Curriculum Vitae

Name:	Helge Holden, **Born:** September 28, 1956 in Oslo. Norwegian nationality
Position:	Professor of mathematics
Address:	Department of Mathematical Sciences, NTNU Norwegian University of Science and Technology, Alfred Getz' vei 1, NO–7491 Trondheim, Norway
Email/URL:	`helge.holden@ntnu.no`, `https://www.ntnu.edu/employees/holden`, ORCID 0000-0002-8564-0343
Education:	Cand. real., University of Oslo, 1976–81 (major: mathematics). Dr. Philos., University of Oslo, 1985.
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, 8/85–7/86 Visiting member, California Institute of Technology, 1/89-7/89 Visiting professor, University of Missouri–Columbia, 8/96–7/97
Memberships:	Norwegian Academy of Science and Letters (Elected) Royal Norwegian Society of Sciences and Letters (Elected) Norwegian Academy of Technological Sciences (Elected) Academia Europaea (Elected) European Academy of Sciences (Elected) TWAS — The World Academy of Sciences (Elected) Fellow, American Mathematical Society Fellow, Society for Industrial and Applied Mathematics (SIAM) Heidelberg Laureate Forum Founders Club (lifetime member) Norwegian and European Mathematical Society, Intern'l Association of Mathematical Physics (IAMP)
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, Doctor honoris causa, Vietnam Academy of Science and Technology, Hanoi, 2017.
Offices:	Member of the Board of NTNU, 2009–17, President of the Royal Norwegian Society of Sciences and Letters, 2014–16, Secretary General, The International Mathematical Union, 2015–18, 2019–22 Chair, The European Research Council Consolidator Grant panel, 2013, 2015, 2017 Chair, Scientific Advisory Board, The Erwin Schrödinger Institute, Vienna, Austria, 2016–19, Chair, the Onsager Committee, NTNU, Chair, The Niels Henrik Abel Board, 2010–14, President, European Consortium for Mathematics in Industry, 2004–06, Vice-president, European Mathematical Society, 2007–10, Secretary 2003–06, Chair, Department of Mathematical Sciences 7/90–12/92.
Editor:	Member of editorial board of Acta Mathematica, Transactions of the Roy. Norw. Soc. of Sciences and Letters, Springer Undergrad. Text Math. Technology, Journal of Nonlinear Mathematical Physics, J. Mathematics in Industry, Vietnam J. Mathematics
External engagements:	Adjunct professor, Centre of Mathematics for Applications, University of Oslo, 2002–15 Visiting professor, Simula Research Laboratory, Oslo (`www.simula.no`), 2001–05
Students:	Supervised 24 PhD students (3 current), supervised almost 90 master students.
Grants:	Principal Investigator and participant in several major grants. "Toppforsk" grant 2016–2020
Talks:	More than 100 international lectures since 1990, Keynote lecture, ECMOR IV conference 1994, Invited speaker, HYKE-2 Conference, Paris, 2004, Invited speaker, Fourth European Congress of Mathematics, Stockholm 2004.
Miscellaneous:	Co-organized semesters at the Mittag-Leffler Institute, Sweden (Fall 2005 and 2016). Co-organizer year at the Centre for Advanced Study, Oslo, 2008-09. Evaluated Aalborg University, Uppsala University (twice chair), Technical University of Denmark, University of Gothenburg, Royal Institute of Technology, Stockholm, University of Copenhagen, and two evaluations by Swedish National Agency for Higher Education.

(i) 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. 2nd edition 2015, 516 pp.
(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)

(ii) Recent publications in international, refereed journals[1]

[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. Addendum, *ibid.* **34** (2016) 243–245.
(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)

[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
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
Annali di Matematica Pura ed Applicata, **191** (2012) 631–676.
(with F. Gesztesy, J. M. Goldstein, and G. Teschl)

---

[1]Numbers refer to complete list of publications.

