: A sharp bound for the distribution tail	632–650
BERTOIN, JEAN. Sur une intégrale pour les processus à α -variation bornée	1521–1535
BOLTHAUSEN, ERWIN. A central limit theorem for two-dimensional random walks in random sceneries	108–115
BRAMSON, M., DURRETT, R. AND SWINDLE, G. Statistical mechanics of crabgrass	444–481
BRAMSON, MAURY. Survival of nearest-particle systems with low birth rate	433–443
BRAMSON, MAURY AND GRIFFEATH, DAVID. Flux and fixation in cyclic particle systems	26–45

BRETAGNOLLE, J. AND MASSART, P. Hungarian constructions from the nonasymptotic viewpoint	239–256
BURDZY, KRZYSZTOF. Cut points on Brownian paths	1012–1036
CHAYES, J. T., CHAYES, L., GRIMMETT, G. R., KESTEN, H. AND SCHONMANN, R. H. The correlation length for the high-density phase of Bernoulli percolation	1277–1302
CHAYES, L., GRIMMETT, G. R., KESTEN, H., SCHONMANN, R. H. AND CHAYES, J. T. The correlation length for the high-density phase of Bernoulli percolation	1277–1302
CHEN, MU-FA AND LI, SHAO-FU. Coupling methods for multidimensional diffusion processes	151–177
CHIANG, TZUU-SHUH AND CHOW, YUNSHYONG. A limit theorem for a class of inhomogeneous Markov processes	1483–1502
CHOW, YUNSHYONG AND CHIANG, TZUU-SHUH. A limit theorem for a class of inhomogeneous Markov processes	1483–1502
COHN, HARRY. On the growth of the multitype supercritical branching process in a random environment	1118–1123
CORNEA, AUREL AND LOEB, PETER A. A convergence property for conditional expectation	353–356
COVER, THOMAS M., GACS, PETER AND GRAY, ROBERT M. Kolmogorov's contributions to information theory and algorithmic complexity	840–865
COX, J. T. Coalescing random walks and voter model consensus times on the torus in \mathbb{Z}^d	1333–1366
CRANSTON, M., HSU, P. AND MARCH, P. Smoothness of the convex hull of planar Brownian motion	144–150
CSÁKI, E., CSÖRGŐ, M., FÖLDES, A. AND RÉVÉSZ, P. Brownian local time approximated by a Wiener sheet	516–537
CSÖRGŐ, M., FÖLDES, A., RÉVÉSZ, P. AND CSÁKI, E. Brownian local time approximated by a Wiener sheet	516–537
CUESTA, JUAN ANTONIO AND MATRAN, CARLOS. Notes on the Wasserstein metric in Hilbert spaces	1264–1276
DAWSON, DONALD A., FLEISCHMANN, KLAUS AND GOROSTIZA, LUIS G. Stable hydrodynamic limit fluctuations of a critical branching particle system in a random medium	1083–1117
DE HAAN, L. AND RACHEV, S. T. Estimates of the rate of convergence for max-stable processes	651–677
DEHEUVELS, PAUL AND STEINEBACH, JOSEF. Sharp rates for increments of renewal processes	700–722
DE LA CAL, JESÚS. On the three series theorem in number theory	357–361
DEN HOLLANDER, W. TH. F. AND BERBEE, H. C. P. Tail triviality for sums of stationary random variables	1635–1645
DEUSCHEL, JEAN-DOMINIQUE. Invariance principle and empirical mean large deviations of the critical Ornstein–Uhlenbeck process	74–90

