List of publications N.P. (Klaas) Landsman (1963), August 2023

Research monographs

1. *Concepts in Thermal Field Theory*, PhD Thesis (University of Amsterdam, 1989).

2. *Mathematical Topics Between Classical and Quantum Mechanics* (Springer, 1998).

3. *Foundations of Quantum Theory: From Classical Concepts to Operator Algebras* (Springer, 2017).
`https://link.springer.com/content/pdf/10.1007/978-3-319-51777-3.pdf`.

4. *Foundations of General Relativity: From Einstein to Black Holes* (Radboud University Press, 2021, Open Acces), second corrected and expanded printing (July 2022).
`https://www.math.ru.nl/~landsman/FGRBook2022-online.pdf`.

Edited Volumes

1. *Quantization of Singular Symplectic Quotients* (Birkhäuser, 2001). With M. Pflaum & M. Schlichenmaier.

2. *The Challenge of Chance* (Springer, 2016). With E. van Wolde.
`https://link.springer.com/content/pdf/10.1007/978-3-319-26300-7.pdf`.

Popular science books (in Dutch)

1. *Requiem voor Newton* (Contact, 2005).

2. *Naar alle ONwaarschijnlijkheid: Toeval in de wetenschap en filosofie* (Prometheus, 2018). [*In all improbability: Chance in Science and Philosophy*]

Refereed journal articles

1. Consistent real-time propagators for any spin, mass, temperature and density, *Physics Letters* **B172**, 46–48 (1986).

2. Real- and imaginary-time field theory at finite temperature and density (with Ch.G. van Weert), *Physics Reports* **145**, 141–249 (1987). $>$ 1300 citations in Google Scolar.

3. Hilbert space and propagator in thermal field theory, *Physical Review Letters* **60**, 1909–1912 (1988).

4. Non-shell unstable particles in thermal field theory, *Annals of Physics (N.Y.)* **186**, 141–205 (1988).

5. How dissipation solves the infrared problem in thermal QCD, *Physica* **A158**, 200–224 (1989).

6. Limitations to dimensional reduction at high temperature, *Nuclear Physics* **B322**, 498–530 (1989). 200 citations in Google Scolar.

7. Large-mass and high-temperature behaviour in perturbative quantum field theory, *Communications in Mathematical Physics* **125**, 643–660 (1989).

8. Dimensional reduction at high temperature revisited (with E.L.M. Koopman), *Physics Letters* **B223**, 421–424 (1989).

9. A gauge-independent coupling constant in thermal QCD, *Physics Letters* **B232**, 240–246 (1989).

10. C^*-algebraic quantization and the origin of topological quantum effects, *Letters in Mathematical Physics* **20**, 11–18 (1990).

11. Quantization and superselection sectors I. Transformation group C^*-algebras, *Reviews in Mathematical Physics* **2**, 45–72 (1990).

12. Quantization and superselection sectors II. Dirac Monopole and Aharonov-Bohm effect, *Reviews in Mathematical Physics* **2**, 73–104 (1990).

13. Algebraic theory of superselection sectors and the measurement problem in quantum mechanics, *International Journal of Modern Physics* **A6**, 5349–5372 (1991).

14. The geometry of inequivalent quantizations (with N. Linden), *Nuclear Physics* **B365**, 121–160 (1991).

15. Superselection rules from Dirac and BRST quantization of constrained systems (with N. Linden), *Nuclear Physics* **B371**, 415–433 (1992).

16. Induced representations, gauge fields, and quantization on homogeneous spaces, *Reviews in Mathematical Physics* **4**, 503–528 (1992).

17. Deformations of algebras of observables and the classical limit of quantum mechanics, *Reviews in Mathematical Physics* **5**, 775–806 (1993).

18. Quantization and classicization: from Jordan-Lie algebras of observables to gauge fields, *Classical and Quantum Gravity*, **10**, S101–S108 (1993).

19. Quantization on Riemannian spaces from groupoid C^*-algebras, *International Journal of Modern Physics* Proc. Suppl. **3A**, 347–350 (1993).

20. Strict deformation quantization of a particle in external gravitational and Yang-Mills fields, *Journal of Geometry and Physics* **12**, 93–132 (1993).

