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CURRICULUM VITAE

Kazufumi Ito
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Center for Research in Scientific Computation
Department of Mathematics
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Education

1976 B.S. Applied Physics
Osaka University
Japan

1978 M.S. Mathematical Science
Department of Applied Physics
Osaka University
Japan

1981 D. Sc. Systems Science and Mathematics
Washington University
St. Louis, MO

Thesis: Linear Functional Differential Equations and Control and Estimation Problems

Areas of Interests

- Optimal control and Inverse problems in systems governed by partial differential equations (PDEs) and Optimization methods for variational problems.
- Analytical and Numerical methods for solutions to PDEs
- Functional differential equations in Banach spaces, C_0 semigroup theory and Nonlinear analysis.

Major Field

Functional Analytic Method for Control and Inverse Problems and Theoretical and Numerical Analysis for Solutions to PDEs

Societies

Member, SIAM

Experience

July 1992–present	Professor, Associate Professor Department of Mathematics North Carolina State University
Sept. 1989–June 1993	Associate Professor Department of Mathematics University of Southern California
Sept. 1984–June 1991	Associate Professor, Visiting Assistant Professor Division of Applied Mathematics Brown University
Sept. 1981–Aug. 1984	Staff Scientist at ICASE (Institute for Computer Applications in Science and Engineering), NASA Langley Research Center, Hampton, VA
Sept. 1978–Aug. 1981	Research and Teaching Assistant Department of System Science and Mathematics University of Washington, St. Louis
Apr. 1978–Aug. 1978	Research Fellow in Applied Physics Osaka University, Japan Instructor at Kyoto Computer School, Japan

Service to Profession

Referee for:	*IEEE Transactions on Automatic Control*
	SIAM Journal on Control and Optimization
	SIAM Journal on Mathematical Analysis
	SIAM Journal of Numerical Analysis
	SIAM Journal of Scientific and Statistical Computing
	Quarterly of Applied Mathematics
	Journal Differential Equations
	Applied Mathematics and Optimization
Referee of proposals for:	U.S. Air Force Office of Scientific Research
	National Science Foundation
	U.S. Army Research Office

Dr Ito co-organized an AMS-IMS-SIAM Joint Summer Research Conference, July 11-16, 1992, the workshop on Stochastic Control and Nonlinear filtering, at NC State University, October 11-12, 1996, and several invited mini-symposiums in SIAM meeting and IEEE conference on Decision and Control. He advised the two Ph.D thesis (Dr. X. Jiang and Dr. M. Desai, Brown U.), several M.Sc thesis (at USC) and the four Ph.D thesis (Dr. J. Schroter, Dr. T. Simon, Dr. G. Hicks and Dr. Y. Kyei) and several M.Sc thesis at NC Stae U. He also mentored and advised more than ten post-doctoral fellows.

Teaching

1984-85 AM 227, 228 (Control Theory)
1985-86 AM 227, 228
1986-87 AM 227, 228
1987-88 AM 227, 228
1988-89 AM 227, 228, AM 217 (Functional Analysis)
1989-90 Math 501, 502A (Numerical Analysis), Math 585b (Stochastic Control)
1990-91 Math 108 (Pre-Calculus), Math 585a (Control Theory)
1991-92 Math 226 (Calculus III), Math 685a, 685b (Control of PDEs)
1992-93 Ma 401 (Applied PDEs), Ma 231 (Calculus B), Ma 530 (Numer Analysis II)
1993-94 Ma 401, Ma 512 (Adv-Calc II), Ma 501, Ma 583 (Numer ODEs)
1994-95 Ma 401, Ma 512, Ma 232
1995-96 Ma 401, Ma 531-532 (Control Theory I,II), Ma 341 (Applied ODEs)
1996-97 Ma 401, Ma 534, 634 (PDEs), Ma 341
1997-98 Ma 401, Ma 625 (Vector Space Optimization), Ma583, Ma 341
1998-99 Ma 401, Ma 716 (Advanced Functional Analysis I,II), Ma 301 (Intro. to DEs)
1999-00 Ma 341, Ma 515 (Analysis I)
2000-01 Ma 341, Ma 515
2001-02 Ma 716, Ma 748 (Stochastic DE), Ma 131 (Calculus A), Ma401
2002-03 Ma 231, Ma 511 (Advanced Calculus I), MA 747, Ma 797(Levelset Method)

