

CURRICULUM VITAE

(October 2011)

PERSONAL

Name: Espen Robstad Jakobsen
Citizenship: Norwegian
Born: 1972
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EDUCATION

1998-2001 *Doktor ingeniør* (Dr.ing.) in applied mathematics, NTNU.
1991-1996 *Sivilingeniør* in applied mathematics, NTNU.

EXPERIENCE

2008– Professor of Mathematics, NTNU.
2005–2008 Associate professor (*førsteamanuensis*), NTNU.
2002–2005 A Research Council of Norway personal PostDoc fellowship and Assistant Professor positions at NTNU and the University of Bergen
1996–1997 Research assistant (military service) and Researcher at the Norwegian Defense Research Establishment (FFI).

VISITING POSITIONS

Semester or year long Predoc, PostDoc, and Sabbatical stays at the University of Tours, France. Stays at CMA, the University of Oslo, and the Centre of Advanced Studies (CAS), Oslo.

PRIZES

1. *Esso Prize 2002* for best Dr.ing. thesis in fundamental research at NTNU.
2. *Carl-Erik Fröberg Prize 2006* for best paper in *BIT Numerical Mathematics* by young nordic author in 2004-2006.

GRANTS

- 2006-2010 *Research grant*, Research Council of Norway.
Integro-PDEs: Numerical methods, Analysis, and Applications to Finance,
research project under the eVITA programme. Budget: 3,5 mill. NOK.
Participants: ERJ (leader), K. H. Karlsen, S. Cifani (PhD), Hilde Sande (postdoc).
- 2003-2005 *Postdoctoral fellowship*, Research Council of Norway.
- 1998-2001 *Ph.D. fellowship*, Research Council of Norway.

TEACHING

10 different subjects at 3 different universities – basic, intermediate, and PhD courses.

STUDENTS AND POSTDOCS

3 master students, 1 PhD student (ongoing), and 1 PostDoc.

TALKS

13 talks at international conferences, 25 talks at seminars around Norway and internationally.

OTHER ACTIVITIES

Leader and former vice leader of Differential Equations and Numerical Analysis research group, member of group of leaders at department.

Past and present member of various committees at the department and faculty.

Opponent or administrator of Thesis committees of 4 PhD students.

Referee for research project, job candidate, and 14 international research journals.

PUBLICATIONS

In refereed journals

1. *On the convergence rate of operator splitting for Hamilton-Jacobi equations with source terms.* (With K. H. Karlsen and N. H. Risebro). *SIAM J. Numer. Anal.* 39(2):499-518, 2001.
2. *Continuous dependence estimates for viscosity solutions of fully nonlinear degenerate parabolic equations.* (With K. H. Karlsen). *J. Differential Equations* 183:497-525, 2002.
3. *Continuous dependence estimates for viscosity solutions of fully nonlinear degenerate elliptic equations.* (With K. H. Karlsen). *Electron. J. Diff. Eqns.* Vol. 2002(39):1-10, 2002.
4. *On the convergence rate of approximation schemes for Hamilton-Jacobi-Bellman equations.* (With G. Barles). *M2AN Math. Model. Numer. Anal.* Vol. 36(1):33-54, 2002.

