



Chinese
Address
Publications
Resume




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Research on Random Complex Networks and Information Retrieval:


In recent years we have been involved in the research direction of Random Complex Networks and Information Retrieval. Below are some of the related outputs.

Ying Bao, Zhi-Ming Ma, Yan-Hong Shang, Some Recent Results on Ranking Webpages and Websites, to appear in "Industrial and Applied Mathematics in China " in the Series in Contemporary Applied Mathematics (Editors: P.G. Ciarlet and Li Tatsien) by Higher Education Press and World Scientific.  [View PDF](#)

Guo-Lie Lan , Zhi-Ming Ma, Sun Suyong., Coverage Problem of Wireless Sensor Networks, Discrete and Computational Geometry, Lecture Notes in Computer Science 4381 , Discrete Geometry, Combinatorics and Graph Theory, pp88-100, Springer 2007  [View PDF](#)

Yuting Liu, Tie-Yan Liu, Tao Qin, , Zhi-Ming Ma, and Hang Li Supervised Rank Aggregation, WWW 2007.  [View PDF](#)

Ying Bao, Guang Feng, Tie-Yan Liu, Zhi-Ming Ma, and Ying Wang Ranking Websites: A

Probabilistic View, Internet Mathematics., Volume 3 (2007), Issue 3  [View PDF](#)


Li Zhang, Tao Qin, Tie-Yan Liu, Yin Bao, Hang Li, N-Step PageRank for Web Search, ECIR 2007.  [View PDF](#)

Suyong Sun, The Sharp Threshold for Asymptotic Connectivity in Wireless Networks, to appear in Dynamics of Continuous, Discrete and Impulsive Systems B

Y. Bao and Y. Liu, Limit of PageRank with Damping Factor, Dynamics of Continuous, Discrete and Impulsive Systems B, Vol.13 (2006.), Number 3

Guolie Lan , Shengqiu Sun : Local Asymptotic Properties of Complex Networks and their Applications to Infectious Diseases, Dynamics of Continuous, Discrete and Impulsive Systems B, Vol.13 (2006.), Number 3

Y. Bao and Z. H. Zhu, Comparison of Three Web Search Algorithms, Acta Mathematicae Applicatae Sinica, English Series, 223 (2006)

G. Feng, T. Y. Liu, Y. Wang, Y. Bao, Z. M. Ma, X. D. Zhang and W. Y. Ma, AggrerateRank: Bringing Order to Web Sites, Proceedings of the 29th annual international ACM SIGIR conference (SIGIR 2006). pp. 75-82  [View PDF](#)

Journal Articles:

1. A note on random integral measures, Acta Mathematica Sinica Vol. 26, No. 1, 65-69,1983
2. Martingale approach to minimal Q-processes, (with L.Q. Tang), Hunan Annals of Mathematics, Vol. 3, No. 1, 36-44, 1983
3. Stochastic control of multivariate point processes, Acta Mathematicae Applicatae Sinica, Vol. 7, No. 1, 48-62, 1984
4. A sufficient and necessary condition for a distribution of independent sum to be continuous,(with W. An), Acta Mathematicae Applicatae Sinica, Vol. 8, No. 2, 204-209,1985
5. Lebesgue decomposition of random measure and related topics, Chinese Annals of Mathematics, Vol. 6, Ser. A, No. 5, 575-578, 1985
6. Feynman-Kac semigroups and evolutions equation (I): On the density functions of Feynman-Kac semigroups, Advances in Mathematics, Vol. 14, No. 2, 182-183, 1985
7. Feynman-Kac semigroups and evolutions equation (II): Evolution equations with discontinuous potential terms, Advances in Mathematics, Vol. 14, No. 2, 184-185, 1985
8. Some results on regular conditional probabilities, Acta Mathematicae Sinica, New Series Vol. I, No. 4, 1985
9. Queues and marked point processes, Chinese Journal of Applied Probability and Statistics, Vol. 2, No. 1, 52-57, 1986
10. Probabilistic method of Schrödinger equations having infinite gauge, Scientia Sinica (A, Chinese Edition), No. 2, 1987
11. Probabilistic Treatment of Schrödinger equation with infinite gauge, Scientia Sinica (A), Vol. XXX, No. 7, 1987
12. Truncated gauge and Schrödinger operator, (with Z. Zhao), Seminar on Stochastic processes (1986), Birkhäuser, 1987
13. On the probabilistic approach to Boundary value problems, BiBoS, Nr. 288, Bielefeld, 1987
14. Smooth measures and Schrödinger Semigroups, (with Ph. Blanchard), BiBoS, Nr.295, Bielefeld, 1987
15. Probabilistic approach to Neumann problems with infinite gauge, (with R.M. Song),Acta Mathematicae Applicatae Sinica, Vol. 4, No. 7, 1988
16. Nowhere Radon smooth measures, perturbation of Dirichlet forms and singular quadratic forms, (with S. Albeverio), in Lecture Notes in Control and Information Sciences 126, Springer-Verlag, 1989
17. Semigroups of Schrödinger operators with potentials given by Radon measures, (with Ph. Blanchard), in "Stochastic Processes, Physics and Geometry", Ed. S. Albeverio et al., World Scientific, 1990
18. New results on the Schrödinger semigroups with potentials given by signed smooth measures, (with Ph. Blanchard), in "Stochastic Analysis and Related Topics II" (Lecture Notes in Math. 1444), Springer-Verlag, 1990

