

CURRICULUM VITAE

Name: Helge Holden
Position: Professor of mathematics
Address: Department of Mathematical Sciences, Norwegian University of Science and Technology, (NTNU), Alfred Getz vei 1, NO-7491 Trondheim, Norway
Email/URL: holden@math.ntnu.no, www.math.ntnu.no/~holden
Born: September 28, 1956 in Oslo. Norwegian nationality
Education: Cand. real., University of Oslo, 1976–81 (major: mathematics).
Dr. Philos., University of Oslo, 1985. Advisor: Prof. Raphael Høegh-Krohn
Positions: Research Assistant, University of Oslo, 1982–86
Associate Professor, University of Trondheim, 1986–1990
Professor, Norwegian University of Science and Technology, 1991– present
Longer stays abroad: Visiting Member, Courant Institute of Mathematical Sciences, New York University, 1985–86
Visiting member, California Institute of Technology, 1/89-7/89
Visiting professor, University of Missouri–Columbia, 8/96–7/97
Membership: Norwegian Academy of Science and Letters (Elected)
Royal Norwegian Society of Sciences and Letters (Elected)
Norwegian Academy of Technological Sciences (Elected)
European Academy of Sciences (Elected)
Norwegian, European, and American Mathematical Society
International Association of Mathematical Physics (IAMP)
Society for Industrial and Applied Mathematics (SIAM)
Honors: The King of Norway has been informed in the Council of State about the cand. real. exam 1981
Fulbright Scholarship 1985–86
Lucy B. Moses “Thanks to Scandinavia” Scholarship 1985–86
The Faculty’s award for 2005 for popularization of science.
Offices: Member of the Board of NTNU, 2009–12,
Chair, The Board of the Niels Henrik Abel Fund, 2010–13,
Chair, eVITA Committee, Research Council of Norway, 2009–13,
Chair, the Onsager Committee, NTNU,
Member of the VISTA Board, 2011–13,
Chair, National committee for promotion to full professor in mathematics, c. 2004–11,
Vice-president, European Mathematical Society, 2007–10, (Secretary 2003–6),
Chair, SUNT Committee, Research Council of Norway, 2000–6,
Chair, the research program BeMatA, Research Council of Norway, 2000–6,
President, European Consortium for Mathematics in Industry, 2004–6,
Chair, Department of Mathematical Sciences 7/90–12/92,
Member of ERC Advanced Grant panel, two TMR panels, and one Large Scale Installations (EU).
Editor: Member of editorial board of Journal of Nonlinear Mathematical Physics, Transactions of the Roy. Norw. Soc. of Sciences and Letters, Springer Undergrad. Text Math. Technology, Inter J. Differential Eqs.
External engagements: Adjunct professor, Centre of Mathematics for Applications, University of Oslo
Visiting professor, Simula Research Laboratory, Oslo (www.simula.no), 2001–05
Students: Supervised 19 PhD students,
Supervised near 60 master (sivilingeniør or cand.scient.) students.
Grants: Principal Investigator and participant in several major grants.
Talks: More than 80 international lectures since 1990,
Keynote lecture, ECMOR IV conference 1994,
Invited speaker, HYKE-2 Conference, Paris, 2004,
Invited speaker, Fourth European Congress of Mathematics, 2004.
Miscellaneous: Co-organized the special semester “Wave Motion” at the Mittag-Leffler Institute, Sweden, Fall 2005. Co-organizer of a special year on “Nonlinear Partial Differential Equations” at the Centre for Advanced Study, Oslo, 2008-09. Participant in evaluations at Aalborg University, Uppsala University (chair), Technical University of Denmark, University of Gothenburg, and two evaluations organized by the Swedish National Agency for Higher Education.

PUBLICATIONS (RECENT)

(ii) Books

- [1] **Solvable Models in Quantum Mechanics**
Texts and Monographs in Physics. Springer-Verlag, Berlin, 1988, 452 pp.
(with S. Albeverio, F. Gesztesy, R. Høegh-Krohn)
Translation into the Russian, Mir, Moscow 1991. Second edition, Chelsea Publishing, 2005.
- [2] **Stochastic Partial Differential Equations. A Modeling, White Noise Functional Approach**
Birkhäuser Verlag, Basel, 1996, 231 pp. Second edition *Universitext*, Springer 2010, 305 pp.
(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.
2nd corr. printing, 2007, softcover and eBook, 2011.
(with N. H. Risebro)
- [5] **Soliton Equations and Their Algebro-Geometric Solutions**
Volume I: $(1 + 1)$ -Dimensional Continuous Models
Cambridge University Press, Cambridge, 2003, 505 pp.
(with F. Gesztesy)
- [6] **Soliton Equations and Their Algebro-Geometric Solutions**
Volume II: $(1 + 1)$ -Dimensional Discrete Models
Cambridge University Press, Cambridge, 2008, 452 pp.
(with F. Gesztesy, J. Michor, G. Teschl)
- [7] **Operator Splitting for Nonlinear Partial Differential Equations with Rough Solutions**
EMS Series of Lectures in Mathematics, EMS Publishing House, Zurich, 2010, 226 pp.
(with K. H. Karlsen, K.-A. Lie, N. H. Risebro)