5. *On the rate of convergence of approximation schemes for Bellman equations associated with optimal stopping time problems.* *Math. Models Methods Appl. Sci. (M3AS)* 13(5):613-644, 2003.
6. *$W^{2,\infty}$ regularizing effect in a nonlinear degenerate parabolic equation in one space dimension.* *Proc. Amer. Math. Soc.* 132(11): 3203-3213, 2004.
7. *On error bounds for approximation schemes for non-convex degenerate elliptic equations.* *BIT* 44(2): 269-285, 2004.
8. *Convergence rates for semi-discrete splitting approximations for degenerate parabolic equations with source terms.* (With K. H. Karlsen). *BIT* 45(1): 37-67, 2005.
9. *Continuous dependence estimates for viscosity solutions of integro-PDEs.* (With K. H. Karlsen). *J. Differential Equations* 212(2): 278-318, 2005.
10. *Error bounds for monotone approximation schemes for Hamilton-Jacobi-Bellman equations.* (With G. Barles). *SIAM J. Numer. Anal.* 43(2):540-558, 2005.
11. *A "maximum principle for semicontinuous functions" applicable to integro-partial differential equations.* (With K. H. Karlsen). *NoDEA Nonlinear Differential Equations Appl.* 13:137-165, 2006.
12. *On error bounds for monotone approximation schemes for multi-dimensional Isaacs equations.* *Asymptotic Analysis* 49(3,4):249-273, 2006.
13. *Error bounds for monotone approximation schemes for parabolic Hamilton-Jacobi-Bellman equations.* (With G. Barles). *Math. Comp.* 76(240):1861-1893, 2007.
14. *Error estimates for a class of finite difference-quadrature schemes for fully nonlinear degenerate parabolic integro-PDEs.* (With I. H. Biswas and K. H. Karlsen) *J. Hyperbolic Differ. Equ.* 5(1): 187-219, 2008.
15. *Continuous dependence results for non-linear Neumann type boundary value problems.* (With C. A. Georgelin) *J. Differential Equations* 245(9): 2355-2704, 2008.
16. *Error estimates for approximate solutions to Bellman equations associated with controlled jump-diffusions.* (With K. H. Karlsen and C. La Chioma). *Numer. Math.* 110(2): 221-255, 2008.
17. *A Finite Element like Scheme for Integro-Partial Differential Hamilton-Jacobi-Bellman Equations.* (With F. Camilli). *SIAM J. Numer. Anal.* 47(4): 2407-2431, 2009.
18. *Viscosity solutions for a system of integro-PDEs and connections to optimal switching and control of jump-diffusion processes.* (With I. H. Biswas and K. H. Karlsen) *Appl. Math. Optim.* 62(1): 47-80, 2010.
19. *Difference-quadrature schemes for nonlinear degenerate parabolic integro-PDE.* (With I. H. Biswas and K. H. Karlsen) *SIAM J. Numer. Anal.* 48(3): 1110-1135, 2010.
20. *Entropy solution theory for fractional degenerate convection-diffusion equations.* (With S. Cifani) *Ann. Inst. H. Poincare Anal. Non Lineaire* 28(3):413-441, 2011.
21. *The discontinuous Galerkin method for fractal conservation laws.* (With S. Cifani and K. H. Karlsen) *IMA J. Numer. Anal.* 31(3):1090-1122, 2011.
22. *The discontinuous Galerkin method for fractional degenerate convection-diffusion equations.* (With S. Cifani and K. H. Karlsen) *BIT* (online 2011) doi:10.1007/s10543-011-0327-3.

Submitted for publication

23. *Semi-Lagrangian schemes for linear and fully non-linear diffusion equations.* (With K. Debrabant) To appear in *Math. Comp.*
24. *On the spectral vanishing viscosity method for periodic fractional conservation laws.* (With S. Cifani) Submitted 2010.
25. *Continuous dependence estimates for nonlinear fractional convection-diffusion equations.* (With N. Alibaud and S. Cifani) Submitted 2011.

In conference proceedings with referee

26. *On the convergence rate of operator splitting for weakly coupled systems of Hamilton-Jacobi equations.* (With K. H. Karlsen and N. H. Risebro). In *Proceedings HYP2000*, Birkhäuser 2001.
27. *Error estimates for finite difference-quadrature schemes for a class of nonlocal Bellman equations with variable diffusion.* (With I. H. Biswas and K. H. Karlsen) In G.-Q. Chen, E. Hsu, and M. Pinsky (eds.), *Stochastic Analysis and Partial Differential Equations*, AMS, 2007.

Refereed chapter in book

28. *Monotone schemes.* In *Encyclopedia of Quantitative Finance*, pp. 1253-1263, John Wiley & Sons Ltd., 2010.

THESES

1. *The Stochastic Wave Equation.* Diploma Thesis, NTNU, 1996. Advisor: Prof. Helge Holden.
2. *On the Theory and Numerical Analysis of Viscosity Solutions.* Doktor Ingeniør Thesis 2001:95, NTNU, 2001. Advisor: Prof. Helge Holden.