2003-04 Ma 401, Ma 748, Ma 716, Ma 747(Prob &Stoc. Proc, II)
2004-05 Ma 748, Ma 131, OR 708 (Dynamical Programming)
2005-06 Ma 231, Ma 748

Invited Lectures

Lectures at numerous universities in the U.S., Europe, Japan and Asia plus:

1. 22nd IEEE Conference on Decision and Control; December 1983, San Antonio, Texas.
2. Eighth Annual Lecture Series in the Mathematical Sciences, Estimation and Control of Distributed Systems; April 1984, University of Arkansas, Fayetteville, Arkansas.
3. Second International Conference on Control Theory for Distributed Parameter Systems and Applications; July 1984, Vorau, Austria.
4. Third International Conference on Control Theory for Distributed Parameter Systems and Applications; July 1986, Vorau, Austria.
5. Workshop on Applications and Algorithms for Optimal Control and Parameter Identification, Universitat Trier, West Germany, June 24-27, 1987.
6. First International Conference on Industrial and Applied Mathematics, June 29-July 3, 1987, Paris, France.
7. Fourth International Conference on Control Theory for Distributed Parameter Systems and Applications; July 1988, Vorau, Austria.
8. 26th IEEE Conference on Decision and Control, December 1987, Los Angeles, California.
9. Virginia Polytechnic Institute and State University, February 14-17, 1988.
10. International Conference on Theory and Applications of Differential Equations, March 21-25, 1988, Ohio University.
11. 27th IEEE Conference on Decision and Control, December 1988, Austin, Texas.
12. SIAM Conference on Control in the 90's, May 1989, San Francisco, California.
13. Numerical Methods in Optimization and Optimal Control, University of Trier, West Germany, June, 1989.
14. International Conference on Differential Equations and Applications, June 18-24, 1989, Retzhof, Austria.

15. Fifth International Conference on Control Theory for Distributed Parameter Systems and Applications, July, 1990, Vorau, Austria.

16. Second Conference on Computation and Control, August 1-7, 1990, Bozeman, MT.

17. International Symposium on Inverse Problems in Engineering Sciences, August 19-20, 1990, Osaka, Japan.

18. International Symposium on Functional Differential Equations and Related Topics, August 30 - September 2, 1990, Kyoto, Japan.

19. Lecture Series at University of Texas at Dallas, March 25-29, 1991.

20. Conference on Turbulence Structure and Control, Ohio State University, Columbus, April 1-3, 1991.

21. Conference on Numerical Optimization Methods in Differential Equations and Control, North Carolina University State University, July 15-17, 1991.

22. Flexible Structure Workshop, Field Institute, U. Waterloo, June 28-30, 1992.

23. SIAM Control Conference, Minneapolis, Minnesota, September 17-19, 1992.

24. IMA annual program for 1992-93, "Control Theory and its Applications", Workshop on Control and Optimal Design of Distributed Parameter Systems, November 9-1, and Period of Concentration in Flow Control, November 16-21.

25. AMS Knoxville Meeting, special session on Optimization, March 26-27, 1992.

26. Sixth International Conference on Control Theory for Distributed Parameter Systems: Nonlinear Phenomena, July, 1993, Vorau, Austria.

27. SIAM Conference on Linear Algebra, Signal, Systems and Control, Aug. 17-19, 1993, U. Washington, Seattle.

28. 2nd International Symposium on Inverse Problems in Engineering Sciences, July 27-30, 1994, Osaka, Japan.

29. 33rd IEEE Conference on Decision and Control, December 1994, Orland, Florida.

30. 3rd International Congress on Industrial and Applied Mathematics, July 3 -July 7, 1995, Hamburg, Germany.