19. Perturbation by unbounded potentials, (with W. Hansen), *Math. Ann.*, 287, 553-569, 1990
20. Probabilistic Methods in Schrödinger Equations, (with R.M. Song), in "Seminar on Stochastic Processes (1989)", Ed. K.L. Chung et al., Birkhäuser, 1990
21. Some new results concerning Dirichlet forms, Feynman-Kac semigroups and Schrödinger equations, in "Probability theory in China" (Contemporary Mathematics), American Math. Society, 1990
22. Dirichlet forms and Markov fields - A report on recent developments, (with S. Albeverio, M. Röckner), in "Diffusion Processes and Related Problems in Analysis", Ed. M. Pinsky, Birkhäuser, 1990
23. Perturbations of Dirichlet forms, lower semiboundedness, closability and form cores, (with S. Albeverio), *J. Functional Analysis*, 99 (1991), 332-356
24. Diffusion processes associated with singular Dirichlet forms, (with S. Albeverio), "Stochastic Analysis and Applications", Ed. A.B. Cruzeiro et al., Birkhäuser, 1991
25. A note on quasi-continuous kernels representing quasi-linear positive maps, (with S. Albeverio), *Forum Math.*, 3 (1991), 389-400
26. Necessary and sufficient condition for the existence of m -perfect processes associated with Dirichlet forms, (with S. Albeverio), in *Lecture Notes in Math.*, 1485, 374-406, Springer, 1991
27. Feynman-Kac semigroups in terms of signed smooth measures, (with S. Albeverio, Ph. Blanchard), in "International Series of Numerical Mathematics", Vol. 102, p.1-31, Birkhäuser, 1991
28. Capacities on Wiener space: tightness and invariance, (with S. Albeverio, M. Fukushima et al.), *C. R.A.S. 312 S. I.*, 931-935, 1991
29. A general correspondence between Dirichlet forms and right processes, (with S. Albeverio), *Bulletin of the American Math. Society*, (New series) Vol. 26, 245-252, 1992
30. Additive functionals, nowhere Radon and Kato class smooth measures, (with S. Albeverio), *Osaka J. Math.*, 29 (1992), 247-265
31. Probabilistic approach to semilinear boundary value problem, (with R.M. Song), *Acta Mathematicae Applicatae Sinica*, (English Series) 8 (1992), 214-228
32. A Beurling-Deny type structure theorem for Dirichlet forms on general state space, (with S. Albeverio, M. Röckner), in "Ideas and Methods in Mathematical Analysis, Stochastics and Applications", Cambridge University Press, 1992
33. An invariance result for capacities on Wiener space, (with S. Albeverio, M. Fukushima et al.), *J. Functional Analysis*, Vol. 106, 35-49, 1992
34. Characterization of Dirichlet forms associated with Hunt Processes, (with S. Albeverio), in "Stochastic and Quantum Mechanics", Ed. A. Truman, World Scientific, Singapore, 1992
35. Non-symmetric Dirichlet forms and Markov processes on general state spaces, (with S. Albeverio, M. Röckner), *C.R.A.S. 314, S.I.* 77-82, 1992
36. Regularization of Dirichlet spaces and applications, (with S. Albeverio, M. Röckner), *C.R.A.S. 314, S.I.* 859-864, 1992
37. Quasi-regular Dirichlet forms and Markov processes, (with S. Albeverio, M. Röckner), *J. Functional Analysis*, Vol. 111, 118-154, 1993
38. A remark on the support of cadlag processes, (with S. Albeverio, M. Röckner), *Festschrift für G. Kallianpur*, M. Dekker, Springer, New York, 1993
39. An integral representation theorem for quasi-regular Dirichlet spaces, (with Z. Dong), *Chinese Science Bulletin*, Vol. 38, No. 15, 1355-1358, 1993
40. Dirichlet forms and their applications to mathematics and physics, *Advances in Math.*, Vol. 22, 46-68, 1993
41. Local property of Dirichlet forms and diffusions on general state spaces, (with S. Albeverio, M. Röckner), in *Math. Ann.*, 296, 677-686, (1993).
42. Characterization of (non-symmetric) Dirichlet forms associated with Hunt processes, (with S. Albeverio, M. Röckner), *SFB 256 Preprint*, No. 238, 1992
43. A remark on quasi-Radon measures, (with S. Albeverio, M. Röckner), *SFB 256 Preprint*, No. 281, 1993. To appear in *Proceedings to the 3rd Ascona Conference on Probability, Mathematical Physics and Geometry*.
44. Quasi-homeomorphism of Dirichlet forms, (with Z. Chen, M. Röckner), *Nagoya J. Math.* Vol. 136, 1-15, 1994.
45. Markov processes associated with semi-Dirichlet forms, (with L. Overbeck, M. Röckner), *Osaka J.*

