

VITAE

David L. Russell

PERSONAL

Citizenship: U.S.A.

Home Address and Telephone:

3468 Cameo Lane

Blacksburg, VA 24060; Ph.:(540) 951 0439

E-mail: RUSSELL@MATH.VT.EDU

Offices: 418 McBryde Hall, Virginia Tech., Blacksburg, VA 24061

Telephone: (540) 231 6171

Math Emporium, Va. Tech.

Telephone: (540) 231 2218

EDUCATION

PhD. (Mathematics): University of Minnesota, 1964

B.A.: Andrews University, 1960

AREAS OF SPECIALIZATION

Ordinary and Partial Differential Equations, Systems Theory,
Elasticity, Mathematical Modelling, Control Theory

ACADEMIC POSITIONS

Virginia Polytechnic Institute and State University:

Professor of Mathematics, 1988 -

University of Wisconsin-Madison: Professor of Mathematics and Electrical and Computer Engineering, 1984 - 1990
—, Professor of Mathematics: 1972 - 1984
—, Associate Professor of Mathematics: 1968 - 1972
—, Assistant Professor of Mathematics: 1965 - 1968

VISITING AND TEMPORARY APPOINTMENTS

Mathematics Research Center, U. of Wisc.: Assistant Research Professor, 1964 - 1965; numerous part time appointments later.
University of California, Los Angeles: Visiting Associate Professor, of Mathematics, 1970 - 1971
University of Warwick, Coventry, England: Visiting Research Fellow, Summer, 1971
University of Strathclyde, Glasgow, Scotland: Visiting Lecturer, April, May, 1972
Institut Matematyczne, Polskiej Akademii Nauk, Warsaw, Poland: Visiting Lecturer, November, 1973
Institut de Recherche en Informatique et Automatique, Rocquencourt, France: Visiting Lecturer, April, May, 1976
University of Sheffield, England: Visiting Lecturer, September, 1980
University of Florida, Gainesville, Fla.: Visiting Professor, Sem. II, 1985
Universite' Louis Pasteur, Strasbourg, France: Visiting Professor, June, July, 1992
Institute for Mathematics and its Applications, University of Minnesota: Workshop Coordinator, September, November, 1992

HONORS, AWARDS

Who's Who in American Colleges and Universities: 1960
National Defense Education Act Fellow: 1960 - 1963
Alumnus of Achievement, Andrews University: 1980

Special Merit Award, University of Wisconsin: 1984
Research Assignment, Virginia Tech., Spring semester, 1997
Joint United Nations, Chinese Academy of Sciences Grant, 1997
Honored guest (60th birthday); Conference on Control of Nonlinear
Distributed Parameter Systems, Texas A. & M. University, October 1999
Honored guest (70th birthday); Conf. on Mathematical Theory of Control
To be convened at Chinese Academy of Sciences, Beijing, China, May, 2009.

EDITORIAL POSITIONS

SIAM Journal on Control, Member of Editorial Board: 1972-1989
Proceedings (A), Royal Society of Edinburgh, Consulting Editor: 1980 - 1987
Discrete and Continuous Dynamical Systems, Associate Editor: 2006 -
Journal of Mathematical Analysis and Applications, Assoc. Editor: 2006 -
Journal of Information & Systems Sciences, Honorary Editor: 2006 -

SCIENTIFIC ACTIVITIES

Honeywell, Inc., Minneapolis, Consultant: 1963 - 1979
Battelle Pac. NW Laboratory, Richland, WA., Consultant: 1980 - 1984
U. S. Army ARRADCOM, Fire Control Division, Picatinny Arsenal,
Dover, NJ, Consultant: 1982 - 1984
U. S. Naval Surface Weapons Center, White Oak, MD,
Visiting Consultant: 1976
Symposium on Calculus of Variations and Control Theory,
University of Wisconsin-Madison; Chairman, 1975
UW MIPAC Workshop on Computational and Experimental Aspects of Control: Organizer, May, 1988
U.W. Modelling Information Processing and Control (MIPAC) Facility,
Founder and Coordinator: 1983-1988
External Review Committee, Department of Mathematics,
West Virginia University: 1969
External Review Committee, Department of Mathematics,
Georgetown University: 1987
Member of NSF Panel on Future Directions in Control Theory
(Chaired by Prof. Wendell Fleming): 1987

Organizer of numerous sessions in IEEE Control Society meetings.
U. S. Army Applied Mathematics Steering Committee: 1984
Workshop Coordinator for Year of Emphasis on Control,
Institute for Mathematics and its Applications, University of Minnesota, 1992
Dozens of invited addresses at a wide variety of scientific meetings.

RESEARCH GRANT HISTORY

From 1965 through 1991 continuous support was received from various agencies, including the National Science Foundation, the Office of Naval Research and the Air Force Office of Scientific Research. The most recent of these grants provided approximately \$360,000 during the period 1988 - 1991.

