

Bibliography

- [1] **V. Balakrishnan**, Anomalous diffusion in one dimension, *Physica A*, Vol. 132 (1985) 569–580.
- [2] **E. Barkai**, Fractional Fokker-Planck equation, solution, and application, *Phys. Rev. E*, Vol. 63 (2001) 046118–1–046118–17.
- [3] **E. Barkai**, **R. Metzler** and **J. Klafter**, From continuous time random walks to the fractional Fokker-Planck equation, *Phys. Rev. E*, Vol. 61, No. 1 (2000) 132–138.
- [4] **K. W. H. Van Beek** and **A. J. Stam**, A Variant of the Ehrenfest model, *Adv. Appl. Prob.* 19 (1987) 995–996.
- [5] **P. Biler**, **G. Karch** and **W. A. Woyczyn'ski**, Fokker-Planck equations and conservation laws involving diffusion generators. In: Miscellanea No. 22 August 2002, Mini Proceedings on Lévy Processes, Theory and Applications, pp 64–68. Available at <http://www.maphysto.dk>.
- [6] **N. H. Bingham**, Fluctuation theory for the Ehrenfest urn, *Adv. Appl. Prob.*, Vol. 23 (1991) 598–611.
- [7] **G. Blom**, Mean transition times for the Ehrenfest urn model, *Adv. Appl. Prob.*, Vol. 21 (1989) 479–480.
- [8] **L. Breiman**, *Probability*, SIAM, Philadelphia (1992).
- [9] **A. V. Chechkin** and **V. Yu. Gonchar**, A model for persistent Lévy motion, *Physica A*, Vol. 277 (2000) 312–326.
- [10] **A. Chechkin**, **V. Gonchar**, **J. Klafter**, **R. Metzler**, and **L. Tanatarov**, Stationary states of non-linear oscillators driven by Lévy noise, *Chemical Physics* 284 (2002) 233–251.
- [11] **Chao Chung-Jeh**, Explicit formula for the stable law of distribution, *Acta Math. Sinica*, Vol. 3 (1953). [in Chinese with English summary]

- [12] **K. L. Chung**, *A Course in probability Theory*, 2nd ed., Academic Press, New York (1974). [1st ed., Harcourt Brace Jovanovich (1968)].
- [13] **D. R. Cox**, *Renewal Theory*, Methuen, London (1967).
- [14] **D. R. Cox** and **H. D. Miller**, *The Theory of Stochastic Processes*, Methuen and Co Ltd, London (1970).
- [15] **P. Ehrenfest** and **T. Ehrenfest**, Über zwei bekannte Einwände gegen das Boltzmannsche H-Theorem, *Phys. Zeit.*, Vol. 8 (1907) 311–314.
- [16] **P. Ehrenfest** and **T. Ehrenfest**, *Enzyklop. math. Wiss.*, (Leipzig, 1911), Bd. IV, Heft 32.
- [17] **A. Erdélyi**, **W. Magnus**, **F. Oberhettinger** and **F. G. Tricomi**, *Higher Transcendental Functions, Bateman Project*, Vols. 1-3, McGraw-Hill, New York, 1953–1955.
- [18] **W. Feller**, On a generalization of Marcel Riesz’potentials and the semi-groups generated by them, *Meddelanden Lunds Universitetes Matematiska Seminarium* (Comm. Sém. Mathém. Université de Lund), Tome suppl. dédié a M. Riesz, Lund (1952) 73–81.
- [19] **W. Feller**, *An Introduction to Probability Theory and its Applications*, vol.1 (3rd Ed.) New York, London, Sydney (1968).
- [20] **W. Feller**, *An Introduction to Probability Theory and its Applications*, Vol. 2, John Wiley and Sons, New York, London, Sydney, Toronto (1971).
- [21] **H. C. Fogedby**, Langevin equations for continuous time Lévy flights, *Phys. Rev. E.*, Vol. 50, No. 2 (1994) 1657–1600.
- [22] **F.-J. Fritz**, **B. Huppert**, and **W. Willems**, *Stochastische Matrizen*, Springer-Verlag, Berlin, Heidelberg, New York (1979).
- [23] **B. V. Gnedenko** and **A. N. Kolmogorov**, *Limit Distributions for Sums of Independent Random Variables*, (transl. from Russian by K. I. Chung), Cambridge (Mass.), Addison-Wesley Publishing Company (1954).
- [24] **C. Godrèche** and **J. M. Luck**, Correlation and response in the backgammon model: the Ehrenfest legacy, *J. Phys. A: Math. Gen.* 32 (1999) 6033–6054.
- [25] **J. A. Goldstein**, *Semigroups of Linear Operators and Applications*, Oxford University Press, Oxford and New York (1985).
- [26] **R. Gorenflo**, Newtonsche Aufheizung, Abelsche Integralgleichungen zweiter Art und Mittag-Leffler Funktionen, *Z. Naturforschung A*, Vol. 42 (1987) 1141–1146.
- [27] **R. Gorenflo**, Fractional calculus: some numerical methods. In: A. Carpinteri and F. Mainardi (Editors), *Fractals and Fractional Calculus in Continuum Mechanics*, CISM Courses and Lectures # 378, Springer Verlag, Wien (1997) 277–290.