- of Mathematics. Vol. 32, No.1 97-120, 1995.
46. The analytic operator-valued Feynman-integral via additive functional of Brownian motion, (with G.W. Johnson, S. Albeverio), *Acta Appl. Math.*, 42, 267-295, 1996
 47. Markov processes associated with positive preserving coercive forms, (with M. Röckner) *Canadian J. Math.*, 47, 817-840, 1995.
 48. Potential theory of quasi-regular Dirichlet forms without capacity, (with S. Albeverio, M. Röckner), *Proc. ICDFSP, de Gruyter*, 47-54, 1995.
 49. Partition of unity in Sobolev spaces over infinite dimensional state spaces (with S. Albeverio, M. Röckner), *J. Functional Analysis*, Vol. 143, 247-268, 1997.
 50. Quasi-regular Dirichlet forms and applications, *Proc. ICM94*, 1006-1016, Birkhäuser Verlag, Basel, 1995.
 51. Invariance of Malliavin fields on Ito's Wiener space and on abstract Wiener space (with F. Z. Gong), *J. Functional Analysis*, Vol. 138, 449-476, 1996.
 52. Quasi-sure analysis on Ito's Wiener space (with F. Z. Gong), *C.R.A.S. t.321. Serie I*, 1609-1614, 1995.
 53. Characterization of non-symmetric semi-Dirichlet forms associated with Hunt processes (with S. Albeverio, M. Röckner), *Random Operators and Stochastic Equations*, 3, 161-179, 1995.
 54. One to one correspondence between markov processes and Dirichlet forms, *Bulletin of the International Statistical Institute*, IP 13.2 517-530, 1995.
 55. Vector fields on mapping spaces and related Dirichlet forms and diffusions (with K.D. Elworthy), *Osaka J. Math.*, 34(1997), 629-651
 56. Admissible vector fields and related diffusions on infinite dimensional manifolds (with K.D. Elworthy), *Ukrain. Mat. Zh.* 49 (1997), no. 3, 410-423; translation in *Ukrainian Math. J.* 49 (1997), no. 3, 451-466 (1998)
 57. Some contributions in stochastic analysis by Chinese mathematicians, in "The 60th anniversary of the Chinese Mathematical Society", Hunan press, 1997
 58. Stochastic differential geometry and infinite dimensional stochastic analysis, in "The tendency of natural sciences in the 21th century ", Chinese Academic Press, 1997
 59. Some discussion about the research subject concerning stochastic analysis, in *Bull. Academia Sinica*, N0.4, 1995
 60. A note on Beurling-Deny formulae in infinite dimensional spaces, (with Z. Dong, W. Sun), *Acta Math. Appl. Sinica* 13 (4), 353-361, 1997
 61. Approximation of arbitrary Dirichlet processes by Markov chains, (with M. Röckner, T.S. Zhang), *Ann. Inst. Henri Poincare*, Vol.34, No. 1, 1-22, 1998
 62. Martingale representation and log-Sobolev inequality on loop space, (with F.Z. Gong), *C.R.A.S. t.326. Serie I*, 749-753, 1998.
 63. Log-Sobolev inequality on loop space over a compact Riemannian manifold, (with F.Z. Gong), *J. Functional Analysis*, 157(1998), 599-621
 64. Construction of stochastic processes on configuration spaces, (with M. Roeckner), *Osaka J. Math.*, 37(2000), 273-314
 65. Approximation of Hunt processes by multivariate Poisson processes, (with M. Roeckner, W. Sun), *Acta Applicandae Mathematicae* 63, 233-243, 2000
 66. Diffusions living on simple configuration spaces (with M. Roeckner), *Canadian Mathematical Society Conference Proceedings*, Volum 28, 255-269, 2000
 67. Superprocesses of stochastic flows (with Kai-Nan Xiang), *Annals of Probability*, 29(2001), 317-343
 68. Introduction to Dirichlet forms. (in Chinese) *J. Chongqing Norm. Univ. Nat. Sci. Ed.* 18 (2001), no. 1, 1--7.
 69. Beurling-Deny formula of semi-Dirichlet forms (with Z.C. Hu) *C. R. Math. Acad. Sci. Paris* 338 (2004), no. 7, 521--526.
 70. Boundary Problems for Fractional Laplacians (with Q.Y. Guan), *Stochastics and Dynamics*, 2005 , Vol. 5, No. 3.
 71. Reflected Symmetric alpha-Stable Processes and Regional Fractional Laplacian with Q.Y. Guan), *Probability Theory and Related Fields*, 134 (2006), 649-694
 72. Extensions of Levy-Khintchine formula and Beurling-Deny formula in semi-Dirichlet forms setting (with Ze-Chun Hu and Wei Sun), *Journal of Functional Analysis*, 239(2006), 179-213.
 73. Guo-Lie Lan , Zhi-Ming Ma, Sun Suyong, Coverage Problem of Wireless Sensor Networks,