DE VALK, VINCENT, AARONSON, JON, GILAT, DAVID AND KEANE, MICHAEL. An algebraic construction of a class of one-dependent processes	128–143
DOOB, J. L. Kolmogorov's early work on convergence theory and foundations	815–821
DURRETT, R., SWINDLE, G. AND BRAMSON, M. Statistical mechanics of crabgrass	444–481
DURRETT, RICHARD, SCHONMANN, ROBERTO H. AND TANAKA, NELSON I. The contact process on a finite set. III: The critical case	1303–1321
DUTKO, MICHAEL. Central limit theorems for infinite urn models	1255–1263
DYNKIN, E. B. Kolmogorov and the theory of Markov processes .	822–832
EINMAHL, UWE. Stability results and strong invariance principles for partial sums of Banach space valued random variables . . .	333–352
ELLIOTT, ROBERT J. AND KOHLMANN, MICHAEL. Integration by parts, homogeneous chaos expansions and smooth densities . . .	194–207
ELLIS, RICHARD S. AND WYNER, AARON D. Uniform large deviation property of the empirical process of a Markov chain	1147–1151
EPSTEIN, RAISA. Some limit theorems for functionals of the Brownian sheet	538–558
FALK, M. AND REISS, R.-D. Weak convergence of smoothed and nonsmoothed bootstrap quantile estimates	362–371
FLEISCHMANN, KLAUS, GOROSTIZA, LUIS G. AND DAWSON, DONALD A. Stable hydrodynamic limit fluctuations of a critical branching particle system in a random medium	1083–1117
FÖLDES, A., RÉVÉSZ, P., CSÁKI, E. AND CSÖRGŐ, M. Brownian local time approximated by a Wiener sheet	516–537
GACS, PETER, GRAY, ROBERT M. AND COVER, THOMAS M. Kolmogorov's contributions to information theory and algorithmic complexity	840–865
GANDOLFI, ALBERTO. Uniqueness of the infinite cluster for stationary Gibbs states	1403–1415
GILAT, DAVID, KEANE, MICHAEL, DE VALK, VINCENT AND AARONSON, JON. An algebraic construction of a class of one-dependent processes	128–143
GOLDIE, CHARLES M. AND RESNICK, SIDNEY. Records in a partially ordered set	678–699
GOLDSTEIN, L., GORDON, L. AND ARRATIA, R. Two moments suffice for Poisson approximations: The Chen–Stein method . .	9–25
GOODMAN, VICTOR AND KUELBS, JAMES. Rates of convergence for the functional LIL	301–316
GORDON, L., ARRATIA, R. AND GOLDSTEIN, L. Two moments suffice for Poisson approximations: The Chen–Stein method . .	9–25

GOROSTIZA, LUIS G., DAWSON, DONALD A. AND FLEISCHMANN, KLAUS. Stable hydrodynamic limit fluctuations of a critical branching particle system in a random medium	1083–1117
GÖTZE, F. Edgeworth expansions in functional limit theorems . . .	1602–1634
GRAY, ROBERT M., COVER, THOMAS M. AND GACS, PETER. Kolmogorov's contributions to information theory and algorithmic complexity	840–865
GRIFFEATH, DAVID AND BRAMSON, MAURY. Flux and fixation in cyclic particle systems	26–45
GRIFFIN, PHILIP S. AND KUELBS, JAMES D. Self-normalized laws of the iterated logarithm	1571–1601
GRIFFIN, PHILIP S. AND PRUITT, WILLIAM E. Asymptotic normality and subsequential limits of trimmed sums	1186–1219
GRIMMETT, G. R., KESTEN, H., SCHONMANN, R. H., CHAYES, J. T. AND CHAYES, L. The correlation length for the high-density phase of Bernoulli percolation	1277–1302
HANSEN, JENNIE C. A functional central limit theorem for random mappings	317–332
HANSON, D. L. AND RUSSO, RALPH P. Some "lim inf" results for increments of a Wiener process	1063–1082
HSU, P., MARCH, P. AND CRANSTON, M. Smoothness of the convex hull of planar Brownian motion	144–150
HSU, PEI. Heat semigroup on a complete Riemannian manifold . .	1248–1254
ISCOE, I. AND McDONALD, D. Large deviations for l^2 -valued Ornstein–Uhlenbeck processes	58–73
JOHNSON, WILLIAM B. AND SCHECHTMAN, G. Sums of independent random variables in rearrangement invariant function spaces	789–808
KANDA, MAMORU. A note on capacitary measures of semipolar sets	379–384
KAUFMAN, ROBERT. Dimensional properties of one-dimensional Brownian motion	189–193
KEANE, MICHAEL, DE VALK, VINCENT, AARONSON, JON AND GILAT, DAVID. An algebraic construction of a class of one-dependent processes	128–143
KENNEDY, J. E. AND QUINE, M. P. The total variation distance between the binomial and Poisson distributions	396–400
KENT, JOHN T. Continuity properties for random fields	1432–1440
KESTEN, H., SCHONMANN, R. H., CHAYES, J. T., CHAYES, L. AND GRIMMETT, G. R. The correlation length for the high-density phase of Bernoulli percolation	1277–1302
KLASS, MICHAEL J. Maximizing $E \max_{1 \leq k \leq n} S_k^+ / ES_n^+$: A prophet inequality for sums of i.i.d. mean zero variates	1243–1247
KLEBANER, FIMA C. Geometric growth in near-supercritical population size dependent multitype Galton–Watson processes . .	1466–1477