- [28] **R. Gorenflo** and **E. A. Abdel-Rehim**, Approximations of time-fractional diffusion with central drift by difference schemes, Freie Universität Berlin, Fachbereich Mathematik und Informatik, Serie A. Mathematik, Preprint Nr. A-05-03, see <http://www.math.fu-berlin.de/publ/index.html>.
- [29] **R. Gorenflo** and **E. A. Abdel-Rehim**, Discrete models of time-fractional diffusion in a potential well, *J. Concrete and Applicable Mathematics*, Special Issue on Fractional Calculus, Stefan G. Samko (Editor), to appear.
- [30] **R. Gorenflo** and **E. A. Abdel-Rehim**, From power laws to fractional diffusion: the direct way, *Vietnam Journal of Mathematics*, to appear.
- [31] **R. Gorenflo**, **A. Iskenderov** and **Yu. Luchko**, Mapping between solutions of fractional diffusion-wave equations, *Fractional Calculus and Applied Analysis*, Vol. 3, No. 1 (2000) 75–86.
- [32] **R. Gorenflo**, **I. Loutchko**, and **Yu. Luchko**, Computation of the Mittag-Leffler function $E_{\alpha,\beta}(z)$ and its derivative, *Fractional Calculus and Applied Analysis*, Vol. 5 (2002) 491–518.
- [33] **R. Gorenflo** and **M. Niedack**, Conservative difference schemes for diffusion problems with boundary and interface conditions, *Computing*, Vol. 25 (1980) 299–316.
- [34] **R. Gorenflo** and **F. Mainardi**, Approximation of Lévy- Feller diffusion by random walk, *J. for Analysis and its Applications(ZAA)*, Vol. 18 (1999) 231–146.
- [35] **R. Gorenflo** and **F. Mainardi**, Random walk models for space-fractional diffusion processes, *Fractional Calculus and Applied Analysis*, Vol. 1 (1998) 167–191.
- [36] **R. Gorenflo** and **F. Mainardi**, Random walk models approximating symmetric space-fractional diffusion processes. In: J. Elschner, I. Gohberg and B. Silbermann (Editors), *Problems in Mathematical Physics*, Birkhäuser Verlag, Basel (2001) 120-145.
- [37] **R. Gorenflo** and **F. Mainardi**, Fractional calculus: integral and differential equations of fractional order. In: A. Carpinteri and F. Mainardi (Editors), *Fractals and Fractional Calculus in Continuum Mechanics*, Springer Verlag, Wien and New York, 1997, pp. 223-276. [Reprinted in News 010101, see <http://www.fracalmo.org>]
- [38] **R. Gorenflo** and **M. Mainardi**, Fractional diffusion processes: Probability distributions and continuous time random walk. In: Govindan Rangarajan and M. Ding (Editors), *Processes with Long Range Correlations*, Lecture Notes in Physics, Springer-Verlag Berlin, No. 621 (2003) pp. 148–166.
- [39] **R. Gorenflo**, **F. Mainardi**, **D. Moretti**, and **P. Paradisi**, Time-fractional diffusion: a discrete random walk approach, *Nonlinear Dynamics*, Vol. 29 (2002) 129–143.
- [40] **R. Gorenflo**, **F. Mainardi**, **D. Moretti**, **G. Pagnini**, and **P. Paradisi**, Discrete random walk models for space-time fractional diffusion, *Chemical Physics*, Vol. 284 (2002) 521–541.

