Curriculum Vitae of Garnet N. Ord

Department of Mathematics
Toronto Metropolitan University
350 Victoria St. Toronto, On M5B2K3

Email: gord@torontomu.ca
Nationality: Canadian

Education

B. Sc.	Physics	Brock University	St. Catharines On.	1972
M. A.	Mathematics	York University	Toronto, On.	1975
PhD.	Physics	University of Toronto	Toronto, On.	1983

Employment

Postdoctoral Fellow	Cornell University	Ithaca, New York	(Ben Widom)	1983-1985
Postdoctoral Fellow	Courant Institute	New York, NY	(J.K.Percus)	(1985-1988)
Assistant Professor	Western University	London, On.		(1988-1997)
Assistant Professor	Ryerson University	Toronto, On.		(1997-2000)
Associate Professor	Toronto Metropolitan[1]	Toronto, On.		(2000-2024)
Emeritus	Toronto Metropolitan	Toronto, On.		2024

Research Areas:

Phase Transitions and Critical Phenomena, Percolation Theory, Exactly Solvable Models in Classical Statistical Mechanics, Discrete Physics, Path Integrals, Emergent Quantum Mechanics, Stochastic Models of the Dirac, Schrodinger and Maxwell Equations, Foundations and Interpretations of Quantum Mechanics.

Representative Publications

Ord, G. N. (2023). The Feynman chessboard model in 3 + 1 dimensions. Frontiers in Physics, 11. https://doi.org/10.3389/fphy.2023.1286030

Ord, G. (2021). How Does Spacetime “Tell an Electron How to Move”? Symmetry, 13(12), 2283. https://doi.org/10.3390/sym13122283

Ord, G. N. (1983). Fractal space-time: a geometric analogue of relativistic quantum mechanics. Journal of Physics A: Mathematical and General, 16(9), 1869–1884.

Publications: > 80, citations > 1200, H-index 19

Partial Publicaton List

Ord, G. N. (2023). The Feynman chessboard model in 3 + 1 dimensions. Frontiers in Physics, 11. https://doi.org/10.3389/fphy.2023.1286030

1 Formerly Ryerson University

Ord, G. (2021). How Does Spacetime “Tell an Electron How to Move”? Symmetry, 13(12), 2283. https://doi.org/10.3390/sym13122283

Ord, G. (2019), Statistical Mechanics and the Ghosts of Departed Quantities, arXiv.1901.11066

Ord, G. N. (2018) Can Minkowski Spacetime Resolve Quantum Superpositon? In book: Spacetime Physics 1907-2017 Publisher: Minkowski Institute Press

Ord, G. N. (2017). Superposition as a Relativistic Filter. International Journal of Theoretical Physics, 56(7), 2243–2256. https://doi.org/10.1007/s10773-017-3372-0

Ord, G. N. (2014). Which came first, spacetime or clocks? Journal of Physics: Conference Series, 504, 012011. https://doi.org/10.1088/1742-6596/504/1/012011

Ord, G. N. (2013). Spacetime, Dirac and Bit-Strings. Scientific Essays in Honor of H Pierre Noyes on the Occasion of His 90th Birthday, 270–291. https://doi.org/10.1142/9789814579377_0016

Ord, Garnet, N. (2013). Spacetime and Quantum Propagation From Digital Clocks. The Physics of Reality, 111–119. https://doi.org/10.1142/9789814504782_0012

Ord, G. N. (2012). Quantum Phase from the Twin Paradox. Journal of Physics: Conference Series, 361, 012007. https://doi.org/10.1088/1742-6596/361/1/012007

Ord, G. N., & Mann, R. (2011). How Does an Electron Tell the Time? International Journal of Theoretical Physics, 51(2), 652–666. https://doi.org/10.1007/s10773-011-0945-1

Ord, G. N. (2011). What happens ... between the ticks of a clock. In Proceedings ANPA.