KLEBANER, FIMA C. Stochastic difference equations and generalized gamma distributions	178–188
KOHLMANN, MICHAEL AND ELLIOTT, ROBERT J. Integration by parts, homogeneous chaos expansions and smooth densities . . .	194–207
KOLMOGOROV, A. N. Publications of A. N. Kolmogorov	945–964
KÔNO, NORIO AND BERMAN, SIMEON M. The maximum of a Gaussian process with nonconstant variance: A sharp bound for the distribution tail	632–650
KUCZEK, THOMAS. The central limit theorem for the right edge of supercritical oriented percolation	1322–1332
KUELBS, JAMES AND GOODMAN, VICTOR. Rates of convergence for the functional LIL	301–316
KUELBS, JAMES D. AND GRIFFIN, PHILIP S. Self-normalized laws of the iterated logarithm	1571–1601
LACEY, MICHAEL T. Laws of the iterated logarithm for the empirical characteristic function	292–300
LALLEY, S. AND SELKE, T. Travelling waves in inhomogeneous branching Brownian motions. II	116–127
LAWLER, GREGORY F. The infinite self-avoiding walk in high dimensions	1367–1376
LEDOUX, M. AND TALAGRAND, M. Comparison theorems, random geometry and some limit theorems for empirical processes . . .	596–631
LEE, TZONG-YOW. Large deviations for systems of noninteracting recurrent particles	46–57
LE GALL, JEAN-FRANÇOIS, ROSEN, JAY AND SHIEH, NARN RUEIH. Multiple points of Lévy processes	503–515
LI, DELI AND WU, ZHIQUAN. The law of the iterated logarithm for B -valued random variables with multidimensional indices .	760–774
LI, SHAO-FU AND CHEN, MU-FA. Coupling methods for multidimensional diffusion processes	151–177
LIGGETT, THOMAS M. Exponential L_2 convergence of attractive reversible nearest particle systems	403–432
LIU, LI AND MUELLER, CARL. On the extinction of measure-valued critical branching Brownian motion	1463–1465
LOEB, PETER A. AND CORNEA, AUREL. A convergence property for conditional expectation	353–356
MAKOWSKI, ARMAND M. AND BACCELLI, FRANÇOIS. Dynamic, transient and stationary behavior of the $M/GI/1$ queue via martingales	1691–1699
MARCH, P., CRANSTON, M. AND HSU, P. Smoothness of the convex hull of planar Brownian motion	144–150
MASON, DAVID M. An extended version of the Erdős–Rényi strong law of large numbers	257–265
MASSART, P. AND BRETAGNOLLE, J. Hungarian constructions from the nonasymptotic viewpoint	239–256

