Publications of Thomas G. Kurtz

Articles

1. On numerical calculation of transonic flow patterns (with S. Bergman and J. G. Herriot), *Math. Comp.* **22** (1968), 13–27. MR0224335 (36 #7379).
2. Extensions of Trotter's operator semigroup approximation theorems, *J. Functional Analysis* **3** (1969), 354–375. MR0242016 (39 #3351).
3. A note on sequences of continuous parameter Markov chains, *Ann. Math. Statist.* **40** (1969), 1078–1082. MR0246370 (39 #7674).
4. A general theorem on convergence of operator semigroups, *Trans. Amer. Math. Soc.* **148** (1970), 23–32. MR0256210 (41 #867).
5. Approximation of age dependent, multitype branching processes, *Ann. Math. Statist.* **41** (1970), 363–368. MR0258137 (41 #2784).
6. Solutions of ordinary differential equations as limits of pure jump Markov processes, *J. Appl. Probab.* **7** (1970), 49–58. MR0254917 (40 #8124).
7. Comparison of semi-Markov and Markov processes, *Ann. Math. Statist.* **42** (1971), 991–1002. MR0278382 (43 #4112).
8. Limit theorems for sequences of jump Markov processes approximating ordinary differential processes, *J. Appl. Probab.* **8** (1971), 344–356. MR0287609 (44 #4812).
9. A random Trotter product formula, *Proc. Amer. Math. Soc.* **35** (1972), 147–154. MR0303347 (46 #2484).
10. The relationship between stochastic and deterministic models for chemical reactions, *J. Chem. Phys.* **57** (1972), 2976–2978.
11. Inequalities for the law of large numbers, *Ann. Math. Statist.* **43** (1972), 1874–1883. MR0378045 (51 #14214).
12. A limit theorem for perturbed operator semigroups with applications to random evolutions, *J. Functional Analysis* **12** (1973), 55–67. MR0365224 (51 #1477).
13. A generalization of Dynkin's identity and some applications (with Krishna B. Athreya), *Ann. Probab.* **1** (1973), 570–579. MR0348847 (50 #1342).
14. The nonexistence of the Yaglom limit for an age dependent subcritical branching process (with Stephen Wainger), *Ann. Probab.* **1** (1973), 857–861. MR 0353473 (50 #5956).
15. Convergence of sequences of semigroups of nonlinear operators with an application to gas kinetics, *Trans. Amer. Math. Soc.* **186** (1973), 259–272. MR0336482 (49 #1256). Erratum **209** (1975), 442.
16. Berry–Esseen estimates in Hilbert space and an application to the law of the iterated logarithm (with James Kuelbs), *Ann. Probab.* **2** (1974), 387–407. MR0362427 (50 #14868).
17. Point processes and completely monotone set functions, *Z. Wahrscheinlichkeitstheorie und Verw. Gebiete* **31** (1974), 57–67. MR0362480 (50 #14921).
18. Semigroups of conditioned shifts and approximation of Markov processes, *Ann. Probab.* 3 (1975), 618–642. MR0383544 (52 #4425).
19. An abstract averaging theorem, *J. Functional Analysis* **23** (1976), 135–144. MR0425674 (54 #13628).