Two grants of \$110,000 and \$26,000 were received in 1983 from AFOSR and ARO, respectively, providing initial equipment acquisitions for the MIPAC Facility. The equipment thus acquired was later supplemented with 1985 grants of \$19,000 and \$5,000 from the National Science Foundation and the University of Wisconsin's Graduate Research Committee. A further award from the AFOSR portion of the 1986 - 1987 DoD Universities Instrumentation Program, in the amount of \$220,000, was made by AFOSR in June, 1986.

A three year grant, joint with Y. Beliveau of Virginia Tech Civil Engineering, on optimal control of construction cranes, was awarded fall, 1992. This grant provided \$13,000 per year for support of graduate students and some laboratory equipment. The National Science Foundation provided a grant of

\$25,000, with starting date July 1, 1993, funding a computer system for MIPAC's undergraduate mathematics modelling courses.

The National Science Foundation provided a two year grant in the amount of \$40,000, with starting date July 1, 1994, supporting studies in control and stability theory for certain nonlinear partial differential equations.

The National Science Foundation provided a grant in the amount of \$20,000

funding an exchange program between Virginia Tech and University of Maryland, Baltimore County, in the U.S., with St. Petersburg State University, St. Petersburg, Russia. This grant provided for exchange visits between the U.S. and Russian campuses and funded joint work in the area of harmonic analysis and control theory of partial differential equations.

PhD STUDENTS

PhD Students at Virginia Tech:

X. Zhang (1993) Assoc. Prof., West Virginia State Univ., Dunbar, W.Va.
F.-L. Liu (1993) Currently working as actuary in California
E. A. Bonawitz (1994) Asst. Prof., Univ. of Rio Grande, Rio Grande, OH
G. Huang (1994) Deceased
G. Pitts (1994)(with C. Ribbens) Chrysler, Inc., Detroit, MI
J. Zhu (1996) Associate Professor, Tongji University, Shanghai, China
J. Kang (1996) FAA, Washington, DC
D. Schenck (2001) Working as an actuary in Cincinnati, OH
J. Vance (2006) University of Virginia, Wise

PhD Students at the University of Wisconsin, Madison:

M. Cirina (Comp. Sci., w. Ben Rosen, 1968) University of Torino, Italy.
J. P. Quinn (1969) St. Francis Xavier University, Antigonish, NS
J. Grainger (ECE, w. D. Novotny, 1969) Univ. of Wisconsin, Milwaukee
R. Thomas (ECE, w. D. Novotny, 1972) Wisconsin paper cutting mach. mfr.
F. Fath (ECE, w. T. J. Higgins, 1970) Boeing Aircraft Co., Seattle
W. Wallace (Comp. Sci., 1974) University of Wisconsin - Oshkosh
K. Chueh (1975) Hughes Aircraft Corp., Canoga Park, CA
H. L. Koh (1976) Malaysia Technical University, Penang, Malaysia
G. Chen (1977) Texas A & M University
R. Reid (1979) Michigan Technological University
R. Teglas (1981) Initially U. Vt.; current position unknown.
L. F. Ho (1983) Wright State University
R. Rebarber (1984) University of Nebraska, Lincoln
H. Tjandrasa (ECE, w. R. Marleau, 1984) Univ. of Surabaya, Indonesia.

K. D. Graham (Univ. of Minn., joint with L. Markus, 1977) Honeywell Inc.,
Minneapolis (now retired)
K. A. Kime (1986) University of Nebraska, Kearney
T. Svobodny (1986) Wright State University
R. Acar (1987) (w. S. Parter) IMA, University of Puerto Rico
K. Shabtaie (w. R. Marleau, 1987) Currently employed in Israel.
S. Hansen (1988) Iowa State University
B.-Y. Zhang (1990) University of Cincinnati

UNIVERSITY AND DEPARTMENTAL SERVICE

University and Departmental Service at Virginia Tech:

Served on Search Committee or subcommittees from 1988 through 1991.
Served on Dean H. Doswald's Awards Committee, 1990 - 1992.
Candidate for Mathematics Department Head (one of the last three); 1994
Chairman, MIPAC Committee
Member of Commission on University Support; 1993 - 1996. Commission's
representative on the University's Computer Committee
Faculty Senate Alternate; 1993, 1994;
Department Personnel Committee, AY 1995-1996
Member of Faculty Senate, 1994 - 1997, 2006 -
Member, Dept. Computer Committee, AYs 1996-1997, 1997-1998, 2004 -
Member, Dept. CIL Committee, AY 1997-1998.
College Curriculum Committee, 2001-2004.