31. 3rd IEEE Mediterranean Symposium on New Directions in Control and Automation, July 11- July 13, 1995, Limassol, Cyprus.

32. 34th IEEE Conference on Decision and Control, December 1995, New Orleans, Louisiana.

33. Volterra Conference, University of Texas, Arlington, May 1996.

34. 1996 AMS-IMS-SIAM Joint Summer Research Conference, Mount Holyoke College, MA.

35. Sixth International Conference on Control Theory for Distributed Parameter Systems, July, 1996, Vorau, Austria.

36. 35th IEEE Conference on Decision and Control, December 1996, Kobe, Japan.

37. 3rd International Symposium on Inverse Problems in Engineering Sciences, December 9-10, 1996, Osaka, Japan

38. IFAC workshop on Optimization, University of Florida, February 1997.

39. Twenty-Eight Annual Mathematics Conference at the University of Southwestern Louisiana, October, 1997.

40. 36th IEEE Conference on Decision and Control, December 1997, San Diego, California.

41. Symposium on Stochastic Control and Nonlinear Filtering, University of Southern California, December 1997.

42. Workshop on control of flows: models, dynamic analysis, control algorithms, and computation, University of California at San Diego, May 31-June 1, 1999.

43. AFOSR workshop on dynamics and control, Wright-Patterson AFB, 4-6 August 1999.

44. AMS Regional Meeting, Charlotte, October 1999.

45. AFOSR workshop on dynamics and control, Wright-Patterson AFB, 4-6 August 1999.

46. AMS National Meeting, Washington D.C., January, 2000.

47. Math 2000, Hamilton, McMater University, June 10-13, 2000.

48. SFB Conference on Inverse Problems, Strobl, Austria, June 2000.

49. 39th IEEE Conference on Decision and Control, December 2000, Sydney, Australia.

50. Control Theory Workshop, July 2001, U. Twente, Netherlands

51. SIAM Annual Meeting, San Diego, July 2001.

52. Eighth International Conference on Control Theory for Distributed Parameter Systems, July 2001, Graz, Austria.

53. AIAA 1st Flow Control Meeting, St Louis, June 2002.

54. 5th International Symposium on Mathematical Theory of Networks and Systems, University of Notre Dame, August 12-16, 2002

55. AFOSR Electmagnetics Workshop, San Antonio, January 9-11, 2003.

56. SIAM Annual Meeting, Portland, July, 2004.

57. Oberwolfach Workshop, Optimal Control of Coupled Systems of PDEs, April, 2005.

58. International Conference on Scientific Computing, Nanjing, June, 2005.

59. SIAM Annual Meeting, New Orlines, July, 2005.

60. International Workshop on Control of Infinite Dimensional System, Waterloo, July, 2005.

61. AFSOR Annual Meeting, Atlanta, August, 2006.

62. IMS Conference on Moving Interface Problems and Applications in Fluid Dynamics, Singapore, January, 2007

63. ICIAM, Zurich, July, 2007.

64. SIAM Control Meeting, San Francisco, July, 2007.

65. AFSOR Annual Meeting, Log Beach, August, 2007.

66. Oberwolfach meeting on Control of PDEs, March, 2008.

Consulting

Institute for Computer Application in Science and Engineering (ICASE), NASA Langley Research Center, Hampton, Virginia, November 1, 1984 - August, 1992.

Funds and Research Funds

* NSF USA - Austria Cooperative Science Program between Banks/Ito Brown, USC)

and Kappel/Kunisch (Graz) June, 1986 - August, 1994.

* NSF grant DMS-8818530 (Computational techniques for control and parameter estimation problem with distributed systems), January 15, 1989 - June 30, 1990.

* ONR grant (Random fields governed by stochastic partial differential equations and their applications to oceanography) April, 1991 - August, 1992.

* AFOSR-URI grant (Center of Applied Mathematical Sciences), Modeling, Estimation and Control Theory, January, 1990 - December, 1992.

* AFOSR grant (Identification and Control of Nonlinear Fluid Structure Interaction) January, 1993 - July, 1995.