- [41] **R. Gorenflo, F. Mainardi, E. Scalas and M. Raberto**, Fractional Calculus and continuous time finance *III: The diffusion limit*, in M. Kohlmann and S. Tang (Editors): Trends in Mathematics-Mathematical Finance, pp. 171–180 (Birkhäuser, Basel, 2001)
- [42] **R. Gorenflo and S. Vessella**, *Abel Integral Equations: Analysis and Applications*, Lecture Notes in Mathematics # 1461, Springer-Verlag, Berlin, Heidelberg (1991).
- [43] **R. Gorenflo and A. Vivoli**, Fully discrete random walks for space-time fractional diffusion equations, *Signal Processing*, Vol. 83 (2003) 2411–2420.
- [44] **I. S. Gradshteyn and I. M. Ryzhik**, *Tables of Integrals, Series and Products*, Academic Press, New York (1980).
- [45] **R. Hilfer and L. Anton**, Fractional master equations and fractal time random walks, *Phys. Rev. E*, Vol. 51, No. 2 (1995) R848–R851.
- [46] **R. Hilfer**, On fractional diffusion and its relation with continuous time random walks. In: Anomalous Diffusion: from Basics to Applications, (Editors. R. Kutner, A. Pekalaski, and K. Sznajd-Werson), *Springer-Verlag Berlin* (1999) 77–82.
- [47] **R. Hilfer**, Fractional time evolution. In: R. Hilfer (Editor), Applications of Fractional Calculus in Physics, *World Scientific*, Singapore (2000) 87–130.
- [48] **N. Jacob**, *Pseudo-Differential Operators and Markov Processes*, Akademie Verlag, Berlin (1996).
- [49] **N. Jacob**, *Pseudo-Differential Operators and Markov Processes*, Vol. 1, Imperial College Press, London (2001).
- [50] **G. Jumarie**, A Fokker-Planck equation of fractional order with respect to time, *J. Math. Phys.*, Vol. 33, No. 10 (1992) 3536–3542.
- [51] **M. Kac**, Random walk and the theory of Brownian motion, *Am. Math. Monthly*, Vol. 54 (1947) 369–391.
- [52] **M. Kac**, Random walk and the theory of Brownian motion. In: *The Annual Meeting of the Association at Swarthmore*, December (1946) 26–27.
- [53] **N. G. V. Kampen**, *Stochastic Processes in Physics and Chemistry*, North-Holland Publishing Company, Amsterdam, New York, Oxford (1981).
- [54] **S. Karlin and M. Taylor**, *A Course in Stochastic Processes*, 2nd ed., Academic Press, New York, San Francisco, London (1975).
- [55] **M.G. Kendall and S. B. Babington**, *Random Sampling Numbers*, Cambridge University Press, Cambridge (1939).
- [56] **V. Kiryakova**, *Generalized Fractional Calculus and Applications*, Longman Scientific & Technical, John Wiley & Sons, New York (1993).
- [57] **J. Klafter, A. Blumen and M. F. Shlesinger**, A stochastic pathway to anomalous diffusion, *Phys. Rev. E*, Vol. 35 (1987) 3081–3085.
- [58] **A. N. Kolmogorov**, Über die analytischen Methoden in der Wahrscheinlichkeitsrechnung, *Math. Ann.* Vol. 4, No. 104 (1931) 415–458.
- [59] **R. G. Laha and V. K. Rohatgi**, *Probability Theory*, Wiley, New York (1979).