(iii) Publications in international, refereed journals

- [71] Optimal rebalancing of portfolios with transaction costs
Stochastics, to appear.
(with L. Holden)
- [72] Algebro-geometric finite-band solutions of the Ablowitz–Ladik hierarchy
International Mathematics Research Notes, 2007, Article ID rnm082, 55 pp.
(with F. Gesztesy, J. Michor, G. Teschl)
- [73] The algebro-geometric initial value problem for the Ablowitz–Ladik hierarchy
Discrete and Continuous Dynamical Systems, **26** (2010) 151–196.
(with F. Gesztesy, J. Michor, G. Teschl)
- [74] A convergent finite difference method for a nonlinear variational wave equation
IMA Journal of Numerical Analysis, **29** (2009) 539–572.
(with K. H. Karlsen and N. H. Risebro)
- [75] The solution of the Cauchy problem with large data for a model of a mixture of gases
Journal of Hyperbolic Differential Equations, **6** (2009) 25–106.
(with N. H. Risebro and H. Sande)
- [76] Local conservation laws and the Hamiltonian formalism for the Ablowitz–Ladik hierarchy
Studies in Applied Mathematics **120** (2008) 361–423.
(with F. Gesztesy, J. Michor, G. Teschl)
- [77] Dissipative solutions for the Camassa–Holm equation
Discrete and Continuous Dynamical Systems, **24** (2009) 1047–1112.
(with X. Raynaud)
- [78] Ground states of the Schrödinger–Maxwell system with Dirac mass: Existence and asymptotics
Discrete and Continuous Dynamical Systems, Series A, **27** (2010) 117–132.
(with G. M. Coclite)

- [79] Global dissipative multipeakon solutions for the Camassa–Holm equation
Communications in Partial Differential Equations, **33** (2008) 2040–2063.
(with X. Raynaud)
- [80] Front tracking for a model of immiscible gas flow with large data
BIT Numerical Mathematics, **50** (2010) 331–376.
(with N. H. Risebro and H. Sande)
- [81] Symmetric waves are traveling waves
International Mathematics Research Notices, 2009, Article ID rnp100, 19 pp.
(with M. Ehrnström and X. Raynaud)
- [82] Zero diffusion-dispersion-smoothing limits for a scalar conservation law with discontinuous flux function
International Journal of Differential Equations, **2009** (2009), Article ID 279818, pp. 33.
(with K. H. Karlsen and D. Mitrovic)
- [83] Lipschitz metric for the Hunter–Saxton equation
Journal de Mathématiques Pures et Appliquées, **94** (2010) 68–92.
(with A. Bressan and X. Raynaud)
- [84] The Kolmogorov–Riesz compactness theorem
Expositiones Mathematicae, **28** (2010) 385–394.
(with H. Hanche-Olsen)
- [85] Operator splitting for the KdV equation
Mathematics of Computation, **80** (2011) 821–846.
(with K. H. Karlsen, N. H. Risebro, and T. Tao)
- [86] Global semigroup of conservative solutions of the nonlinear variational wave equation
Archive for Rational Mechanics and Analysis, **201** (2011) 871–964.
(with X. Raynaud)
- [87] Strong compactness of approximated solutions to degenerate elliptic-hyperbolic equations with discontinuous flux function
Acta Mathematica Scientia **29B** (2009) 1573–1612
(with K. H. Karlsen, D. Mitrovic, and E. Yu. Panov)
- [88] Lipschitz metric for the periodic Camassa–Holm equation
Journal of Differential Equations **250** (2011) 1460–1492.
(with K. Grunert and X. Raynaud)
- [89] L^∞ solutions for a model of polytropic gas flow with diffusive entropy
SIAM Journal of Mathematical Analysis, **43** (2011) 2253–2274.
(with H. Frid and K. H. Karlsen)
- [90] The damped string problem revisited
Journal of Differential Equations **251** (2011) 1086–1127.
(with F. Gesztesy)
- [91] Lipschitz metric for the Camassa–Holm equation on the line
Preprint, submitted.
(with K. Grunert and X. Raynaud)
- [92] Abstract wave equations and associated Dirac-type operators
Annali di Matematica Pura ed Applicata, doi: 10.1007/s10231-011-0200-7, pp. 46.
(with F. Gesztesy, J. M. Goldstein, and G. Teschl)
- [93] Operator splitting for two-dimensional incompressible fluid equations
Mathematics of Computation, to appear.
(with K. H. Karlsen and T. Karper)
- [94] Operator splitting for partial differential equations with Burgers nonlinearity
Mathematics of Computation, to appear.
(with C. Lubich and N. H. Risebro)
- [95] Global conservative solutions of the Camassa–Holm equation for initial data with nonvanishing asymptotics
Discrete and Continuous Dynamical Systems, Series A, to appear.
(with K. Grunert and X. Raynaud)
- [96] Global solutions for the two-component Camassa–Holm system
Preprint, submitted.
(with K. Grunert and X. Raynaud)
- [97] Operator splitting for well-posed active scalar equations
Preprint, submitted.
(with K. H. Karlsen and T. Karper)