* NASA grant (Control of purity and stoichiometry of compound semiconductors), February, 1992 - February, 1995.
* ARPA/AFOSR F49620-95-1-0437 (Rapid Thermal Processing of Semiconductors at High Vapor Densities), June, 1995 - June, 1996.

* ARPA/AFORS/MURI grant (Modeling and Control of Advanced Vapor Deposition Process: The Control of Defects in Mixed II-V Compound Heterostructures) July 1995 - June 1998.

* AFOSR F49620-95-1-0236 (Modeling and Control in Distributed Parameter Physical Systems), March 1995 - February 1996.

* ONR, N00014-96-1-0265, Numerical Approximation of Zakai equation for nonlinear filtering, 1/1/96–9/30/98.

* ONR, N00014-96-1-0648 (Ito-McEneaney) Stochastic Control and Nonlinear filtering, Workshop fund, 9/1/96-11/30/96.

* AASSERT–AFOSR, Modeling and Control of Advanced CVD Processed by PRS, 5/1/97-4/30/2000, Banks-Dietz-Ito, 100K.

* AASSERT–ONR, Fast and Robust Nonlinear Filters, 5/1/97-4/30/2000, Ito-McEneaney, 140K.
* ARO, (Li-Ito) Finite Element Methods and Iterative Refinement Techniques for Interface Problems and Applications, 6/1/99–5/30/2003.
* AFOSR/JFACC, (McEneaney-Ito) Dynamic Methods in the Agile Control of Military Operations, 8/27/99-2/26/2001.
* AFOSR (Banks-Ito) Dynamical Modeling and Control in PBPK Models for Toxic Agents, Electromagnetic Imaging and Active Stealth, 1 summ. mo, Co-PI, 12/01/2000–11/30/2003.
* ARO, (Li-Ito) Theoretical and Numerical Analysis for Nonlinear Interface Problems & Application, Co-PI, 2 summ. mo, 9/1/02–8/31/2005.
* AFOSR (Banks-Ito) Inverse Problems, Control and Modeling in the Presence of Uncertainty, 200K, 1 summ. mo, Co-PI, 12/01/2005–11/30/2006.

* ONR Level Set Methods for Path Planning and Search Strategy, Naval Surface Center, 37K, December 2003-August 2005.
* AFSOR, (Ito-Li) Sharp Interface Methods for Moving Interface/Free Boundary Problems and Applications, PI, 100K, 1 academic mo and 1 summ mo, 3/15/06–11/30/08
* ONR (Ito-Toivanen) High-fidelity finite-element modeling of acoustic scattering from complex 3-D elastic targets in littoral environments, PI, 150K, 1 academic mo and 1 summ mo, 1/16/06-1/15/09.
* NSF (Ito-Toivanen) Effcient Numerical Methods for Time-harmonic Acoustic Wave Propagation, PI, 180K, 9/01/06-8/31/09.
* AOR (Li-Ito) Subspace Iteration and Immersed Interface Methods: Theory, Algorithms, and Applications, Co-PI, 100K, 1 academic mo and 1 summ mo, 8/15/06-7/14/09.

Award

SIAM Oustanding Paper Award, 2006.

Research in Progress

1. Feedback synthesis for systems governed by nonlinear PDEs and boundary control.
2. Nonsmooth optimization methods and sensitivity analysis for inverse problems in PDEs and imaging analysis.
3. Augmented Lagrangian method for variational problems, variational inequalities and non-smooth optimization.
4. Mathematical analysis and numerical methods in control of Navier-Stokes equations.
5. Numerical methods for interface and moving boundary problems.
6. Mathematical analysis for gas-dynamic equation and drift-diffusion and hydrodynamic model equations for semiconductor devises
7. Nonlinear evolution equations and semigroup theory.
8. Stochastic PDEs and applications to nonlinear filtering.
9. Level-set method for inverse interface and shape optimization.
10. Control theoretic formulation of the Monge-Kantorovich mass transfer problem.
11. Synthetic Aperture Sonar imaging via One-Way Wave Equations.
12. Fast iterative solver for Helmholtz equation and saddle point problems.

