# Publications: Tom Lindstrøm

## 1. Published and submitted scientific papers

1. "Hyperfinite Stochastic Integration I: The Nonstandard Theory", *Math. Scand.* **46** (1980), 265-292.
2. "Hyperfinite Stochastic Integration II: Comparison with the Standard Theory", *Math. Scand.* **46** (1980), 293-314.
3. "Hyperfinite Stochastic Integration III: Hyperfinite Representations of Standard Martingales", *Math. Scand.* **46** (1980), 315-331.
4. "Addendum to Hyperfinite Stochastic Integration III", *Math. Scand.* **46** (1980), 332-333.
5. "A Loeb-Measure Approach to Theorems by Prohorov, Sazonov, and Gross", *Trans. Amer. Math. Soc.* **269** (1982), 521-534.
6. "Stochastic Integration in Hyperfinite Dimensional Linear spaces"in A. E. Hurd (ed.): *Nonstandard Analysis — Recent Developments*, Springer Lecture Notes in Mathematics 983, 1983, 134-161.
7. (with Sergio Albeverio, Jens Erik Fenstad, Raphael Høegh-Krohn, and Witold Karwowski) "Perturbations of the Laplacian Supported by Null Sets, with Applications to Polymer Measures and Quantum Fields", *Physics Letters* **104** (1984), 396-400.
8. (with Øystein Nirisen and Erling Rytter) "First Order Activation-Second Order Deactivation Kinetics Applied to the Polymerization with Supported Ziegler-Natta Catalysts", *Makromol. Chem., Rapid Commun.* **7** (1986), 103-108.
9. "Nonstandard Analysis and Perturbations of the Laplacian along Brownian Paths"in S.Albeverio et al. (eds.) *Stochastic Processes - Mathematics and Physics*, Springer Lecture Notes in Mathematics 1158, 1986, 180-200.
10. "Nonstandard Energy Forms and Diffusions on Manifolds and Fractals", in S. Albeverio et al. (eds.) *Stochastic Processes in Classical and Quantum Systems*, Springer-Verlag, 1986, 363-380.
11. "Nonstandard Constructions of Diffusions and Related Processes", in Yu. Prohorov and V.V. Sazonov (eds.): *Proceedings of the 1st World Congress of the Bernoulli Society, Vol. I.* VNU Science Press, 1987, 179-190.
12. "An Invitation to Nonstandard Analysis", in N. J. Cutland (ed.) *Nonstandard Analysis and its Applications*, Cambridge University Press, 1988, 1-105.
13. "Brownian motion on Nested Fractals", *Memoirs Amer. Math. Soc.* **420**, 1990, 128p.
14. "A Nonstandard Approach to Iterated Function Systems", in M. Reeken (ed): *Tagungsberichte — Nonstandard Analysis*, Wuppertal, 1990, 86-110.

15. (with Iulie Aslaksen, Olav Bjerkholt, Kjell Arne Brekke & Bernt Øksendal) "The Choice Between Hydro and Thermal Power Generation under Uncertainty", in O. Bjerkholt, Ø. Olsen & J. Vislie (eds.) *Recent Modelling Approaches in Applied Energy Economics*, Chapman and Hall, 1990, 187-206.

16. (with Iulie Aslaksen, Olav Bjerkholt, Kjell Arne Brekke & Bernt Øksendal) "An Application of Reflected Diffusions to the Problem of Choosing Between Hydro and Thermal Power Generation", *Stoch. Proc. Appl*, **44** (1993), 117-139

17. "Fractional Brownian Fields as Integrals of White Noise", *Bull. London Math. Soc.* **25** (1993), 83-88.

18. (with Iulie Aslaksen, Olav Bjerkholt, Kjell Arne Brekke, and Bernt Øksendal) "Partial Investment under Uncertainty", in D. Lund & B. Øksendal (eds.): *Stochastic Models and Option Values*, North-Holland, 1991, 167-186.

19. "Nonstandard Analysis, Iterated Function Systems and Brownian Motion on Fractals"in G. O. S. Ekhaguerre (ed.) *Contemporary Stochastic Analysis*, World Scientific, 1991, 71-108.

20. "Brownian Motion Penetrating the Sierpinski Gasket", in N. Ikeda & K. D. Elworthy: *Asymptotic Problems in Probability Theory: Stochastic Models and Diffusions on Fractals*, Longman Scientific and Technical, 1993, 248-278.

21. (with Bernt Øksendal & Jan Ubøe) "Stochastic Differential Equations Involving White Noise", in M. T. Barlow & N. H. Bingham (eds.) *Stochastic Analysis*, CambridgeUniversity Press, 1991, 261-303.

22. (with Bernt Øksendal & Jan Ubøe) "Wick Multiplication and Ito-Skorohod Stochastic Differential Equations", in S. Albeverio & al. (eds.): *Ideas and Methods in Mathematical Analysis, Stochastics, and Applications*, Cambridge University Press, 1992, 183-206.