21. Inaccuracy and spontaneous symmetry breaking in quantum measurements (with T. Breuer and A. Amann), *Journal of Mathematical Physics* **34**, 5441–5450 (1993).

22. Rieffel induction as generalized quantum Marsden-Weinstein reduction, *Journal of Geometry and Physics* **15**, 285–319 (1995), Err. **17** (1995) 298, `arXiv:hep-th/9305088`. 111 citations in Google Scolar.

23. Observation and superselection in quantum mechanics, *Studies in History and Philosophy of Modern Physics* **26**, 45–73 (1995). `arXiv:hep-th/9411173`.

24. Massless particles, electromagnetism, and Rieffel induction (with U.A. Wiedemann), *Reviews in Mathematical Physics* **7**, 923–958 (1995). `arXiv:hep-th/9411174`.

25. The Stueckelberg-Kibble model as an example of quantized symplectic reduction (with U.A. Wiedemann), *Journal of Mathematical Physics* **37**, 2731–2747, (1996). `arXiv:hep-th/9508134`.

26. Local Quantum Physics, *Studies in History and Philosophy of Modern Physics* **27**, 511–525 (1996).

27. Classical behaviour in quantum mechanics: a transition probability approach, *International Journal of Modern Physics* **B10**, 1545–1554 (1996). `arXiv:quant-ph/9511001`.

28. Against the Wheeler-DeWitt equation, *Classical and Quantum Gravity* **12**, L119–L123 (1995). `arXiv:gr-qc/9510033`.

29. Poisson spaces with a transition probability, *Reviews in Mathematical Physics* **9**, 29–57 (1997). `arXiv:quant-ph/9603005`.

30. Simple new axioms for quantum mechanics, *International Journal of Theoretical Physics* **37** (1998) 343–348, `arXiv:quant-ph/9604008`.

31. Constrained quantization and θ-angles (with K.K. Wren), *Nuclear Physics* **B502** [PM], 537–560 (1997). `arXiv:hep-th/9706178`.

32. Quantum Mechanics on Phase Space, *Studies in History and Philosophy of Modern Physics* **30**, 287–305 (1999).

33. Representations of the infinite unitary group from constrained quantization, *Journal of Nonlinear Mathematical Physics* **6**, 161–180 (1999).

34. Lie groupoid C^*-algebras and Weyl quantization, *Communications in Mathematical Physics* **206**, 367–381 (1999). `arXiv:math-ph/9903039`.

35. Strict quantization of coadjoint orbits, *Journal of Mathematical Physics* **39**, 6372–6383 (1998). `arXiv:math-ph/9807027`.

36. Twisted Lie group C^*-algebras as strict quantizations, *Letters in Mathematical Physics* **46**, 181–188 (1998). `arXiv:math-ph/9807028`.

37. Comment on "What is a gauge transformation in quantum mechanics?", *Physical Review Letters* **83**, 1070 (1999).

38. Bicategories of operator algebras and Poisson manifolds, *Mathematical Physics in Mathematics and Physics: Quantum and Operator Algebraic Aspects*, ed. R. Longo, *Fields Institute Communications* **30**, 271–286 (2001). `arXiv:math-ph/0008003`.

39. The Muhly-Renault-Williams theorem for Lie groupoids and its classical counterpart, *Letters in Mathematical Physics* **54**, 43–59 (2001). `arXiv:math-ph/0008005`.

40. Operator algebras and Poisson manifolds associated to groupoids, *Communications in Mathematical Physics* **222**, 97–116 (2001). `arXiv:math-ph/0008036`.

41. Getting even with Heisenberg, *Studies in History and Philosophy of Modern Physics* **33**, 297–325 (2002).

42. Deformation quantization and the Baum–Connes conjecture, *Communications in Mathematical Physics*, **237**, 87–103 (2003). `arXiv:math-ph/0210015`.

43. Quantum mechanics and representation theory: the new synthesis, *Acta Applicandae Mathematica* **81**, 167-189 (2004).