13. Quasi-continuum approximation and multi-level methods.

Publications

Accepted Journal Articles

1. "A Spline Based Technique for Computing Riccati Operators for Delay Equations," (with H.T. Banks and I.G. Rosen), SIAM J. Sci. Statist. Comput. 5 (1984), 830-855.

2. "A Linear Quadratic Optimal Control Problem for Neutral Systems," J. Nonlinear Analysis/TMA 9 (1985), 699-727 (with T.J. Tarn).

3. "On the Approximation of Eigenvalues Associated with Functional Differential Equations," ICASE Rep. 82-29, September 1982, J. Differential Equations 60 (1985), 285-300.

4. "Legendre-Tau Approximations for Functional Differential Equations,"(with R.G. Teglas), SIAM J. Control & Optimization, 24 (1986), 737-759.

5. "Legendre-Tau Approximation for Functional Differential Equations, Part II: The Linear Quadratic Optimal Problem," (with R.G. Teglas), SIAM J. Control & Optimization, 25 (1987), 1379-1408.

6. "Chandrasekhar Equations for Infinite Dimensional Systems," (with R.K. Powers), SIAM J. Control & Optimization, 25 (1987), 596-611.

7. "Chandrasekhar Equations for Infinite Dimensional Systems, Part II: Unbounded Input and Output Case," (with R.K. Powers), J. Differential Equations, 75 (1988), 371-402.

8. "On Non-Convergence of Adjoint Semigroups for Control Systems with Delays," (with J.A. Burns and G. Propst), SIAM J. Control & Optimization, 26 (1988), 1442-1454.

9. "A Unified Framework for Approximation in Inverse Problems for Distributed Parameter Systems," LCDS/CCS Rep 87-47, 1987 (with H.T. Banks), Control Theory and Advanced Technology, 4 (1988), 73-90.

10. "On the Regularity of Solutions to an Operator Riccati Equation Arising in Linear Quadratic Optimal Control Problems for Hereditary Differential Systems," J. Math. Anal. Appl., 40 (1989), 396-406.

11. "Approximation of Infinite Delay and Volterra Type Equations," (with F. Kappel), Numer. Math., 54 (1989), 405-444

12. "The Augmented Lagrangian Method for Equality and Inequality Constraints in Hilbert Spaces," Mathematical Programming, 46 (1990), 341-360.

13. "The Augmented Lagrangian Method for Parameter Estimation in Elliptic Systems," (with K. Kunisch), SIAM J. Control and Optimization, 28 (1990), 113-136.

14. "Finite Dimensional Compensators for Infinite Dimensional Systems via Galerkin-Type Approximation," SIAM J. Control & Optimization, 28 (1990), 1251-1269.

15. "Semigroup Theory and Numerical Approximation for Equations in Linear Viscoelasticity," (with R.H. Fabiano), SIAM Math. Anal., (1990), 374-393.

16. "An Augmented Lagrangian Technique for Variational Inequalities," (with K. Kunisch), Applied Math. Optimization, 21 (1990), 223-241.

17. "A Numerical Algorithm for Optimal Feedback Gains in High Dimensional LQR Problem," (with H.T. Banks), SIAM J. Control & Optimization, 29 (1991), 499-515.

18. "A Uniformly Differentiable Approximation Scheme for a Delay System Using Splines,"(with F. Kappel) Applied Math. Optimization, 23 (1991), 217-262.

19. "A Fully-Discrete Spectral Method for Delay Differential Equations," (with H.T. Tran and A. Manitius), SIAM J. Numerical Analysis, 28 (1991), 1121-1140.

20. "A Numerical Study of Augmented Lagrangian Method for the Estimation of Parameters in Elliptic Systems, (with M. Kroller and K. Kunisch), SIAM J. Scientific and Statistical Computing, 12 (1991), 884-910.

21. "Numerical Method for A Class of Singular Integro-Differential Equation Based on Semigroup Approximation," (with J. Turi), SIAM J. Numerical Analysis, 28 (1991), 1698-1722.