20. Limit theorems and diffusion approximations for density dependent Markov chains. *Stochastic Systems: Modeling, Identification and Optimization.* Ed. Roger J. B. Wets, North Holland, Ames (1976), 67–78. MR0445626 (56 #3962).
21. Applications of an abstract perturbation theorem to ordinary differential equations, *Houston J. Math.* **3** (1977), 67–82. MR0425288 (54 #13245).
22. Landau–Kolmogorov inequalities for semigroups and groups (with Melinda W. Certain), *Proc. Amer. Math. Soc.* **63** (1977), 226–230. MR0458242 (56 #16445).
23. Strong approximation theorems for density dependent Markov chains, *Stochastic Process. Appl.* **6** (1978), 223–240. MR0464414 (57 #4344).
24. Diffusion approximations for branching processes, *Branching Processes*, *Advances in Probability* **5**, Ed. Joffe and Ney (1978), 268–292. MR0517538 (80g:60089).
25. A variational formula for the growth rate of a positive operator semigroup, *SIAM J. Math. Anal.* **10** (1979), 112–117. MR0516757 (80e:47034).
26. Necessary and sufficient conditions for complete convergence in the law of large numbers (with Soren Asmussen), *Ann. Probab.* **8** (1980), 176–182. MR 0556425 (81d:60034).
27. The optional sampling theorem for martingales indexed by directed sets, *Ann. Probab.* **8** (1980), 675–681. MR0577309 (81f:60063).
28. Representations of Markov processes as multiparameter time changes, *Ann. Probab.* **8** (1980), 682–715. MR0577310 (82d:60130).
29. Relationships between stochastic and deterministic population models, *Proceedings of the Heidelberg Conference on Models of Biological Growth and Spread*, Lecture Notes in Biomathematics **38**, Springer-Verlag, Berlin (1980), 449–467. MR0609379 (83m:60100).
30. On the infinitely-many-neutral-alleles diffusion model (with Stewart N. Ethier), *Adv. in Appl. Probab.* **13** (1981), 429–452. MR0615945 (82j:60143).
31. Approximation of discontinuous processes by continuous processes, *Proceedings, Bielefeld Conf. on Stochastic Nonlinear Systems in Physics, Chemistry and Biology*, Springer-Verlag, Berlin (1981), 22–35
32. The central limit theorem for Markov chains, *Ann. Probab.* **9** (1981), 557–560. MR0624682 (83e:60069). Acknowledgement of priority, **12**, 282.
33. Applications of duality to measure-valued processes (with Donald A. Dawson). *Advances in Filtering and Optimal Stochastic Control.* Lecture Notes in Control and Information Sci. **42**, Springer-Verlag, Berlin (1982), 91–105. MR0794506 (86j:60175).
34. Representation and approximation of counting processes. *Advances in Filtering and Optimal Control.* Lecture Notes in Control and Information Sci. **42**, Springer-Verlag, Berlin (1982), 177–191. MR0794515 (86m:60128).
35. Gaussian approximation for Markov chains and counting processes. *Bull. Inst. Internat. Statist.*, Proceedings of the 44th Session, Invited Paper Vol. **1** (1983), 361–376. MR0820729 (87c:60054).
36. A counter example for the Trotter product formula (with Michel Pierre), *J. Differential Equations* **52** (1984), 407–414. MR0744304 (85i:47072).
37. Approaches to weak convergence. *Multifunctions and Integrands*, Lecture Notes in Math **1091**, Springer-Verlag, Berlin (1984), 173–183. MR0785584 (86k:60004).
38. Unique characterization of conditional distributions in nonlinear filtering (with Daniel L. Ocone). *Proceedings of IEEE Conference on Decision and Control*

(1984).
39. A martingale problem for conditional distributions and uniqueness for the nonlinear filtering equations (with Daniel Ocone). *Stochastic Differential Systems, Filtering and Control*. Lecture Notes in Control and Information Sci. **69**, Springer-Verlag, Berlin (1985), 224–234. MR0798326 (86m:60116).
40. A probabilistic distributed algorithm for set intersection and its analysis (with Udi Manber). *Theoret. Comput. Sci.* **49** (1987), 267–282. MR0909334 (89h:68066).
41. The infinitely-many-alleles model with selection as a measure-valued diffusion (with Stewart N. Ethier). *Stochastic Methods in Biology*. Lecture Notes in Biomath. **70**, Springer-Verlag, Berlin (1987), 72–86. MR0893637 (89c:92037).
42. Martingale problems for controlled processes. *Stochastic Modelling and Filtering*. Lecture Notes in Control and Information Sci. **91**, Springer-Verlag, Berlin (1987), 75–90. MR0894107 (88i:93062).
43. Unique characterization of conditional distributions in nonlinear filtering (with Daniel L. Ocone). *Ann. Probab.* **16** (1988), 80–107. MR0920257 (88m:93146).
44. Martingale problems for constrained Markov problems. *Recent Advances in Stochastic Calculus*, J. S. Baras and V. Mirelli, eds. Springer-Verlag, New York (1990), 151–168. MR1255166 (95d:60081).
45. Random time changes and convergence in distribution under the Meyer–Zheng conditions. *Ann. Probab.* **19** (1991), 1010–1034. MR1112405 (92m:60033).
46. Weak limit theorems for stochastic integrals and stochastic differential equations (with Philip Protter). *Ann. Probab.* **19** (1991), 1035–1070. MR1112406 (92k:60130).
47. A control formulation for constrained Markov processes. *Mathematics of Random Media*. Lectures in Applied Mathematics **27**, AMS, Providence (1991), 139–150. MR1117242 (92h:60122).
48. On the functional central limit theorem for the Ewen sampling formula (with Peter Donnelly and Simon Tavare). *Ann. Appl. Probab.* **1** (1991), 539–545. MR1129773 (93e:60064).
49. Wong–Zakai corrections, random evolutions, and simulation schemes for SDEs (with Philip Protter). *Stochastic Analysis: Liber Amicorum for Moshe Zakai*. Academic Press, Boston. (1991), 331–346. MR1119837 (92k:60131).
50. Characterizing the weak convergence of stochastic integrals (with Philip Protter). *Stochastic Analysis*, M. T. Barlow and N. H. Bingham, eds. Cambridge University Press, Cambridge (1991), 255–259. MR1166413 (93e:60104).
51. Averaging for martingale problems and stochastic approximation. *Applied Stochastic Analysis*. Proceedings of the US-French Workshop. Lecture Notes in Control and Information Sci. **177** (1992), 186–209. MR1169928 (93h:60070).
52. Results on local stability of fixed step size recursive algorithms. *Proceedings of the International Conference on Acousitics, Speech and Signal Processing*. San Francisco, March 1992.
53. On the stationary distribution of the neutral diffusion model in population genetics (with Stewart N. Ethier). *Ann. Appl. Probab.* **2** (1992), 24–35. MR 1143391 (93j:60107).
54. Weak convergence and local stability properties of fixed step size recursive algorithms (with James Bucklew and William Sethares). *IEEE Trans. Information Theory* **39** (1993), 966–978. MR1237722 (94g:94001).
55. Fleming–Viot processes in population genetics (with Stewart N. Ethier). *SIAM J. Control Optim.* **31** (1993), 345–386. MR1205982 (94d:60131).