44. Lie Groupoids and Lie algebroids in physics and noncommutative geometry, *Journal of Geometry and Physics* **56**, 24–54 (2006). arXiv:math-ph/0506024

45. When champions meet: Rethinking the Bohr–Einstein debate, *Studies in History and Philosophy of Modern Physics*, **37**, 212–242 (2006). arXiv:quant-ph/0507220.

46. The Guillemin-Sternberg conjecture for noncompact groups and spaces (with P. Hochs). Journal of K-theory **1**, 473–533 (2008). arXiv:math-ph/0512022.

47. Macroscopic observables and the Born rule, *Reviews in Mathematical Physics* **20**, 1173–1190 (2008). arXiv:0804.4849.

48. A topos for algebraic quantum theory (with C. Heunen and B. Spitters), *Communications in Mathematical Physics* **291**, 63–110 (2009). arXiv:0709.4364.

49. Intuitionistic quantum logic of an n-level system (with M. Caspers, C. Heunen and B. Spitters), *Foundations of Physics* **39**, 731–759 (2009). arXiv:0902.3201.

50. Bohrification of operator algebras and quantum logic (with C. Heunen and B. Spitters), *Synthese*, **186**, 719–752 (2012). arXiv:0905.2275.

51. The Gelfand spectrum of a noncommutative C*-algebra: a topos-theoretic approach (with C. Heunen, B. Spitters, and S. Wolters), *J. Australian Mathematical Society* **90**, 32–59 (2011). arXiv:1010.2050.

52. A Flea on Schrödinger's Cat (with R. Reuvers), *Foundation of Physics* **43**, 373–407 (2013). arXiv:1210.2353.

53. Spontaneous symmetry breaking in quantum systems: Emergence or reduction? *Studies in History and Philosophy of Modern Physics* **44**, 379–394 (2013). arXiv:1305.4473.

54. Constraints on determinism: Bell versus Conway & Kochen (with E. Cator), *Foundation of Physics* **44**, 781–791 (2014). arXiv:1402.1972.

55. On the Colbeck-Renner Theorem, *Journal of Mathematical Physics* **56**, 122103 (2015). arXiv:1509.08498.

56. A bounded transform approach to self-adjoint operators: Functional calculus and affiliated von Neumann algebras (with C. Budde). *Annals of Functional Analysis* **7**, 411–420 (2016). arXiv:1508.06772.

57. Quantization and superselection sectors III: Multiply connected spaces and indistinguishable particles, *Reviews in Mathematical Physics* **28**, 1650019 (2016). arXiv:1302.3637.

58. The Kadison-Singer conjecture (with M. Stevens), *Nieuw Archief voor Wiskunde* **17**, 41–46 (2016).

59. On the notion of free will in the Free Will Theorem, *Studies in History and Philosophy of Modern Physics*, **57**, 98–103 (2017). philsci-archive.pitt.edu/12579/.

60. Quantisation commutes with singular reduction: cotangent bundles of compact Lie groups (wit J. Boeijink and W. van Suijlekom), *Reviews in Mathematical Physics* https://doi.org/10.1142/S0129055X19500168 (2018). arXiv:1508.06763.

61. Quantum spin systems versus Schrödinger operators: A case study in spontaneous symmetry breaking (with C. J. F. van de Ven, G. C. Groenenboom, and R. Reuvers), *SciPost* 8, 022 (2020). https://scipost.org/SciPostPhys.8.2.022.

62. Randomness? What Randomness? *Foundations of Physics* 50, 61–104 (2020) . https://link.springer.com/article/10.1007/s10701-020-00318-8.

63. Strict deformation quantization of the state space of $M_k(\mathbb{C})$ with applications to the Curie–Weiss model (with V. Moretti and C.J.F. van de Ven), *Reviews in Mathematical Physics* 32, 2050031 (2020). arXiv:1909.10947.

64. (No) Wigner Theorem for C*-algebras (with K. Rang), *Reviews in Mathematical Physics* 32, 2050019 (2020). arXiv:1911.06635.

65. Singularities, black holes, and cosmic censorship: A tribute to Roger Penrose, *Foundations of Physics* 51:42 (2021). https://link.springer.com/content/pdf/10.1007/s10701-021-00432-1.pdf.