22. "A fully discretized approximation scheme for size structured population models," (with F. Kappel and G. Peichl), SIAM J. Numerical Anal., 28 (1991), 923-954.

23. "A variational approach to approximation of delay systems," (with F. Kappel and D. Salamon), Differential and Integral Eqs., 4 (1991), 51-72.

24. "Sensitivity Analysis of Solution to Optimization Problems in Hilbert Spaces with Applications to Optimal Control and Estimation," (with K. Kunisch), J. Differential Equation 99, (1992), 1-40.

25. "On the choice of the regularization parameter in nonlinear inverse problems," (with K. Kunisch), SIAM J. Optimization, 2 (1992), 376-404.

26. "Two families of approximation schemes for delay systems," (with F. Kappel), Results in Mathematics, 21 (1992), 93-137.

27. "Identifiability of semiconductor defects from LBIC images.," SIAM J. Applied Math., 52 (1992), 1611-1626.

28. "Modeling and analysis for laser beam induced current images in semiconductors," (with S. Busenberg and W. Fang) SIAM J. Applied Math, 53 (1993), 187-204.

29. "A dissipative pseudo-spectral method for the two-dimensional Navier-Stokes equations," (with S. Kang), SIAM J. Numerical Analysis, 30 (1993), 1333-1350.

30. "A dissipative feedback control synthesis for systems arising in fluid dynamics," (with S. Kang), SIAM J. Control & Optim, 32 (1994), 831-854.

31. "Optimal Control of Navier-Stokes equations," (with M. Desai) SIAM J. Control & Optim., 32 (1994), 1428-1446.

32. "Reconstruction of semiconductor doping profile from LBIC image,"(with W. Fang), SIAM J. Applied Mathematics, (1994), 1067-1082.

33. "An approximation framework for equations in linear viscoelasticity with strongly singular kernels," (with R.H. Fabiano), Quarterly of Applied Mathematics, 52 (1994), 65-81.

34. "On the injectivity of the coefficient-to-solution mapping for elliptic boundary value problems and its linearization," (with K. Kunisch), J. Math. Anal. Appl., 188 (1994), 1040-1066.

35. "Well posedness for damped second order systems with unbounded input operators," (with H.T. Banks and Y. Wang), Differential and Integral Eqs., 8 (1995), 587-606.

36. "On well-posedness of integro-differential equations in weighted L^2-spaces," (with J.A. Burns) Differential and Integral Eqs, 8 (1995), 627-646.

37. "Approximation of semilinear Cauchy problems," (with F. Kappel), J. Nonlinear Analysis, TMA, 24 (1995), 51-80.

38. "Maximizing robustness in nonlinear illposed inverse problem," (with K. Kunisch), SIAM J. Control & Optim, (1995), 643-666.

39. "On the time-dependent drift-diffusion model for semiconductors,"(with W. Fang), J. Differential Equations, 117 (1995), 345-280.

40. "Stochastic evolution equations in Hilbert spaces," Applied Math. Optimization, 32 (1995), 255-279.

41. "Global solutions of the time-dependent drift-diffusion semiconductor equations," (with W. Fang), J. Differential Equations, 123 (1995), 523-566.

42. "Asymptotic behavior of the drift-diffusion semiconductor equations," (with W. Fang), J. Differential Equations, 123 (1995), 567-587.

43. "On well-posedness of singular neutral equations in the state space C",(with F. Kappel and J. Turi), J. Differential Equations, 125 (1995), 40-72.

44. "Sensitivity measures for the estimation of parameters in elliptic two point boundary value problems," (with K. Kunisch), J. Mathematical Systems, Estimation, and Control, 6 (1996), 195-218.

45. "Approximation of Zakai equation for nonlinear filtering," SIAM J. Control & Optim., 34 (1996), 620-634.

46. "Augmented Lagrangian-SQP-methods for nonlinear optimal control problems of tracking type," (with K.Kunisch), SIAM J. Control & Optim., (1996), 874-891.

