

Publications by Helge Holden¹

(i) Theses

- [1] Konvergens mot punkt-interaksjoner (In Norwegian)
Cand. real. thesis, University of Oslo 1981
- [2] Point interactions and the short-range expansion. A solvable model in quantum mechanics and its approximation
Dr. Philos. Dissertation, University of Oslo 1985

(ii) Books

- [1] **Solvable Models in Quantum Mechanics**
Texts and Monographs in Physics
Springer-Verlag, Berlin-Heidelberg-New York-London-Paris-Tokyo 1988, 452 pp.
(doi:10.1007/978-3-642-88201-2)
(with S. Albeverio, F. Gesztesy, R. Høegh-Krohn)
Translation into the Russian, Mir, Moscow 1991
(Translated by Yu. A. Kuperin, K. A. Makarov, V. A. Geiler)
Second edition with an Appendix by P. Exner
AMS Chelsea Publishing, volume 350
Chelsea Publishing, American Mathematical Society, Providence, 2005, (doi:10.1090/chel/350)
- [2] **Stochastic Partial Differential Equations**
A Modeling, White Noise Functional Approach
Birkhäuser Verlag, Basel, 1996, 231 pp. (doi:10.1007/978-1-4684-9215-6)
Second edition, *Universitext*, Springer-Verlag, 2010, 305 pp. (doi:10.1007/978-0-387-89488-1)
(with J. Ubøe, B. Øksendal, T. Zhang)
- [3] **Sturm–Liouville Operators and Hilbert Spaces: A Brief Introduction**
Tapir forlag, Trondheim, 2000, 90 pp.
Second edition, 2001
- [4] **Front Tracking for Hyperbolic Conservation Laws**
Applied Mathematical Sciences, volume 152
Springer-Verlag, New York, 2002, 380 pp. (doi:10.1007/978-3-642-56139-9)
Second corrected printing, 2007
Softcover and eBook, 2011
Second edition (Hard- and softcover, eBook, “MyCopy”), 2015, 516 pp.
(doi:10.1007/978-3-662-47507-2)
(with N. H. Risebro)
- [5] **Soliton Equations and Their Algebro-Geometric Solutions**

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Volume I: $(1 + 1)$ -Dimensional Continuous Models

Cambridge Studies in Advanced Mathematics, volume 79 (doi:10.1017/CBO9780511546723)
Cambridge University Press, Cambridge, 2003, 530 pp.
(with F. Gesztesy)

[6] **Soliton Equations and Their Algebro-Geometric Solutions**

Volume II: $(1 + 1)$ -Dimensional Discrete Models

Cambridge Studies in Advanced Mathematics, volume 114 (doi:10.1017/CBO9780511543203)
Cambridge University Press, Cambridge, 2008, 452 pp.
(with F. Gesztesy, J. Michor, and G. Teschl)

[7] **Operator Splitting for Nonlinear Partial Differential Equations with Rough Solutions
Analysis and Matlab Programs**

EMS Series of Lectures in Mathematics, EMS Publishing House, Zurich, 2010, 226 pp. (doi:10.4171/078)
(with K. H. Karlsen, K.-A. Lie, N. H. Risebro)

(iii) Publications in international, refereed journals

- [1] The spectrum of defect periodic point interactions
Letters in Mathematical Physics **7** (1983) 221–228
(with R. Høegh-Krohn, F. Martinelli)
- [2] The short range expansion
Advances in Applied Mathematics **4** (1983) 402–421
(with R. Høegh-Krohn, S. Johannesen)
- [3] On absence of diffusion near the bottom of the spectrum
for a random Schrödinger operator on $L^2(\mathbf{R}^\nu)$
Communications in Mathematical Physics **93** (1984) 197–217
(with F. Martinelli)
- [4] The short-range expansion in solid state physics
Annales de l'Institut Henri Poincaré, Section A, Physique Théorique **41** (1984) 335–362
(with R. Høegh-Krohn, S. Johannesen)
- [5] The short-range expansion for multiple well scattering theory
Journal of Mathematical Physics **26** (1985) 145–151
(with R. Høegh-Krohn, M. Mebkhout)
- [6] The Fermi surface for point interactions
Journal of Mathematical Physics **27** (1986) 385–405
(with R. Høegh-Krohn, S. Johannesen, T. Wentzel-Larsen)
- [7] On coupling constant thresholds in two dimensions
Journal of Operator Theory **14** (1985) 263–276
- [8] A unified approach to eigenvalues and resonances of Schrödinger operators
using Fredholm determinants
Journal of Mathematical Analysis and Applications **123** (1987) 181–198

Addendum **132** (1988) 309
(with F. Gesztesy)