23. (with Sergio Albeverio, Jens Erik Fenstad, Raphael Høegh-Krohn & WittoldKarwowski) "Schrödinger Operators with Potentials Supported by Null Sets", in S. Albeverio et al. (eds.): *Ideas and Methods in Quantum and Statistical Physics*, Cambridge University Press, 1992, 63-95.

24. (with Helge Holden, Bernt Øksendal, & Jan Ubøe) "Discrete Wick Calculus and Stochastic Functional Equations", *Potential Analysis* **1** (1992). 291-306.

25. (with Helge Holden, Bernt Øksendal, Jan Ubøe & T.-S. Zhang) "Stochastic Boundary Value Problems. A White Noise Functional Approach", *Probab.Th. and Rel. Fields* **95** (1993), 391-419.

26. (with Bernt Øksendal & Jan Ubøe) "Stochastic Modelling of Fluid Flow in Porous Media", in Shuping Chen & Jiongmin Yong (eds.) *Control Theory, Stochastic Analysis,and Applications*, World Scientific, 1992, 156-172.

27. (with Nigel Cutland) "Random Relaxed Controls and Partially Observed Stochastic Systems", *Acta Appl. Math.* **32** (1993), 157-182.

28. (with I. Aslaksen, O. Bjerkholt, K. A. Brekke & B. Øksendal) "A Class of Solvable Stochastic Investment Problems Involving Singular Controls", *Stochastics* **43** (1993), 29-63.

29. (with H. Gjessing, H. Holden, B. Øksendal, J. Ubøe & T.-S. Zhang) "The Wick Product", in H. Niemi, G. Högnäs, A. N. Shiryaev, A. V. Melnikov (eds.): *Frontiers in Pure and Applied Probability I*, VSP-Utrecht/TVP-Moscow, 1993, 29-67.

30. (with H. Holden, B. Øksendal, and J. Ubøe): "Discrete Wick Products", in T. Lindstrøm, B. Øksendal, S. Ustunel (eds.) *Stochastic Analysis and Related Topics*, Gordon & Breach, 1994, 123-148

31. (with H. Holden, B. Øksendal, J. Ubøe, and T.-S. Zhang): "A Comparison Experiment for Wick Multiplication and Ordinary Multiplication", in T. Lindstrøm, B. Øksendal, S. Ustunel (eds.) *Stochastic Analysis and Related Topics*, Gordon & Breach, 1994, 149-160

32. (with H. Holden, B. Øksendal, J. Ubøe, and T.-S. Zhang): "The Burgers Equation with a Noisy Force and the Stochastic Heat Equation", *Comm. Part. Diff. Eq.* **19** (1994), 119-142

33. "Anderson´s Brownian Motion and the Infinite Dimensional Ornstein-Uhlenbeck Process", in S. Albeverio, D. Laugwitz, M. Wolff (eds.) *Applications of Nonstandard Analysis to Analysis, Functional Analysis, Probability Theory, and Mathematical Physics*, Kluwer Academic Publishers, 1995, 186-199.

34. (with B. Øksendal, J. Ubøe, and T.-S. Zhang) "Stability Properties of Stochastic Partial Differential Equations", *Stoch. Anal. Appl.* **13** (1995), 177-204.

35. (with H. Holden, B. Øksendal, J. Ubøe, and T.-S. Zhang) "The Pressure Equation for Fluid Flow in a Stochastic Medium", *Potential Analysis* **4** (1995), 655-674.

36. (with Y. Hu, B. Øksendal, J. Ubøe, and T.-S. Zhang): "Inverse Powers of White Noise", in M. Cranston & M. Pinsky (eds.): *Stochastic Analysis*, Proceedings in Symposia in Pure Mathematics, American Mathematical Society, 1995, 439-456.

37. (with I. Aslaksen, O. Bjerkholt, K. A. Brekke & B. Øksendal): "Solvable Stochastic Investment Problems", in A. N. Shirayev et al. (eds.) *Frontiers in Pure and Applied Probability II, TVP Sci. Publ.* 1996, 113-120.

38. (with H. Holden, B. Øksendal, J. Ubøe, and T.-S. Zhang) "The Stochastic Wick-Type Burgers Equation", in Alison Etheridge (ed.): *Stochastic Partial Differential Equations*, Cambridge University Press, 1995, 141-161.

39. "Internal Martingales and Stochastic Integration", in L. O. Arkeryd et al. (eds.) *Nonstandard Analysis — Theory and Applications*, Kluwer, Dordrecht, 1997, 209-258.

40. "Hyperfinite Lévy processes", *Stochastics and Stochastics Reports*, **76** (2004), 517-548.

41. "Nonlinear Stochastic Integrals for Hyperfinite Lévy Processes", *Logic and Analysis* **1** (2008), 91-129.

42. "A Weighted Random Walk Approximation to Fractional Brownian Motion", e-print, Department of Mathematics/CMA, University of Oslo, 2007

## 2. Scientific books

43. (with Sergio Albeverio, Jens Erik Fenstad & Raphael Høegh-Krohn) *Nonstandard Methods in Stochastic Analysis and Mathematical Physics*, Academic Press, 1986, 514p.