Ord, G. N. (2010). Feynman’s Corner Rule; Quantum Propagation from Special Relativity. International Journal of Theoretical Physics, 49(10), 2528–2539. https://doi.org/10.1007/s10773-010-0445-8

Ord, G. N. (2009). Quantum mechanics in a two-dimensional spacetime: What is a wavefunction? Annals of Physics, 324(6), 1211–1218. https://doi.org/10.1016/j.aop.2009.03.007

G.N. Ord, R.B. Mann, E. Harley, Zenon Harley, Qin Qin Lin, Andrew Lauritzen. (2009) Numerical experiments in relativistic phase generation through time reversal. Advanced Studies in Theoretical Physics, 3(3), 99-130.

Ord, G. N. (2008). Counting oriented rectangles and the propagation of waves. Journal of Mathematical Chemistry, 45(1), 65–71. https://doi.org/10.1007/s10910-008-9368-5

Ord, G. N. (2006). The Dirac equation for accountants. Chaos, Solitons & Fractals, 30(2), 407–411. https://doi.org/10.1016/j.chaos.2006.01.052

Ord, G. N., Gualtieri, J. A., & Mann, R. B. (2006). A Discrete, Deterministic Construction of the Phase in Feynman Paths. Foundations of Physics Letters, 19(5), 471–480. https://doi.org/10.1007/s10702-006-0905-9

ORD, G. N. (2006). DO REAL NUMBERS OBSCURE REAL PHYSICS? Frontiers of Fundamental Physics, 175–182. https://doi.org/10.1007/1-4020-4339-2_24

Ord, G. (2005). Foreword. Chaos, Solitons & Fractals, 25(4), 765. https://doi.org/10.1016/j.chaos.2004.11.030

Ord, G. N. (2005). Bohr, Bohm and entwined paths. Chaos, Solitons & Fractals, 25(4), 769–774. https://doi.org/10.1016/j.chaos.2004.11.080

McKeon, D. G. C., & Ord, G. N. (2004). Time reversal and a stochastic model of the Dirac equation in an electromagnetic field. Canadian Journal of Physics, 82(1), 19–27. https://doi.org/10.1139/p03-120

Garnet Ord, J. A. Gualtieri, Robert B. Mann. (2004) A physical basis for the phase in Feynman path integration. ArXiv, https://arxiv.org/abs/quant-ph/0411005

Ord, G. N. (2003). From classical mechanics to unitary propagation without quantization. Chaos, Solitons & Fractals, 17(4), 609–620. https://doi.org/10.1016/s0960-0779(02)00316-8

Ord, G. N., & Mann, R. B. (2003). Entwined paths, difference equations, and the Dirac equation. Physical Review A, 67(2). https://doi.org/10.1103/physreva.67.022105

Ord, G. N., & Gualtieri, J. A. (2002). The Feynman Propagator from a Single Path. Physical Review Letters, 89(25). https://doi.org/10.1103/physrevlett.89.250403

Ord, G. N., & Gualtieri, J. A. (2002). A realistic setting for Feynman paths. Chaos, Solitons & Fractals, 14(7), 929–935. https://doi.org/10.1016/s0960-0779(02)00043-7

Ord, G. N., & Mann, R. B. (2003). Entwined pairs and Schrödinger's equation. Annals of Physics, 308(2), 478–492. https://doi.org/10.1016/s0003-4916(03)00148-9

Ord, G. N. (2002). The Dirac Equation in Classical Statistical Mechanics. AIP Conference Proceedings, 646, 249–254. https://doi.org/10.1063/1.1524581

Ord, G. N. (2000). Reversible dynamics in discrete dissipative systems. Chaos, Solitons & Fractals, 11(1–3), 383–391. https://doi.org/10.1016/s0960-0779(98)00308-7

McKeon, D. G. C., & Ord, G. N. (2000). Time Reversal in stochastic processes and the Dirac equation II: coupling to an external electromagnetic field. Modern Physics Letters A, 15(09), 595–598. https://doi.org/10.1142/s0217732300000608

Ord, G. N. (1999). Fractals and the Quantum Classical Boundary. Chaos, Solitons & Fractals, 10(8), 1281–1294. https://doi.org/10.1016/s0960-0779(98)00114-3

Ord, G. N. (1999). Gravity and the spiral model. Chaos, Solitons & Fractals, 10(2–3), 499–512. https://doi.org/10.1016/s0960-0779(98)00255-0