47. "Augmented Lagrangian-SQP-methods in Hilbert spaces and applications to control in the coefficients problems," (with K. Kunisch), SIAM J. Optimization, (1996), 96-125.

48. "On the stationary semiconductor equations arising in modeling of LBIC technique,"(with W. Fang), Applied Math. Optimization, 33 (1996) 189-202.

49. "Weak Solutions to the one-dimensional non-isentropic gas dynamics by the vanishing viscosity method", Electronic Journal of Differential Equations, Vol 1996, No.04 (1996), 1-17.

50. "Weak solutions to a one-dimensional hydrodynamic model of two carrier types for semiconductors," (W. Fang), J. Nonlinear Analysis, TMA, 28 (1997), 947-963.

51. "Steady-state solutions of a one-dimensional hydrodynamic model for semiconductors", (with W. Fang), J. Diff. Eqs., 133 (1997), 224-244

52. "Identifiability of stiffness and damping coefficients in Euler-Bernoulli beam equation with Kelvin-Voigt damping,"(with S. Nakagiri), Numerical Functional Analysis and Optimization, 18 (1997), 107-129.

53. "On the inhomogeneous system of isentropic gas dynamics by viscosity method", (with W.Fang) Proc. Roy. Soc. Edinburgh Sect.A, 127 (1997), 261-280.

54. "Estimation of the convection coefficient in elliptic equations," (with K. Kunisch), Inverse Problem 13 (1997), 995-1013.

55. "An Implicit Finite Difference Scheme for the Nonlinear Size Structure Model," (with A.S. Ackleh), Numerical Functional Analysis and Optimization, 18 (1997), 865-884.

56. "Approximation in LQR problems for infinite dimensional systems with unbounded input operators ," (with H.T. Banks), J. Mathematical Systems, Estimation, and Control, 7, (1997), no. 1, 34 pp. (electronic).

57. "An approximation theory for solutions to operator Riccati equations for H^∞ control," (with K. Morris), SIAM J. Control & Optimization, 36 (1998), 82-99.

58. "The Trotter-Kato Theorem and Applications of PDEs," (with F. Kappel), Math. Comp., 67 (1998), 21-44.

59. "Legendre-Tau-Pade approximations to the one-dimensional wave equation with boundary oscillators," (with G. Propst), Numerical Functional Analysis and Optimization, 19 (1998), 57-70.

60. "A Reduced Order Method for Simulation and Control of Fluid Flows", (with S.S. Ravindran), J. Computational Physics, 143 (1998), 403–425.

61. "Optimal control of thermally convected fluid flow," (with S.S.Ravindran), SIAM J. Sci. Comput. (1998), 1847-1869.

62. "Viscous scalar conservation law with nonlinear flux feedback and attractor," (with Y. Yan), J. Math. Anal. Appl., 227 (1998), 271-299.

63. "An active set strategy for image restoration based on the augmented Lagrangian formulation," (with K.Kunisch), RAIRO, Mathematical Modeling and Numerical Analysis, 33 (1999), 1-21.

64. "Solutions to a nonlinear drift-diffusion model of semiconductors," (with F.Fang), Electronic Journal of Differential Equations, 15 (1999), 1-38

65. "Optimal Control," (with K. Kunisch) Encyclopedia of Electrical and Electronics Engineering, ed. Webster, Vol 15, John Wiley, (1999), 364-379.

66. "Primal-dual strategy for constrained optimal control problems,"(with M.Bergounioux and K.Kunisch), SIAM J. Control & Optim., 37 (1999), 1176–1194.

67. "Simulations of particle dynamics in magnetorheological fluids", (with H.Ly, M.Jolly, F.Reitich, H.T.Banks), Journal of Computational Physics 155 (1999), 160-177.

68. "A High–Order Perturbation Approach to Profile Reconstruction. I: Perfectly Conducting Gratings", (with F. Reitich), Inverse Problems, 15 (1999), 1067-1085.

69. "Optimal control of elliptic variational inequalities", (with K.Kunisch), Applied Math. Optimization, 41 (2000), 343-364.