66. Bohmian mechanics is not deterministic, *Foundations of Physics* 52:73 (2022). https://link.springer.com/article/10.1007/s10701-022-00591-9.

67. Penrose's 1965 singularity theorem: From geodesic incompleteness to cosmic censorship. *General Relativity and Gravitation* 54:115 (2022). https://link.springer.com/article/10.1007/s10714-022-02973-w.

68. Zwarte gaten en het werk van Roger Penrose [Black holes and the work of Roger Penrose], *Nieuw Archief voor Wiskunde*, september 2022, pp. 167–174.

69. Reopening the Hole Argument, *Philosophy of Physics*, accepted subject to approval of revision, https://www.math.ru.nl/~landsman/RHA4.pdf.

70. Typical = Random, *Axioms* 12(8), 727 (2023), https://www.mdpi.com/2075-1680/12/8/727.

Refereed book chapters

1. Quantized reduction as a tensor product. *Quantization of Singular Symplectic Quotients*, eds. N.P. Landsman, M. Pflaum, M. Schlichenmaier, pp. 137–180 (Birkhäuser, Basel, 2001). arXiv:math-ph/0008004.

2. Between classical and quantum. *Handbook of the Philosophy of Science, Vol. 2: Philosophy of Physics*, Eds. J. Butterfield & J. Earman, pp. 417–554 (North-Holland, Amsterdam, 2007). arXiv:quant-ph/0506082.

3. Algebraic quantum mechanics. The Born rule and its interpretation. Quantization (systematic). Quasi-classical limit. *Compendium of Quantum Physics*, Eds. D. Greenberger, K. Hentschel, and F. Weinert, pp. 6–9, 64–70, 510–513, 626–629 (Springer, 2009).

4. Bohrification (with C. Heunen and B. Spitters). *Deep Beauty: Understanding the Quantum World through Mathematical Innovation*, Ed. H. Halvorson, pp. 271–313 (Cambridge University Press, 2011). arXiv:0909.3468.

5. The Fine-Tuning Argument. *The Challenge of Chance*, pp. 111–130 (2016). https://www.math.ru.nl/~landsman/FTAv2.pdf.

6. Bohrification: From classical concepts to commutative algebras. *Niels Bohr and the Philosophy of Physics: Twenty-First Century Perspectives*, eds. J. Faye and J. Folse, pp. 335–366 (Bloomsbury, 2017). https://www.math.ru.nl/~landsman/Bohr2.pdf.

7. Symmetries in exact Bohrification (with A.J. Lindenhovius). *Reality and Measurement in Algebraic Quantum Theory*, eds. M. Ozawa et al, pp. 97–118 (Springer, 2018). https://arxiv.org/pdf/1806.04648.pdf.

8. The logic of quantum mechanics (revisited). *New Spaces in Mathematics and Physics: Formal and Philosophical Reflections*, eds. G. Catren and M. Anel, pp. 85–112 (Cambridge University Press, 2021). https://www.math.ru.nl/~landsman/Spacesv3.pdf.

9. The axiomatization of quantum theory through functional analysis: Hilbert, von Neumann, and beyond. *Oxford Handbook of the History of Interpretations and Foundations of Quantum Mechanics*, ed. O. Freire, pp. 473-494. (Oxford University Press, 2021). https://www.math.ru.nl/~landsman/QTFA.pdf.

10. Indeterminism and undecidability, co-winner, FQXi Essay Contest 2019–2020. Extended version. *Undecidability, Uncomputability, and Unpredictability*, eds. A. Aguirre, Z. Merali, D. Sloan, pp. 17–46 (Springer, 2021). https://arxiv.org/pdf/2003.03554.pdf.

Refereed conference proceedings

1. Universal quantum field theory, *Proceedings of the CAP-NSERC Summer Institute in Theoretical Physics*, eds. F.C.Khanna and H. Umezawa (World Scientific, Singapore), 204–226 (1988).

2. The inherent non-perturbativeness of thermal field theories (and a possible perturbativization), *Nuclear Physics* **A525** *Proceedings Supplement, Quark Matter '90*, 397c–400c (1991).