44. (with Sergio Albeverio, Jens Erik Fenstad & Raphael Høegh-Krohn) *Nestandartny Metody v Stochastistjeskom Analize i Matematistjeskoy Fizike*, MIR, Moscow, 1990, 616p. (Russian Translation of the preceding.)

## 3. Unpublished scientific reports and preprints

45. "The Structure of Hyperfinite Stochastic Integrals", Preprint 1980 (accepted by *Z. Wahrsch. verw. Gebiete.*, but never revised).

46. "Pushing Down Loeb-Measures", Preprint Series, Department of Mathematics, University of Oslo, 1981.

47. *Oscillating Cylinder in Ocean Waves*, SI-Report 78 04 09, Central Institute for Industrial Research, Oslo, 1981.

48. (with Iulie Aslaksen, Olav Bjerkholt, Kjell Arne Brekke & Bernt Øksendal) "Equilibrium in Real Options", Preprint, 1991

## 4. Edited scientific books

49. (joint editor with S. Albeverio, J. E. Fenstad, and H. Holden): *Ideas and Methods in Mathematical Analysis, Stochastics, and Applications*", Cambridge University Press, 1992, 509 p.

50. (joint editor with S. Albeverio, J. E. Fenstad, and H. Holden): *Ideas and Methods in Quantum and Statistical Physics*, Cambridge University Press, 1992, 542 p.

51. (joint editor with B. Øksendal & S. Üstünel): *Stochastic Analysis and Related Topics*, Gordon & Breach, 1994, 287 pp.

52. (joint editor with F.E. Benth, G. Di Nunno, B. Øksendal, T, Zhang) *Stochastic Analysis and Applications: The Abel Symposium 2005*, Springer-Verlag, Berlin, 2007, 678 pp.

## 5. Popularizations

53. "Brownske bevegelser, molekyler og Cantor-mengder"(Brownian Motion, Molecules and Cantor Sets), *Normat*, **36** (1988), 114-125.

54. "Fraktaler — matematisk tankespinn med praktiske anvendelser?"(Fractals — mathematical daydreams with practical applications?) in Per Hag & Ben Johnsen (eds.) *Fra Matematikkens Spennende Verden*, Tapir Forlag, 1993, 77-108.

55. *Kompletthet og Kontinuitet. Om Grunnlaget for Differensial- og Integralregningen* (Completeness and Continuity. On the Foundations of Differential and Integral Calculus), Gyldendal Norske Forlag, 1992, 48pp.

56. *Orden og Kaos. Om lineære og ikke-lineære differensligninger* (Order and Chaos. On linear and nonlinear difference equations), Gyldendal Norsk Forlag, 1993, 47 p.

57. "En falskspillers bekjennelser — om gevinstsjanser i Svarteper"(The confessions of a cardsharp — on winning probabilities in Old Maid), *Normat* **41** (1993), 161-172.

58. "Uendelig små og store tall — og litt om hva de kan brukes til" (Infinitely small and infinitely large numbers — and a little about what they can be used for), *Normat* **44** (1996), 71- 91.

59. "Kaos — er ikke kaos"(Chaos — isn't chaos), i *P2-akademiet B*, NRK-P2, 1995, 176-189.

60. "Ikke-euklidsk geometri — om parellellpostulatets forunderlige liv og skjebne"(Non-euclidean geometry — on the strange life and destiny of the parallel postulate), in Geir Tufteland (ed.) *Matematikk I for allmennlærerutdanningen*, Universitetsforlaget, Oslo, 1998.

61. "Tallenes tale"(Numbers talking), in Mari Toft (ed.) *Prosaboka*, Fritt og vilt, Nesbru, 2000, 139-145

62. "Å se det som ikke kan sees" (To see what cannot be seen), in J. Braarud og B. Natvig (eds.). *To kulturer?*, Pax, Oslo 2002.

63. "Algebra og geometri — samspillet som ble borte I" (Algebra and geometry — the interplay that disappeared I), *Tangenten* **19** (2008), 29-31

## 6. Textbooks

64. *Kalkulus* (Calculus), Universitetetsforlaget, 1995, 687 pp (3rd edition 2006).

65. (with Lisa Lorentzen & Arne Hole) *Kalkulus med én og flere variable* (Calculus with one and several variables), Universitetsforlaget, Oslo, 2003, 716 pp.

## 7. Teaching material

66. (with Erik Alfsen): *Klassisk Tallteori* (Classical Number Theory), Matematisk institutt, 1994, 58 pp.

67. *MA 114: Funksjoner av flere variable* (Functions of several variables), Matematisk institutt, 1997, 97 pp.

68. *Vektorregning* (Vectors), Matematisk institutt, 2000, 75 pp

69. (with Klara Hveberg) *MATLAB for MAT1110*, Matematisk institutt/CMA, 2007, 31 pages

70. *Flervariabel analyse med lineær algebra* (Multidimensional calculus with linear algebra), Matematisk institutt/CMA, 2008, 623 pages