56. Correlation and variability in birth processes (with Peter Donnelly and Paul Marjoram). *J. Appl. Probab.* **30** (1993) 275–284. MR1212661 (94c:60135).
57. Convergence of Fleming–Viot processes in the weak atomic topology (with Stewart N. Ethier). *Stochastic Process. Appl.* **54** (1994), 1–27. MR1302692 (95m:60075).
58. Large loss networks (with Philip J. Hunt). *Stochastic Process. Appl.* **53** (1994), 363–378. MR1302919 (95k:60246).
59. Stratonovich stochastic differential equations driven by general semimartingales (with Étienne Pardoux and Philip Protter). *Ann. Inst. H. Poincaré Probab. Statist.* **31** (1995), 351–377. MR1324812 (96d:60085).
60. Averaging stochastically perturbed Hamiltonian systems (with Federico Marchetti). *Stochastic Analysis.* AMS Proceedings of Symposia in Pure Mathematics **57** (1995), 93–114. MR1335465 (96f:60098).
61. A multiclass station with Markovian feedback in heavy traffic (with J. G. Dai). *Math. Oper. Res.* **20** (1995), 721–742. MR1354779 (96m:60209).
62. A countable representation of the Fleming–Viot measure-valued diffusion (with Peter Donnelly). *Ann. Probab.* **24** (1996), 698–742. MR1404525 (98f: 60162).
63. The asymptotic behavior of an urn model arising in population genetics (with Peter Donnelly). *Stochastic Process. Appl.* **64** (1996), 1–16. MR1419488 (98g:60152).
64. Limit theorems for workload input models. *Stochastic Networks: Theory and Applications*, F. P. Kelly, S. Zachary, I. Ziedins, eds. Royal Statistical Society Lecture Note Series **4**. Oxford Science Publications, Oxford (1996), 119–140.
65. A conceptual proof of the Kesten–Stigum theorem for multi-type branching processes (with Russell Lyons, Robin Pemantle, and Yuval Peres). *Classical and Modern Branching Processes*, K. B. Athreya and P. Jagers, eds. IMA Volumes in Mathematics and its Applications **84**. Springer, New York (1997), 181–185. MR1601737 (98j:60122).
66. Looking behind and beyond self-similarity: Scaling phenomena in measured WAN traffic (with A. Feldmann, A. C. Gilbert, and W. Willinger). *Proceedings of the 35th Annual Allerton Conference on Communication, Control and Computing, University of Illinois at Urbana-Champaign, Allerton House, Monticello, IL, September 29 – October 1, 1997*, (1997), 269–280.
67. Martingale problems for conditional distributions of Markov processes. *Electron. J. Probab.* **3** (1998), no. 9, 29pp. MR1637085 (99k:60186).
68. Existence of Markov controls and characterization of optimal Markov controls (with Richard H. Stockbridge). *SIAM J. Control Optim.* **36** (1998), 609–653. MR1616514 (99b:93051). Erratum **37** (1999) 1310–1311. MR1691943 (2000e:93077).
69. Coupling and ergodic theorems for Fleming–Viot processes (with Stewart N. Ethier). *Ann. Probab.* **26** (1998), 533–561. MR1626158 (99f:60074).
70. The changing nature of network traffic: Scaling phenomena (with A. Feldman, A. C. Gilbert and W. Willinger). *ACM SIGCOMM Computer Communication Review*, April, 1998.
71. Particle representations for measure-valued population processes with spatially varying birth and death rates. *Proceedings of International Conference on Stochastic Models (Ottawa, June, 1998).* CMS Conference Proceedings **26**, 299–317. AMS, Providence. MR1765017 (2002b:60082).
72. Particle representations for measure-valued population models (with Peter Donnelly). *Ann. Probab.* **27** (1999), 166–205. MR1681126 (2000f:60108).