- [60] **P. Lévy**, *Théorie de l'addition des variables aléatoires*, Paris, Gauthiers-Villars (1937), 2nd ed. (1954).
- [61] **E. Lukacs**, *Characteristic Functions*, Charles Griffin and Company Limited, London (1960), 2nd ed. (1970).
- [62] **V. E. Lynch, B. A. Carreras, D. del-Castillo-Negrete, K. M. Ferreira-Mejias** and **H. R. Hicks**, Numerical methods for the solution of partial differential equations of fractional order, *J. Computational Physics*, 192 (2003) 406–421.
- [63] **F. Mainardi** and **R. Gorenflo**, The Mittag-Leffler function in the Riemann-Liouville fractional calculus, boundary value problems, special functions and fractional calculus. In: Proceedings of the International Conference *dedicated to the 90th birthday of Academician F. D. Gakhov*, Held in Minsk, February 16–20, (1996) (Editor A. A. Kilbas). Minsk, Belarusian State University, February (1996) 215–225.
- [64] **F. Mainardi, R. Gorenflo** and **E. Scalas**, A fractional generalization of the Poisson processes, *Vietnam Journal of Mathematics*, to appear.
- [65] **F. Mainardi, Yu. Luchko** and **G. Pagnini**, The fundamental solution of the space-time fractional diffusion equation, *Fractional Calculus and Applied Analysis* Vol. 4, No. 2 (2001) 153–192, Dedicated to R. Gorenflo on the occasion of his 70-th birthday [Available on www.fracalmo.org, pre-print 0101].
- [66] **F. Mainardi, G. Pagnini** and **R. Gorenflo**, Probability distributions as solutions to fractional diffusion equations. In: O.E. Barndorff-Nielsen (Editor), Mini-Proceedings: 2nd MaPhySto Conference on Lévy Processes: Theory and Applications, Dept. Mathematics, University of Aarhus, Denmark, 21–25 January 2002 (ISSN 1398-5957), pp.197–205, 2002. [Available c/o <http://www.MaPhySto.dk>, Miscellanea No. 22]
- [67] **F. Mainardi, M. Raberto, R. Gorenflo** and **E. Scalas**, Fractional calculus and continuous-time finance II: the waiting-time distribution, *Physica A*, Vol. 287 (2000) 568–481.
- [68] **M. M. Meerschaert** and **H. P. Scheffler**, *Distributions for sums of independent random vectors*, Willey series in probability and statistics, New York (2001).
- [69] **M. M. Meerschaert, D. A. Benson, H. P. Scheffler** and **B. Baeumer**, Stochastic solution of space-time fractional diffusion equations, *Phy. Rev. E.*, Vol. 65, No. 041103 (2002) 041103, 1–4.
- [70] **R. Metzler, J. Klafter** and **I. M. Sokolov**, Anomalous transport and external fields: continuous time random walks and fractional diffusion equations extended, *Phy. Rev. E*, Vol. 58, No. 2 (1998) 1621–1633.
- [71] **R. Metzler, E. Barkai** and **J. Klafter**, Anomalous diffusion and relaxation close to thermal equilibrium: a fractional Fokker-Planck equation approach, *Phys. Rev. Lett.*, Vol. 82, No. 18 (1999) 3563–3568.
- [72] **K.S. Miller** and **B. Ross**, *An Introduction to the Fractional Calculus and Fractional Differential Equations*, John Wiley and Sons, INC., New York, Chichester, Brisbane, Toronto, Singapore (1993).

- [73] **K.S. Miller** and **S. G. Samko**, A note on the complete monotonicity of the generalized Mittag-Leffler function, *Real Anal. Exchange*, Vol. 23 (1997) 753–755.
- [74] **K. S. Miller** and **S. G. Samko**, Completely monotonic functions, *Integral Transforms and Special Functions*, Vol. 12, No. 4 (2001) 389–402.
- [75] **M. G. Mittag-Leffler**, Sur la nouvelle fonction $E_\alpha(x)$, *Comptes Rendus Acad. Sci. Paris*, Vol. 137 (1903) 554–558.
- [76] **M. G. Mittag-Leffler**, Sur la représentation analytique d’une branche uniforme d’une fonction monogène, *Acta Math.*, Vol. 29(1905) 101–181.
- [77] **E. W. Montroll** and **G. H. Weiss**, Random walks on lattices II, *J. Math. Phys.*, Vol. 6 (1965) 167–181.
- [78] **T. F. Nonnenmacher** and **R. Metzler**, On the Riemann-Liouville fractional calculus and some recent applications, *Fractals*, Vol. 3, No. 3 (1995) 557–566.
- [79] **K. B. Oldham** and **J. Spanier**, *The Fractional Calculus*, Vol. 3 of Mathematics in Science and Engineering, Academic Press, New York (1974).
- [80] **I. Podlubny**, *Fractional Differential Equations*, Academic Press, San Diego, Boston, New York, London, Sydney, Tokyo, Toronto, 1999.
- [81] **H. Pollard**, The complete monotonic character of the Mittag-Leffler function $E_\alpha(-x)$, *Bull. Am. Math. Soc.*, Vol. 54 (1948) 1115–1116.
- [82] **N. U. Prabhu**, *Stochastic Processes (Basic Theory and its Applications)*, The Macmillan Company New York, Collier-Macmillan Limited London (1965).
- [83] **M. Raberto**, **E. Scalas** and **F. Mainardi**, Waiting-times and returns in high-frequency financial data: an empirical study, *Physica A*, Vol. 314 (2002) 749–755.
- [84] **H. Risken**, *The Fokker-Planck Equation (Methods of Solution and Applications)*, 2nd ed., Springer-Verlag, Berlin, Heidelberg (1989).
- [85] **S. M. Ross**, *Introduction to Probability Models*, 6-th ed., Academic Press, New York, 1997.
- [86] **S. M. Ross**, *Introduction to Probability and Statistics for Engineers and Scientists*, New York, Chichester, Brisbane, Toronto, and Singapore (1987).
- [87] **B. Ross**, A brief history and exposition of the fundamental theory of fractional calculus. In: B. Ross (Editor) *Fractional and its Applications*, Vol. 457 of Lecture Notes in Math., Springer, New York (1975) 1–36.
- [88] **B. Rubin**, *Fractional Integrals and Potentials*, Addison Wesley Longman Limited, Harlow, England (1996).
- [89] **A. I. Saichev** and **G. M. Zaslavsky**, Fractional kinetic equations: solutions and applications, *Chaos*, Vol. 7 (1997) 753–764.
- [90] **S. G. Samko**, **A. A. Kilbas**, and **O. I. Marichev**, *Fractional Integrals and Derivatives (Theory and Applications)* OPA, Amsterdam (1993).
- [91] **G. Samorodnitsky** and **M. S. Taqqu**, *Stable Non-Gaussian Random Processes: Stochastic Models with Infinite Variance*, New York, NY: Chapman and Hall (1994).