MASSART, PASCAL. Strong approximation for multivariate empirical and related processes, via KMT constructions	266–291
MATRAN, CARLOS AND CUESTA, JUAN ANTONIO. Notes on the Wasserstein metric in Hilbert spaces	1264–1276
MCDONALD, D. AND ISCOE, I. Large deviations for l^2 -valued Ornstein–Uhlenbeck processes	58–73
MILLET, A., NUALART, D. AND SANZ, M. Integration by parts and time reversal for diffusion processes	208–238
MORROW, GREGORY J. AND SAWYER, STANLEY. Large deviation results for a class of Markov chains arising from population genetics	1124–1146
MOUNTFORD, T. S. Time inhomogeneous Markov processes and the polarity of single points	573–585
MOUNTFORD, T. S. Uniform dimension results for the Brownian sheet	1454–1462
MUELLER, CARL AND LIU, LI. On the extinction of measure-valued critical branching Brownian motion	1463–1465
NUALART, D., SANZ, M. AND MILLET, A. Integration by parts and time reversal for diffusion processes	208–238
NUALART, D. AND ZAKAI, M. On the relation between the Stratonovich and Ogawa integrals	1536–1540
PENROSE, M. D. On the existence of self-intersections for quasi-every Brownian path in space	482–502
PINSKY, ROSS. The averaging principle for diffusions with a small parameter in the case of a noncharacteristic boundary	559–572
PITMAN, JIM AND YOR, MARC. Further asymptotic laws of planar Brownian motion	965–1011
PITT, LOREN D. On a problem of H. P. McKean: Independence of Brownian hitting times and places	1651–1657
PRASAD, V. S. AND ALPERN, S. Coding a stationary process to one with prescribed marginals	1658–1663
PRUITT, WILLIAM E. AND GRIFFIN, PHILIP S. Asymptotic normality and subsequential limits of trimmed sums	1186–1219
QUINE, M. P. AND KENNEDY, J. E. The total variation distance between the binomial and Poisson distributions	396–400
RACHEV, S. T. AND DE HAAN, L. Estimates of the rate of convergence for max-stable processes	651–677
RACHEV, S. T. AND YUKICH, J. E. Rates for the CLT via new ideal metrics	775–788
REISS, R.-D. AND FALK, M. Weak convergence of smoothed and nonsmoothed bootstrap quantile estimates	362–371
RESNICK, SIDNEY AND GOLDIE, CHARLES M. Records in a partially ordered set	678–699
RÉVÉSZ, P., CSÁKI, E., CSÖRGŐ, M. AND FÖLDES, A. Brownian local time approximated by a Wiener sheet	516–537
RHEE, WANSOO T. AND TALAGRAND, MICHEL. A sharp deviation inequality for the stochastic traveling salesman problem	1–8