- Discrete and Computational Geometry, Lecture Notes in Computer Science 4381 , Discrete Geometry, Combinatorics and Graph Theory, pp88-100, Springer 2007
74. C.Z. Chen, Z.M. Ma and W. Sun , On Girsanov and generalized Feynman-Kac transformations for symmetric Markov processes. Infinite Dimensional Analysis, Quantum Probability and Related Topics, Vol. 10 (2007) , no. 2, 141-163.
 75. Ying Bao, Gang Feng, Tie-Yan Liu, Zhi-Ming Ma, and Ying Wang, Ranking Websites: A Probabilistic View, Internet Mathematics., Volume 3 (2007), Issue 3

Books:

1. An introduction to the theory of (non-symmetric) Dirichlet forms , (with M. Röckner), Springer Verlag, 1992
2. Dirichlet Forms and Stochastic Processes (Proceedings of the International Conference held in Beijing in 1993, Eds: Ma, Roeckner, Yan), de Gruyter, 1995
3. Recent Developments in Stochastic Analysis and Related topics (Proceedings of the first Sino-German conference on Stochastic Analysis, Eds: Albeverio, Ma, Roeckner), World Scientific, 2004

Education:

Doctor of Sciences, Academia Sinica, 1984

Fellowships:

Academician, Chinese Academy of Sciences (since 1995)

Fellow, Third World Academy of Sciences (since 1998)

Fellow, Institute of Mathematical Statistics (since 2007)

Present Position:

Professor, Inst. Appl. Math., AMSS, Chinese Academy of Sciences

Vice President, Executive Committee of IMU

President, Chinese Mathematical Society

Selected Activities:

1989.01-1992.12 Chief of Research Group of Stochastic Calculus, Institute of Applied Mathematics, Academia Sinica

1993.10-1996.10 Director of the Probability Center, Inst. Appl. Math., Academia Sinica

1996.01-1999.12 Vice president of CMS

1996.11-1998.12 Deputy director of Inst. Appl. Math., Academia Sinica

1999.01-2003.01 Director of Inst. Appl. Math., Academia Sinica

2000.01- 2003.12	President of CMS
2002.08	Chairman of the Organizing Committee of ICM2002
2002.08 - 2006.08	Executive committee member, International Math Union
2003.01 - Present	Council member, Bernoulli Society for Math Statistics and Probability
2004.03 - Present	Committee member, National Natural Science Foundation of China
2004.10	Distinguished Chinese Visiting Scholars Scheme, Hong Kong Polytechnic University
2007.01- Present	Vice President, Executive Committee of International Math Union
2008.01- Present	President, Chinese Mathematical Society

Awards/Honours:

1992	First Class Prize for Natural Sciences (by Academia Sinica
1992	Max-Plank Research Award (by Max-Plank Society and Alexander von Humboldt Foundatio)
1993	Chinses National Natural Sciences Prize
1995	S.S. Chern Mathematics Prize
1996	Qiu-Shi outstanding young scholars Prize
1999	He-Liang-He-Li Sciences and Technology Progress Prize
2004	Honorary Degree of Doctor of Science, Loughborough University, U.K.
2005	Hua Loo-Keng Mathematics Prize (by Chinese Mathematical Society)