- [92] **K. Samuel** and **J. Mc Gregor**, Ehrenfest urn models, *J. Appl. Prob.*, Vol. 2 (1965) 352–376.
- [93] **E. Scalas**, **R. Gorenflo** and **F. Mainardi**, Fractional calculus and continuous-time finance, *Physica A*, Vol. 284 (2000) 376–384.
- [94] **E. Scalas**, **R. Gorenflo** and **F. Mainardi**, Uncoupled continuous-time random walks: Solutions and limiting behaviour of the master equation, *Phys. Rev. E*, Vol. 69 (2004) 0111071. 1–8.
- [95] **W. R. Schneider**, Completely monotone generalized Mittag-Leffler functions, *Expo. Math.*, Vol. 14 (1996) 3–16.
- [96] **W. R. Schneider** and **W. Wyss**, Fractional diffusion and wave equations, *J. Math. Phys.*, Vol. 30, No. 1 (1989) 134–144.
- [97] **E. Schrödinger** and **K. W. F. Kohlrusch**, Das Ehrenfestsche Model der H-Kurve, *Phys. Zeit.*, Vol. 27 (1926) 306-313.
- [98] **G. D. Smith**, *Numerical Solution of Partial Differential Equations with Exercises and Worked Solutions*, London Oxford University Press, New York, Toronto (1965).
- [99] **M. V. Smoluchowski**, Drei Vorträge über Diffusion, Brownsche Molekularbewegung und Koagulation von Kolloidteilchen, *Phys. Zeit.*, Vol. 17, 557–571 and 585–599 (1916).
- [100] **I. M. Sokolov**, **J. Klafter**, and **A. Blumen**, Fractional kinetics, *Physics Today*, Vol. 55 (2002) 48–54.
- [101] **H. Takayasu**, *Fractals in Physics Sciences*, Manchester University Press, Manchester and New York (1990).
- [102] **J. D. Tamarkin**, On integrable solutions of Abel’s integral equation, *Annals of Math.*, Vol. 2, No. 31 (1930) 219–229.
- [103] **Vu Kim Tuan** and **R. Gorenflo**, Extrapolation to the limit for numerical fractional differentiation, *Z. angew. Math. Mech.*, Vol. 75, No. 8 (1995) 646–648.
- [104] **V. V. Uchaikin** and **V. M. Zolotarev**, *Chance and Stability, Stable Distributions and their Applications*, VSP Utrecht, The Netherlands (1999).
- [105] **G.E. Uhlenbeck** and **L. S. Ornstein**, On the theory of Brownian motion, *Phys. Rev.*, Vol. 36 (1930) 823–841.
- [106] **R. S. Varga**, *Matrix Iterative Analysis*, Inc. Englewood Cliffs, New Jersey, Prentice-Hall (1962).
- [107] **I. Vincze**, Über das Ehrenfestsche Modell der Wärmeübertragung, *Archiv der Mathematik XV* (1964) 394–400.
- [108] **V. M. Zolotarev**, Expression of the density of a stable distribution with exponent α greater than one by means of density with exponent $1/\alpha$, *Dokl. Akad. Nauk SSSR (N. S.)*, Vol. 98 (1954) 735–738.
- [109] **V. M. Zolotarev**, *One-dimensional Stable Distributions, Translations of Mathematical Monographs*, Vol. 65, American Mathematical Society Providence, RI (1986).

- [110] **M. C. Wang** and **G. E. Uhlenbeck**, On the theory of Brownian motion II, *Rev. Mod. Phys.*, Vol. 17 (1956) 323-342.
- [111] **D. V. Widder**, *The Laplace Transform*, Princeton Univ. Press, Princeton (1946).