73. Particle representations for a class of nonlinear SPDEs (with Jie Xiong). *Stochastic Process. Appl.* **83** (1999), 103–126. MR1705602 (2000g:60108).
74. Genealogical processes for Fleming–Viot models with selection and recombination (with Peter Donnelly). *AnnȦppl. Probab.* **9** (1999), 1091–1148. MR 1728556 (2001h:92029).
75. Martingale problems and linear programs for singular control (with Richard H. Stockbridge). *Proceedings of the 37th Annual Allerton Conference on Communication, Control and Computing* (1999), 11–20.
76. Continuum-sites stepping-stone models, coalescing exchangeable partitions and random trees (with Peter Donnelly, Steven N. Evans, Klaus Fleischmann, and Xiaowen Zhou). *Ann. Probab.* **28** (2000), 1063–1110. MR1797304 (2001j: 60183).
77. Numerical solutions for a class of SPDEs with application to filtering (with Jie Xiong). *Stochastics in Finite and Infinite Dimensions (In honor of Gopinath Kallianpur)* (2001), 233–258. Birkhäuser, Boston. MR1797090 (2001h:65013).
78. Mixed time scale recursive algorithms (with James A. Bucklew). *IEEE Trans. Signal Process.* **49** (2001), 1824–1830. MR1850132 (2002i:94006).
79. Stationary solutions and forward equations for controlled and singular martingale problems (with Richard H. Stockbridge). *Electron. J. Probab.* **6** (2001), no. 17, 52pp. MR1873294 (2002j:60128).
80. Gaussian limits associated with the Poisson–Dirichlet distribution and the Ewens sampling formula (with Paul Joyce and Stephen M. Krone). *Ann. Appl. Probab.* **12** (2002), 101–124. MR1890058 (2002m:62019).
81. When can one detect overdominant selection in the infinite-alleles model? (with Paul Joyce and Stephen M. Krone). *Ann. Appl. Probab.* **13** (2003), 181–212. MR1951997 (2004c:60059).
82. A stochastic evolution equation arising from the fluctuation of a class of interacting particle systems (with Jie Xiong). *Commun. Math. Sci.* **2** (2004), 325–358. MR2118848 (2005m:60136).
83. The approximate Euler method for Lévy driven stochastic differential equations (with Jean Jacod, Sylvie Méléard, and Philip Protter) *Ann. Inst. H. Poincaré Probab. Statist.* **41** (2005), 523–558. MR2139032 (2005m: 60149).
84. Spatial birth and death processes as solutions of stochastic equations (with Nancy Lopes Garcia). *ALEA Lat. Am. J. Probab. Math. Stat.* **1** (2006), 281–303. MR2249658 (2007k:60326).
85. Diffusion approximation of transport processes with general reflecting boundary conditions (with Cristina Costantini). *Math. Models Methods Appl. Sci.* **16** (2006), 717–762. MR2226124 (2008b:82081).
86. Asymptotic analysis of multiscale approximations to reaction networks (with Karen Ball, Lea Popovic, and Greg Rempala). *Ann. Appl. Probab.* **16** (2006), 1925–1961. MR2288709 (2007i:60089).
87. The Yamada–Watanabe–Engelbert theorem for general stochastic equations and inequalities. *Electron. J. Probab.* **12** (2007), 951–965. MR2336594 (2008h: 60291).
88. Spatial point processes and the projection method (with Nancy Lopes Garcia). *In and Out of Equilibrium 2*, Vladas Sidoravicius and Maria Eulalia Vares, eds. Progress in Probability **60**. Birkhäuser Boston, Inc., Boston, MA (2008), 271–298.
89. Limit theorems for an epidemic model on the complete graph (with Elcio Lebensztayn, Alexandre R. Leichsenring, and Fábio P. Machado). *ALEA Lat. Am. J. Probab. Math. Stat.* **4** (2008), 45–55. MR2399589.