Ord, G. N., & Deakin, A. S. (1997). Random walks and Schrödinger's equation in 2+1 dimensions. Journal of Physics A: Mathematical and General, 30(3), 819–830. https://doi.org/10.1088/0305-4470/30/3/008

Ord, G. N. (1996). The Schrödinger and diffusion propagators coexisting on a lattice. Journal of Physics A: Mathematical and General, 29(5), L123–L128. https://doi.org/10.1088/0305-4470/29/5/007

Ord, G. N., & Gualtieri, J. A. (1998). Fractal Paths and Schrödingers Equation in an Electromagnetic Field. Chaos, Solitons & Fractals, 9(11), 1921–1929. https://doi.org/10.1016/s0960-0779(98)00230-6

Ord, G. N. (1998). Schrödinger's Equation and Classical Brownian Motion. Fortschritte Der Physik, 46(6–8), 889–896. https://doi.org/10.1002/(sici)1521-3978(199811)46:6/8<889::aid-prop889>3.0.co;2-z

Ord, G. N. (1998). Schrödinger's equation with Born's guidance. Chaos, Solitons & Fractals, 9(7), 1011–1024. https://doi.org/10.1016/s0960-0779(97)00172-0

Ord, G. N., & Gualtieri, J. A. (1998). Information loss in the continuum limit and Schrödinger's equation in an electromagnetic field. Biosystems, 46(1–2), 21–28. https://doi.org/10.1016/s0303-2647(97)00077-4

Ord, G. N. (1998). Classical Embeddings of Schrödinger's Equation and Non-Locality. Causality and Locality in Modern Physics, 365–372. https://doi.org/10.1007/978-94-017-0990-3_43

Ord, G. N., & Deakin, A. S. (1997). Classical spin in a potential field. International Journal of Theoretical Physics, 36(9), 2013–2021. https://doi.org/10.1007/bf02435957

Ord, G. N. (1997). Classical particles and the Dirac equation with an electromagnetic field. Chaos, Solitons & Fractals, 8(5), 727–741. https://doi.org/10.1016/s0960-0779(96)00059-8

Ord, G. N. (1997). Maxwell's Equations Directly from the Dynamics of Point Particles. The Present Status of the Quantum Theory of Light, 165–168. https://doi.org/10.1007/978-94-011-5682-0_17

Ord, G. N. (1997). Obtaining the Schrödinger and Dirac Equations from the Einstein/KAC Model of Brownian Motion by Projection. The Present Status of the Quantum Theory of Light, 169–180. https://doi.org/10.1007/978-94-011-5682-0_18

Ord, G. N., & Deakin, A. S. (1996). Random walks, continuum limits, and Schrödinger's equation. Physical Review A, 54(5), 3772–3778. https://doi.org/10.1103/physreva.54.3772

McKeon, D. G. C., & Ord, G. N. (1996). On how the (1+1)-dimensional Dirac equation arises in classical physics. Foundations of Physics Letters, 9(5), 447–456. https://doi.org/10.1007/bf02190048

Ord, G. N. (1996). The Schrödinger and Dirac Free Particle Equations without Quantum Mechanics. Annals of Physics, 250(1), 51–62. https://doi.org/10.1006/aphy.1996.0087

Ord, G. N. (1996). Schrödinger's Equation and Discrete Random Walks in a Potential Field. Annals of Physics, 250(1), 63–68. https://doi.org/10.1006/aphy.1996.0088

Ord, G. N. (1996). Fractal space-time and the statistical mechanics of random walks. Chaos, Solitons & Fractals, 7(6), 821–843. https://doi.org/10.1016/0960-0779(95)00100-x

Ord, G. N. (1996). A stochastic model of Maxwell's equations in 1+1 dimensions. International Journal of Theoretical Physics, 35(2), 263–266. https://doi.org/10.1007/bf02083813

Ord, G. N. (1996). The Schrödinger and Dirac Free Particle Equations without Quantum Mechanics. Annals of Physics, 250(1), 51–62. https://doi.org/10.1006/aphy.1996.0087

Ord, G. N. (1995). The Feynman nonrelativistic chessboard. International Journal of Theoretical Physics, 34(9), 1927–1930. https://doi.org/10.1007/bf00674074