- [9] Point interactions in two dimensions. Basic properties, approximations and applications to solid state physics
Journal für die reine und angewandte Mathematik **380** (1987) 87–107
(with S. Albeverio, F. Gesztesy, R. Høegh-Krohn)
- [10] Stochastic multiplicative measures, generalized Markov semigroups and group valued stochastic processes and fields
Journal of Functional Analysis **78** (1988) 154–184
(with S. Albeverio, R. Høegh-Krohn)
- [11] On energy gaps in a new type of analytically solvable models in quantum mechanics
Journal of Mathematical Analysis and Applications **134** (1988) 9–29
(with F. Gesztesy, W. Kirsch)
- [12] On the Riemann problem for a prototype of mixed type conservation law
Communications on Pure and Applied Mathematics **20** (1987) 229–264
- [13] A new class of analytically solvable models in quantum mechanics on the line
Journal of Physics A: Mathematical and General **20** (1987) 5157–5177
(with F. Gesztesy)
- [14] A numerical method for first order nonlinear scalar hyperbolic conservation laws in one dimension
Computers and Mathematics with Applications **15** (1988) 595–602
(with L. Holden, R. Høegh-Krohn)
- [15] A law of large numbers and a central limit theorem for the Schrödinger operator with zero range potentials
Journal of Statistical Physics **51** (1988) 206–214
(with R. Figari, A. Teta)
- [16] Representation and construction of multiplicative noise
Journal of Functional Analysis **87** (1989) 250–272
(with S. Albeverio, R. Høegh-Krohn, T. Kolsrud)
- [17] Trapping and cascading of eigenvalues in the large coupling limit
Communications in Mathematical Physics **118** (1988) 597–634
(with F. Gesztesy, D. Gurarie, M. Klaus, L. Sadun, B. Simon, P. Vogl)
- [18] Construction of quantized Higgs-like fields in two dimensions
Physics Letters **222B** (1989) 263–268
(with S. Albeverio, R. Høegh-Krohn, T. Kolsrud)
- [19] A new front-tracking method for reservoir simulation
SPE Reservoir Engineering **7** (1992) 107–116
(with F. Bratvedt, K. Bratvedt, C. Buchholz, L. Holden, N. H. Risebro)
- [20] Explicit construction of solutions of the modified Kadomtsev–Petviashvili equation
Journal of Functional Analysis **98** (1991) 211–228

- (with F. Gesztesy, E. Saab, B. Simon)
- [21] On the stochastic Buckley–Leverett equation
SIAM Journal of Applied Mathematics **51** (1991) 1472–1488
 (with N. H. Risebro)
 - [22] On the Toda and Kac–van Moerbeke systems
Transactions of the American Mathematical Society **339** (1993) 849–868
 (with F. Gesztesy, B. Simon, Z. Zhao)
 - [23] A method of fractional steps for scalar conservation laws without the CFL condition
Mathematics of Computation **60** (1993) 221–232
 (with N. H. Risebro)
 - [24] Stochastic boundary value problems. A white noise functional approach
Probability Theory and Related Fields **95** (1993) 39–419
 (with T. Lindstrøm, B. Øksendal, J. Ubøe, T.-S. Zhang)
 - [25] Discrete Wick calculus and stochastics functional equations
Potential Analysis **1** (1992) 291–306
 (with T. Lindstrøm, B. Øksendal, J. Ubøe)
 - [26] Frontline and Frontsim; Two full scale, two-phase, black oil reservoir
 simulators based on front tracking
Surveys on Mathematics in Industry **3** (1993) 185–215
 (with F. Bratvedt, K. Bratvedt, C. F. Buchholz, T. Gimse, L. Holden, N. H. Risebro)
 - [27] Comment on a recent note on the Schrödinger equation with a δ' -interaction
Journal of Physics A: Mathematical and General **26** (1993) 3903–3904
 (with S. Albeverio, F. Gesztesy)
 - [28] The Burgers equation with a noisy force
Communications in Partial Differential Equations **19** (1994) 119–142
 (with T. Lindstrøm, B. Øksendal, J. Ubøe, T.-S. Zhang)
 - [29] Trace formulae and inverse scattering for Schrödinger operators
Bulletin of the American Mathematical Society **29** (1993) 250–255
 (with F. Gesztesy, B. Simon, Z. Zhao)
 - [30] Trace formulas and conservation laws for nonlinear evolution equations
Reviews in Mathematical Physics **6** (1994) 51–95, *Errata*, *ibid.* 673
 (with F. Gesztesy)
 - [31] A mathematical model of traffic flow on a network of unidirectional roads
SIAM Journal on Mathematical Analysis, **26** (1995) 999–1017
 (with N. H. Risebro)
 - [32] The pressure equation for fluid flow in a stochastic medium
Potential Analysis **4** (1995) 655–674
 (with T. Lindstrøm, B. Øksendal, J. Ubøe, T.-S. Zhang)
 - [33] Maximum principles for a class of conservation laws
SIAM Journal of Applied Mathematics **55** (1995) 651–661