3. Classical and quantum representation theory, *Proc. Sem. Mathematical Structures in Field Theory 1989-1990*, eds. E. A. de Kerf and H.G.J. Pijls, CWI-syllabus **39**, Amsterdam, 135–163 (1996), arXiv:hep-th/9411172.

4. Disjoint final states in quantum measurements (with T. Breuer and A. Amann), *Proc. Symp. Foundations of Modern Physics 1993*, eds. P. Busch, P. Lahti, and P. Mittelstaedt (World Scientific, Singapore), 118–126 (1993).

5. The quantization of constrained systems: from symplectic reduction to Rieffel induction, *Quantization, Coherent States and Poisson Structures. Proc. XIV'th Workshop on Geometric Methods in Physics, Białowieża, 1995*, eds. A. Strasburger et al. (Polish Scientific Publishers, Warsaw), 73–89 (1998), arXiv:dg-ga/9601009.

6. Classical reduction and quantum induction in constrained systems, *Physical Applications and Mathematical Aspects of Geometry, Groups, and Algebras, Proc. XXI Int.*

Colloquium on Group Theoretical Methods in Physics, Goslar 1996, Vol. 1, eds. H.-D. Doebner, W. Scherer, and P. Nattermann (World Scientific, Singapore), 368–372 (1997).

7. Constrained quantization in algebraic field theory, *Meeting with the Platypus. Proc. XIIth Int. Congress of Mathematical Physics, Brisbane 1997*, eds. A.J. Bracken et al. (International Press, Boston), pp. 191–196 (1999). `arXiv:math-ph/9807029`.

8. Quantization of singular systems and incomplete motions, *Current Topics in Mathematical Cosmology*, eds. M. Rainer and H.-J. Schmidt (World Scientific, Singapore), 256–263 (1998), `arXiv:gr-qc/9807069`.

9. Hall's coherent states, the Cameron-Martin theorem, and the quantization of Yang-Mills theory on a circle (with K.K. Wren), *Coherent States, Quantization and Gravity*, eds. M. Schlichenmaier et al. (WUW, Warszaw, 2001), 23–36, `arXiv:math-ph/9812012`.

10. Compact quantum groupoids, *Quantum Theory and Symmetries*, (Goslar 1999), eds. H.-D. Doebner et al., 421–431 (World Scientific, 2000), `arXiv:math-ph/9912006`.

11. Quantization of Poisson algebras associated to Lie algebroids (with B. Ramazan), *Proceedings of the Conference on Groupoids in Physics, Analysis and Geometry* (Boulder 1999), eds. A. Ramsay and J. Renault, *Contemporary Mathematics* **282**, 159–192 (AMS, Providence, 2001), `arXiv:math-ph/0001005`.

12. Quantization as a functor, *Quantization, Poisson Brackets, and Beyond*, ed. T. Voronov, *Contemporary Mathematics* **315**, 9–24 (AMS, Providence, 2002). `arXiv:math-ph/0107023`.

13. Quantization and the tangent groupoid, *Operator Algebras and Mathematical Physics*, eds. J.-M. Combes, et al., 251–265 (Theta Foundation, 2003), `arXiv:math-ph/0208004`.

14. Functorial Quantization and the Guillemin-Sternberg Conjecture, in: *Twenty Years of Bialowieza: A Mathematical Anthology. Aspects of Differential Geometric Methods in Physics*, (eds. S.T. Ali, G.G. Emch, A. Odzijewicz, M. Schlichenmaier, S.L. Woronowicz), pp. 23–45 (World Scientific, Singapore, 2005). `arXiv:math-ph/0307059`.

15. The principle of general tovariance (with C. Heunen and B. Spitters). *Proc. XVI International Fall Workshop on Geometry and Physics (Lisabon, 2007)*, eds. R.L. Fernandes and R. Picken, pp. 93–102 (American Physical Society, Melville, 2008). `philsci-archive:3931`.

Lecture notes: see `https://www.math.ru.nl/~landsman/notes.html`

Book reviews: see `https://www.math.ru.nl/~landsman/reviews.html`

Popular articles in Dutch: see `https://www.math.ru.nl/~landsman/popular.html`

Podcasts in Dutch: see `https://www.math.ru.nl/~landsman/podcasts.html`