[93] Operator splitting for two-dimensional incompressible fluid equations
Mathematics of Computation, **82** (2013) 719–748.
(with K. H. Karlsen and T. Karper)

[94] Operator splitting for partial differential equations with Burgers nonlinearity
Mathematics of Computation, **82** (2013) 173–185.
(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, **32** (2012) 4209–4227.
(with K. Grunert and X. Raynaud)

[96] Global solutions for the two-component Camassa–Holm system
Communications in Partial Differential Equations **37** (2012) 2245–2271.
(with K. Grunert and X. Raynaud)

[97] Operator splitting for well-posed active scalar equations
SIAM Journal of Mathematical Analysis, **45** (2013) 152–180.
(with K. H. Karlsen and T. Karper)

[98] Convergence of a fully discrete finite difference scheme for the Korteweg–de Vries equation
IMA Journal of Numerical Analysis, doi:10.1093/imanum/dru040.
(with U. Koley and N. H. Risebro)

[99] On the inverse problem for scalar conservation laws
Inverse Problems **30** (2014) 035015 (35 pp.).
(with F. S. Priuli and N. H. Risebro)

[100] Global dissipative solutions of the two-component Camassa–Holm system
for initial data with nonvanishing asymptotics
Nonlinear Analysis: Real World Problems, **17** (2014) 203–244.
(with K. Grunert and X. Raynaud)

[101] A continuous interpolation between conservative and dissipative solutions
for the two-component Camassa–Holm system
Forum of Mathematics, Sigma **3** (2015), e1, 73 pp.
(with K. Grunert and X. Raynaud)

[102] On factorizations of analytic operator-valued functions and eigenvalue multiplicity questions
Integral Equations and Operator Theory **82** (2015) 61–94.
(with F. Gesztesy and R. Nichols)

[103] On the Braess paradox with nonlinear dynamics and control theory
Journal of Optimal Theory and Applications **168** (2016) 216–230
(with R. Colombo)

[104] The general peakon-antipeakon solution for the Camassa–Holm equation
Journal of Hyperbolic Differential Equations **13** (2016) 353–380
(with K. Grunert)

[106] Operator splitting for the Benjamin–Ono equation
Journal of Differential Equations **259** (2015) 6694–6717
(with R. Dutta, U. Koley, N. H. Risebro)

[108] Real-valued algebro-geometric solutions of the two-component Camassa–Holm hierarchy
Annales de l'Institut Fourier (Grenoble) **67** (2017) 1185–1230
(with J. Eckhardt, F. Gesztesy, A. Kostenko, G.Teschl)

[111] Continuum limit of Follow-the-Leader models — a short proof
Discrete and Continuous Dynamical Systems **38**(2) (2018) 715–722.
(with N. H. Risebro)

(iii) Publications in proceedings of conferences (selected)[1]

[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.

(iv) Books edited (selected)[1]

[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, 12, 14] **The Abel Prize 2003–2007. The First Five Years**
         Springer, Heidelberg, 2010, 326 pp.
         The Abel Prize 2008–2012
         Springer, Heidelberg, 2014, 571 pp.
         The Abel Prize 2013–2017
         Springer, Heidelberg, 2019, 774 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)
[11]   **Spectral Analysis, Differential Equations and Mathematical Physics.**
         A Festschrift in Honor of Fritz Gesztesy's 60th Birthday
         Proceedings of Symposia in Pure Mathematics,
         American Mathematical Society, Providence, Vol. 87, 2013, 376 pp.
         (jointly edited with B. Simon and G. Teschl)

(v) Miscellaneous (selected)[1]

[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.
[25]   Matematikkens gave (In Norwegian)
         Featured article, Aftenposten, March 21, 2012
         (with R. Piene)
[41]   Oljefondet kan spare penger (In Norwegian)
         "Forskning viser at...", Dagens Næringsliv, July 23, 2016
         (with L. Holden)

(vi) Addendum

Non-Linear Partial Differential Equations, Mathematical Physics,
and Stochastic Analysis. The Helge Holden Anniversary Volume
F. Gesztesy, H. Hanche-Olsen, E. R. Jakobsen, Y. I. Lyubarskii, N. H. Risebro K. Seip, editors
European Society Society Publishing House, Zurich, 2018, pp. 502 (doi:10.4171/186)