- (with N. H. Risebro, A. Tveito)
- [34] Absolute summability of the trace relation for certain Schrödinger operators
Communications in Mathematical Physics **168** (1995) 137–168
(with F. Gesztesy, B. Simon)
 - [35] Higher order trace relations for Schrödinger operators
Reviews in Mathematical Physics **7** (1995) 893–922
(with F. Gesztesy, B. Simon, Z. Zhao)
 - [36] Conservation laws with a random source
Applied Mathematics & Optimization **36** (1997) 229–241
(with N. H. Risebro)
 - [37] Algebro-geometric quasi-periodic finite-gap solutions of the Toda and Kac–van Moerbeke hierarchy
Memoirs of the American Mathematical Society **135** (1998), no. 641
(with W. Bulla, F. Gesztesy, G. Teschl)
 - [38] Finite difference approximation of the pressure equation for fluid flow in a stochastic medium
Communications in Partial Differential Equations **21** (1996) 1367–1388
(with Y. Hu)
 - [39] A trace formula for multidimensional Schrödinger operators
Journal of Functional Analysis **141** (1996) 449–465
(with F. Gesztesy, B. Simon, Z. Zhao)
 - [40] Riemann problems with a kink
SIAM Journal of Mathematical Analysis **30** (1999) 497–515
(with N. H. Risebro)
 - [41] An unconditionally stable method for the Euler equations
Journal of Computational Physics **150** (1999) 76–96
(with K.-A. Lie, N. H. Risebro)
 - [42] Unconditionally stable splitting methods for the shallow water equations
BIT Numerical Mathematics **39** (1999) 451–472
(with R. Holdahl, K.-A. Lie)
 - [43] Dubrovin equations and integrable systems on hyperelliptic curves
Mathematica Scandinavica, **91** (2002) 91–126
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 - [44] Operator splitting methods for generalized Korteweg–de Vries equations
Journal of Computational Physics **153** (1999) 203–222
(with K. H. Karlsen, N. H. Risebro)
 - [45] The classical Boussinesq hierarchy revisited
Det Kongelige Norske Videnskabers Selskabs Skrifter
(*Transactions of the Royal Norwegian Society of Sciences and Letters*) **1** (2000)
(with F. Gesztesy)
 - [46] Darboux-type transformations and hyperelliptic curves

- Journal für die reine und angewandte Mathematik*, **527** (2000) 151–183
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- [47] Borg-type theorems for matrix-valued Schrödinger operators
Journal of Differential Equations **167** (2000) 181–210
(with S. Clark, F. Gesztesy, B. Levitan)
 - [48] The Riemann problem for an elastic string with a linear Hooke’s law
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Numerical examples with emphasis on reservoir simulation and sedimentation
Computational Geosciences **4** (2000) 287–322
(with K. H. Karlsen, K.-A. Lie)
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Revista Matemática Iberoamericana **19** (2003) 73–142.
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Philosophical Transactions of the Royal Society (London) A **366** (2008) 1025–1054
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(with J. C. Eilbeck and V. Z. Enolskii)
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coupled systems of nonlinear degenerate parabolic systems
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Journal d’Analyse Mathématique **93** (2004) 139–197
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 - [55] Stability of solutions of quasilinear parabolic equations
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 - [56] Algebro-geometric solutions of a discrete system related to the trigonometric moment problem
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- [60] Global weak solutions to a generalized hyperelastic-rod wave equation
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- [61] A convergent numerical scheme for the Camassa–Holm equation based on multipeakons
Discrete and Continuous Dynamical Systems **14** (2006) 505–523.
(with X. Raynaud)
- [62] Convergent difference schemes for the Hunter–Saxton equation
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 - [74] A convergent finite difference method for a nonlinear variational wave equation
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(with M. Ehrnström and X. Raynaud)
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(with H. Hanche-Olsen)
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- [87] Strong compactness of approximated solutions to degenerate elliptic-hyperbolic equations with discontinuous flux function
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- [88] Lipschitz metric for the periodic Camassa–Holm equation
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SIAM Journal of Mathematical Analysis **43** (2011) 2253–2274
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- [90] The damped string problem revisited
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- [91] Lipschitz metric for the Camassa–Holm equation on the line
Discrete and Continuous Dynamical Systems, Series A **33** (2013) 2809–2827
(with K. Grunert and X. Raynaud)
- [92] Abstract wave equations and associated Dirac-type operators
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(with C. Lubich and N. H. Risebro)
- [95] Global conservative solutions of the Camassa–Holm equation for initial data with nonvanishing asymptotics
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- [96] Global solutions for the two-component Camassa–Holm system

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- [100] Global dissipative solutions of the two-component Camassa–Holm system
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Nonlinear Analysis: Real World Applications **17** (2014) 203–244 (doi:10.1016/j.nonrwa.2013.12.001)
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- [101] A continuous interpolation between conservative and dissipative solutions
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