(iv) Publications in proceedings of conferences

- [42] The classical massive Thirring system revisited
In *Stochastic Processes, Physics and Geometry: New Interplays. I. A Volume in Honor of Sergio Albeverio*
Editors F. Gesztesy, H. Holden, J. Jost, S. Paycha, M. Röckner, S. Scarlatti
CMS Conference Proceedings, Volume 28. Canadian Mathematical Society, Providence (USA), 2000, pp. 163-200
(with V. Z. Enolskii, F. Gesztesy)
- [43] On the Camassa–Holm and the Hunter–Saxton equations
In *European Conference of Mathematics. Stockholm, June 27–July 2, 2004*.
Editor A. Laptev. European Mathematical Society, Zurich, 2005, pp. 173–200.
- [44] Algebro-geometric solutions of the KdV and Camassa–Holm equation
Oberwolfach Reports 1 (2004), pp. 275–279
Editors A. Constantin, J. Escher. European Publishing House, Zürich
(with F. Gesztesy)

(v) Books edited

- [2–3] **Ideas and Methods in Mathematical Analysis, Stochastics, and Applications.**
Ideas and Methods in Quantum and Statistical Physics.
In Memory of Raphael Høegh-Krohn (1938-1988)
Cambridge University Press, Cambridge 1992, 509 pp. and 542 pp.
(jointly edited with S. Albeverio, J. E. Fenstad, T. Lindstrøm)
- [4] **The Collected Works of Lars Onsager (With Commentary)**
World Scientific, Singapore, 1996, 1088 pp.
(with P. C. Hemmer, S. K. Ratkje)
- [5–6] **Stochastic Processes, Physics and Geometry: New Interplays. Vols. I and II.**
Volumes in Honor of Sergio Albeverio
CMS Conference Proceedings, Volume 28–29
Canadian Mathematical Society, Providence (USA), 2000, 343 pp. and 645 pp.
(jointly edited with F. Gesztesy, J. Jost, S. Paycha, M. Röckner, S. Scarlatti)
- [7] **The Abel Prize 2003–2007. The First Five Years.**
Springer, Heidelberg, 2010, 326 pp.
(jointly edited with R. Piene)
- [8] **Nonlinear Partial Differential Equations and Hyperbolic Wave Phenomena**
Contemporary Mathematics, American Mathematical Society, Providence, Vol. 526, 2010, 389 pp.
(jointly edited with K. H. Karlsen)
- [9] **Nonlinear Partial Differential Equations. The Abel Symposium 2010**
Abel Symposia, Vol. 7, Springer, Heidelberg, 2012, 360 pp.
(jointly edited with K. H. Karlsen)

(vii) Miscellaneous

- [11] Peter D. Lax. Elements from his contributions to mathematics
Presentation on the occasion of the announcement of the Abel Prize Laureate 2005
English and Norwegian text to be found at www.abelprisen.no
Spanish translation appeared in *Boletín del departamento de matemáticas,*
Universidad Nacional Autónoma de México, no 167-8, April 2005.
- [13] Matematikkens bidrag til Olje-Norge (In Norwegian)
Featured article, Aftenposten, May 24, 2005
- [16] Om Poincaré, Perelman og kuler (In Norwegian)
Featured article, Morgenbladet, October 13-19, 2006.