Ord, G. N., & Mckeon, D. G. C. (1993). On the Dirac Equation in 3 + 1 Dimensions. Annals of Physics, 222(2), 244–253. https://doi.org/10.1006/aphy.1993.1022

Ord, G. N. (1993). Classical spin and quantum propagation. International Journal of Theoretical Physics, 32(2), 249–260. https://doi.org/10.1007/bf00673715

Ord, G. N. (1993). Quantum interference from charge conservation. Physics Letters A, 173(4–5), 343–346. https://doi.org/10.1016/0375-9601(93)90247-w

Ord, G. N. (1993). The Feynman chessboard in a box. Canadian Journal of Physics, 71(3–4), 159–161. https://doi.org/10.1139/p93-025

McKeon, D. G. C., & Ord, G. N. (1992). Time reversal in stochastic processes and the Dirac equation. Physical Review Letters, 69(1), 3–4. https://doi.org/10.1103/physrevlett.69.3

Ord, G. N. (1992). Classical analog of quantum phase. International Journal of Theoretical Physics, 31(7), 1177–1195. https://doi.org/10.1007/bf00673919

Ord, G. N. (1992). A reformulation of the Feynman chessboard model. Journal of Statistical Physics, 66(1–2), 647–659. https://doi.org/10.1007/bf01060086

Ord, G. N., & Percus, J. K. (1989). A generalization of the one-dimensional ?-function Bose gas. Journal of Statistical Physics, 56(5–6), 681–693. https://doi.org/10.1007/bf01016774

Frisch, H. L., Borzi, C., Ord, G., Percus, J. K., & Williams, G. O. (1989). Approximate representation of functions of several variables in terms of functions of one variable. Physical Review Letters, 63(9), 927–929. https://doi.org/10.1103/physrevlett.63.927

Ord, G., Percus, J. K., & Zhang, M. Q. (1988). Energetics of a discrete interface. Nuclear Physics B, 305(2), 271–285. https://doi.org/10.1016/0550-3213(88)90296-9

Ord, G., Payandeh, B., & Robert, M. (1988). Analytic solution of the block-cluster theory of site and bond percolation in arbitrary dimension. Physical Review B, 37(1), 467–471. https://doi.org/10.1103/physrevb.37.467

Borzi, C., Ord, G., & Percus, J. K. (1987). The direct correlation function of a one-dimensional Ising model. Journal of Statistical Physics, 46(1–2), 51–66. https://doi.org/10.1007/bf01010330

Ord, G., & Whittington, S. G. (1986). Failure of hyperscaling in one-dimensional long-range bond percolation. Journal of Physics A: Mathematical and General, 19(6), L347–L350. https://doi.org/10.1088/0305-4470/19/6/009

Ord, G., & Whittington, S. G. (1985). Site decorations and critical exponents in percolation. Journal of Physics A: Mathematical and General, 18(14), 2795–2806. https://doi.org/10.1088/0305-4470/18/14/029

Ord, G., Whittington, S. G., & Wilker, J. B. (1984). Critical probabilities in percolation on decorated graphs. Journal of Physics A: Mathematical and General, 17(16), 3195–3199. https://doi.org/10.1088/0305-4470/17/16/020

Ord, G. N. (1983). Fractal space-time: a geometric analogue of relativistic quantum mechanics. Journal of Physics A: Mathematical and General, 16(9), 1869–1884. https://doi.org/10.1088/0305-4470/16/9/012

Ord, G., & Whittington, S. G. (1982). Percolation on a randomly expanded lattice: a model of polymer gels. Journal of Physics A: Mathematical and General, 15(1), L29–L31. https://doi.org/10.1088/0305-4470/15/1/006

Gaunt, D. S., Martin, J. L., Ord, G., Torrie, G. M., & Whittington, S. G. (1980). Restricted valence site animals on the simple cubic lattice. Journal of Physics A: Mathematical and General, 13(5), 1791–1797. https://doi.org/10.1088/0305-4470/13/5/037

Ord, G., & Whittington, S. G. (1980). Lattice decorations and pseudo-continuum percolation. Journal of Physics A: Mathematical and General, 13(9), L307–L310. https://doi.org/10.1088/0305-4470/13/9/006