RINOTT, YOSEF AND BALDI, PIERRE. On normal approximations of distributions in terms of dependency graphs	1646–1650
ROSEN, JAY, SHIEH, NARN RUEIH AND LE GALL, JEAN-FRANÇOIS. Multiple points of Lévy processes	503–515
RUSSO, RALPH P. AND HANSON, D. L. Some “lim inf” results for increments of a Wiener process	1063–1082
SAMORODNITSKY, GENNADY AND SZULGA, JERZY. An asymptotic evaluation of the tail of a multiple symmetric α -stable integral	1503–1520
SANZ, M., MILLET, A. AND NUALART, D. Integration by parts and time reversal for diffusion processes	208–238
SAWYER, STANLEY AND MORROW, GREGORY J. Large deviation results for a class of Markov chains arising from population genetics	1124–1146
SCHECHTMAN, G. AND JOHNSON, WILLIAM B. Sums of independent random variables in rearrangement invariant function spaces	789–808
SCHMIDT, KLAUS D. The lattice property of uniform amarts	372–378
SCHONMANN, R. H., CHAYES, J. T., CHAYES, L., GRIMMETT, G. R. AND KESTEN, H. The correlation length for the high-density phase of Bernoulli percolation	1277–1302
SCHONMANN, ROBERTO H., TANAKA, NELSON I. AND DURRETT, RICHARD. The contact process on a finite set. III: The critical case	1303–1321
SELLKE, T. AND LALLEY, S. Travelling waves in inhomogeneous branching Brownian motions. II	116–127
SHAO, QI-MAN. On a problem of Csörgő and Révész	809–812
SHIEH, NARN RUEIH, LE GALL, JEAN-FRANÇOIS AND ROSEN, JAY. Multiple points of Lévy processes	503–515
SHIRYAEV, A. N. Kolmogorov—Life and creative activities	866–944
SINAI, YA. G. Kolmogorov’s work on ergodic theory	833–839
SLADE, GORDON. The scaling limit of self-avoiding random walk in high dimensions	91–107
STEINEBACH, JOSEF AND DEHEUVELS, PAUL. Sharp rates for increments of renewal processes	700–722
SWINDLE, G., BRAMSON, M. AND DURRETT, R. Statistical mechanics of crabgrass	444–481
SZULGA, JERZY AND SAMORODNITSKY, GENNADY. An asymptotic evaluation of the tail of a multiple symmetric α -stable integral	1503–1520
TALAGRAND, M. AND LEDOUX, M. Comparison theorems, random geometry and some limit theorems for empirical processes . . .	596–631
TALAGRAND, MICHEL. Isoperimetry and integrability of the sum of independent Banach-space valued random variables	1546–1570
TALAGRAND, MICHEL AND RHEE, WANSOO T. A sharp deviation inequality for the stochastic traveling salesman problem	1–8

TANAKA, NELSON I., DURRETT, RICHARD AND SCHONMANN, ROBERTO H. The contact process on a finite set. III: The critical case	1303–1321
TAYLOR, J. C. The minimal eigenfunctions characterize the Ornstein–Uhlenbeck process	1055–1062
THELEN, BRIAN J. Fisher information and dichotomies in equivalence/contiguity	1664–1690
TUDOR, CONSTANTIN. A comparison theorem for stochastic equations with Volterra drifts	1541–1545
ÜSTÜNEL, ALI SULEYMAN AND ZAKAI, MOSHE. On independence and conditioning on Wiener space	1441–1453
WATERMAN, M. S. AND ARRATIA, R. The Erdős–Rényi strong law for pattern matching with a given proportion of mismatches	1152–1169
WATKINS, JOSEPH C. Donsker’s invariance principle for Lie groups	1220–1242
WU, ZHIQUAN AND LI, DELI. The law of the iterated logarithm for B -valued random variables with multidimensional indices .	760–774
WYNER, AARON D. AND ELLIS, RICHARD S. Uniform large deviation property of the empirical process of a Markov chain	1147–1151
YOR, MARC AND PITMAN, JIM. Further asymptotic laws of planar Brownian motion	965–1011
YUKICH, J. E. AND RACHEV, S. T. Rates for the CLT via new ideal metrics	775–788
ZAKAI, M. AND NUALART, D. On the relation between the Stratonovich and Ogawa integrals	1536–1540
ZAKAI, MOSHE AND ÜSTÜNEL, ALI SULEYMAN. On independence and conditioning on Wiener space	1441–1453
ZEITOUNI, OFER. On the Onsager–Machlup functional of diffusion processes around non C^2 curves	1037–1054
ZHANG, CUN-HUI. A renewal theory with varying drift	723–736

Correction

RHEE, WANSOO AND TALAGRAND, MICHEL. Bad rates of convergence for the central limit theorem in Hilbert space	401
---	-----

Addendum

ISCOE, I. On the supports of measure-valued critical branching Brownian motion	813
--	-----