90. Poisson representations of branching Markov and measure-valued branching processes (with Eliane Rodrigues). *Ann. Probab.* (to appear).
91. Macroscopic limits for stochastic partial differential equations of McKean–Vlasov type (with Peter Kotolenez). *Probab. Theory Related Fields* (to appear).

Books/notes

1. *Approximation of Population Processes.* CBMS–NSF Regional Conference in Applied Mathematics **36**. SIAM, Philadelphia (1981). MR0610982 (82j:60160).
2. *Markov Processes: Characterization and Convergence* (with Stewart N. Ethier). Wiley, New York (1986). MR0838085 (88a:60130).
3. Weak convergence of stochastic integrals and differential equations I, II (with Philip E. Protter). *Probabilistic Models for Nonlinear Partial Differential Equations.* D. Talay and L. Tubaro, eds. Lecture Notes in Math. **1627**. Springer-Verlag, Berlin (1996), 1–38, 197–279. MR1431298 (98h:60073), MR 1431303 (98h:60074).
4. *Large Deviations for Stochastic Processes* (with Jin Feng). AMS Mathematical Surveys and Monographs **131**. American Mathematical Society, Providence, RI (2006). MR2260560.

Ph.D. students

1. Frank J. S. Wang (1973), Limit theorems for age and density dependent stochastic population models.
2. Stewart N. Ethier (1975), An error estimate for the diffusion approximation in population genetics.
3. Harry M. Pierson (1976), Random linear transformations of point processes.
4. Joseph C. Watkins (1982), A central limit problem in random evolutions.
5. Daniel Johnson (1983), Diffusion approximation for optimal filtering of jump processes and for queuing networks.
6. Wiremu Solomon (1984), Limit theorems for random measures with applications.
7. Douglas J. Blount (1987), Comparison of a stochastic model of a chemical reaction with diffusion and the deterministic model.
8. Cristina Costantini (1987), Obliquely reflecting Brownian motion and diffusion approximations for physically reflecting processes.
9. Richard H. Stockbridge (1987), Time-average control of martingale problems.
10. Eimear Mary Goggin (1988), Weak convergence of conditional probabilities.
11. Gary Shon Katzenberger (1990), Solutions of a stochastic differential equation forced onto a manifold by a large drift.
12. Nancy Garcia (1993), Birth and death processes as projections of higher dimensional Poisson processes.
13. Mark Ingenoso (1993), Stability analysis for certain queueing systems and multi-access communication channels.
14. Nahnsook Cho (1994), Weak convergence of stochastic integrals and stochastic differential equations driven by martingale measure and its applications.
15. Anne Dougherty (1994), Averaging and diffusion approximations for stochastic network models.

16. Jin Feng (1996), Martingale problems for large deviations for Markov processes.
17. Bradbury Franklin (1999), The limit of the normalized error in the approximation of stochastic differential equations.
18. Shun-Hwa Li (1999), Time invariance estimation and consistency results for spatial point processes.
19. Yong Zeng (1999), A class of partially observed models with discrete clustering and non-clustering noises: Application to micro-movement of stock prices.
20. Kevin Buhr (2002), Spatial Moran models with local interactions.
21. Jorge Garcia (2002), Large deviation principle for stochastic integrals.
22. Yoonjung Lee (2004), Two essays on modeling financial markets as complex, interactive systems.
23. Kathryn Temple (2005), Particle representations for measure-valued processes with interactions and exit measures.
24. Xin Qi (2007), The central limit theorems for space-time point processes.
25. Zhengxiao Wu (2007), A filtering approach to abnormal cluster identification.
26. Hye-Won Kang (2008), Multiple scaling methods in chemical reaction networks.