70. "Approximation of the Kushner Equation for Nonlinear Filtering" (with B.Rozovskii), SIAM Journal on Control and Optimization, 38 (2000), 893-915.

71. "Newton's method for class of weakly singular optimal control problems," (with K.Kunisch), SIAM J. Optimization, 10 (2000), 896-916.

72. "Augmented Lagrangian methods for nonsmooth, convex optimizations in Hilbert spaces," (with K. Kunisch), J.Nonlinear Analysis, TMA, 41 (2000), 591-616.

73. "New Gaussian filters for nonlinear filtering problems", (with K.Xiong), IEEE Trans. AC, (2000), 910-927.

74. "An approximation theory for strongly stabilizing solutions to the operator LQ Riccati equation", (with R.F.Curtain and J.C.Oostveen), SIAM J. Control and Optimization, 38 (2000), 1909-1937.

75. "BV-type Regularization Methods for Convoluted Objects with Edge-Flat-Grey Scale, (with K.Kunisch), Inverse Probles 16 (2000), 909-928.

76. "Existence and Uniqueness of Steady-State Solutions for Electrochemistry Model", (with W.Fang), Proceedings for American Mathematical Society, 129 (2001), 1037-1040.

77. "Steady-State Solutions for an Electrochemistry Model with Nonlinear Diffusion, (with W.Fang), IMA Applied Math. 66, (2001), 195-213.

78. "Dynamic Simulation of the temporal response of microstructure formation in magnetorheological fluids", (with H.Ly, M.Jolly, F.Reitich, H.T.Banks), International Journal of Modern Phisics B, Condensed Matter Physics, Statistical Physics, Apllied Physiscs, 15 (2001), 894-903.

79. "Piecewise Linear Models for Field-Responsive Fluids", (with H.Ly, M.Jolly, F.Reitich, H.T.Banks), IEEE Transaction on Magnetics, 37 (2001), 558-560.

80. "Existence of stationary solutions to an energy drift-diffusion model for semiconductor devices, (with W.Fang), Math. Model Meth. Appl. Sci., 11 (2001), pp.827-840.

81. "Nonlinear exothermic contributions to radio-frequency bonding of adhesives", (with H.T.Banks, M.G.Choi, S.R. Durso), Nonlinear Anal. Real World Appl. 2 (2001), no. 3, 357–386

82. "Identification of some source densities of the distribution type", (with J.Zou), J. Comput. Appl. Math., 132 (2001), 295-308.

83. "Maximum Principle Preserving Schemes for Interface Problems with Discontinuous Coefficients" (with Zhilin Li), SIAM J. Sci. Stat. Comput., 23 (2001), 339-361.

84. "Rededuced Basis Method for Optimal Control of Unsteady Viscous Flows," (with S.S.Ravindran), International J. of Comp. Fluid Dynamics, 15 (2001) 97-113.

85. "Existence of Solutions to Hamilton-Jacobi-Bellman Equation under Quadratic Growth Conditions," Journal of Differential Equation, 176 (2001), 1-28.

86. "Level-Set Function Approach to an Inverse Interface Problem", (with K.Kunisch and Z.Li), Inverse Problems, 17 (2001), 1225-1242.

87. "Nonhomogeneuous initial-boundary value problems for nonlinear diffusion-convection equations, (with W.Fang) Nonlinear Anal., 48 (2002), pp.303-322.

88. "Optimal Control of the Solid Fuel Ignition Model with H^1–Cost", (with K.Kunisch), SIAM J. Control & Optim., 40 (2002), 1455-1472.

89. "On Asymptotic Properties of Receding Horizon Optimal Control" (with K.Kunisch), SIAM J. Control & Optim, 40 40 (2002), 1585–1610.

90. "Parameter Identification for Semiconductor Diodes by LBIC Imaging" (with W.Fang and David A. Redfern) SIAM Applied Mathematics, 48 (2002), pp.303-322.

91. "Receding Horizon Optimal Control for Infinite Dimensional Systems", (with K.Kunisch), the special volume of COCV dedicated to J.L.Lions, ESIAM 8 (2002), 741-760.

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