Highlights of University Service at University of Wisconsin, Madison, 1965 - 1988:

Graduate Research Committee, 1983 - 1985. This committee oversees the
distribution of internal UW grants involving, at that time, approximately
\$6,000,000 obtained from UW investments and patents through WARF.
Caucus Chairman, Applied Mathematics, 1983 - 1985
Member of Mathematics Department Salary Committee, 1986 - 1988.
Linear Algebra and Differential Equations Course Coordinator, 1980 - 1988.

PUBLICATIONS; D. L. RUSSELL

1. *Time optimal control with amplitude and rate limited controls* (with W. W. Schmaedeke). SIAM J. Control, 2 (1964), 373 - 395.
2. *Penalty functions and bounded phase coordinate control*. SIAM J. Control 2 (1964), 409-423.
3. *Optimal regulation of linear symmetric hyperbolic systems with finite dimensional controls*. SIAM J. Control 4 (1966), 276-294.
4. *The Kuhn - Tucker conditions in Banach space with an application to control theory*. J. Math. Anal. Appl. (1966).
5. *The problem of singular perturbations of linear ordinary differential equations at regular singular points* (with Y. Sibuya). Funkcialaj Ekvacioj 9 (1966), 207-218.
6. *Classification and reduction of second order systems at a turning point* (with R. J. Hanson). J. Math. & Phys. 46 (1967), 74-92.
7. *Analytic simplification of second order systems with a combined transition-regular singular point*. Funkcialaj Ekvacioj 10 (1967), 15-34.
8. *Nonharmonic Fourier series in the control theory of distributed parameter systems*. J. Math. Anal. Appl. 18 (1967), 542-560.
9. *On boundary value controllability of linear symmetric hyperbolic systems*. In *Mathematical Theory of Control*, A. V. Balakrishnan and L. W. Neustadt, Eds., Academic Press, New York, 1967, 312-321
10. *The problem of singular perturbations of linear ordinary differential equations at regular singular points, II: Lemmas on nonlinear differential equations* (with Y. Sibuya). Funkcialaj Ekvacioj 11 (1968), 175-184.
11. *Continuity in the strong topology of operator-valued solutions to nonlinear differential equations with an application to optimal control*. SIAM J. Control 7 (1969), 132-141.

12. *Linear stabilization of the linear oscillator in Hilbert space.* J. Math. Anal. Appl. 25 (1969), 663-675.
13. *The quadratic criterion for distributed systems* (with D. L. Lukes). SIAM J. Control 7 (1969), 101-121.
14. *Numerical solution of singular initial value problems.* SIAM J. Num. Anal. 7 (1970), 399-417.
15. *Operator solutions of nonlinear equations in optimal control problems*. In *Nonlinear Functional Analysis and Applications*, L. B. Rall, Ed., Academic Press, New York, 1971.
16. *A global theory for linear quadratic differential games* (with D. L. Lukes). J. Math. Anal. Appl. 33 (1971), 96-123.
17. *Boundary value control of the higher dimensional wave equation.* SIAM J. Control 9 (1971), 29-42.
18. *Boundary value control theory of the higher dimensional wave equation, Part II.* SIAM J. Control 9 (1971), 401-419.
19. *Exact controllability theorems for linear parabolic equations in one space dimension* (with H. O. Fattorini). Arch. Rat. Mech. Anal. 43 (1971), 272-292.
20. *Control theory of hyperbolic equations related to certain questions in harmonic analysis and spectral theory.* J. Math. Anal. Appl. 40 (1972), 336-368.
21. *The quadratic criterion in boundary value control of linear symmetric hyperbolic systems.* SIAM J. Control 11 (1973), 475-509.
22. *A unified boundary value controllability theory for hyperbolic and parabolic partial differential equations.* Studies in Appl. Math. 52 (1973), 189-211.
23. *Totally implicit methods for numerical solution of singular initial value problems.* Lecture Notes in Mathematics, Vol. 312. *Symposium on Ordinary*

Differential Equations. Springer-Verlag, Berlin - Heidelberg - New York, 1973.

24. *Uniform bounds on biorthogonal functions for real exponentials with an application to the control theory of parabolic equations* (with H. O. Fattorini). *Quart. Appl. Math.* 43 (1974), 45-69.

25. *Boundary value control of hyperbolic and parabolic systems in star-complemented regions.* *Proc. Conf. on Diff. Games and Control Theory*, Kingston, Rhode Island, June 1973. Pub. by Marcel Dekker, New York, 1974.

26. *Decay rates for weakly damped systems in Hilbert space obtained with control-theoretic methods.* *J. Diff. Eqns.* 19 (1975), 344-370.

27. *A singular point problem arising in control theory.* *Proc. Intl. Conf. Diff. Eqns.*, Univ. So. Calif., Sept. 1974, H. A. Antosiewicz, Ed., Academic Press, New York, 1975.

28. *Boundary value control of the wave equation in a spherical region* (with K. D. Graham). *SIAM J. Control* 13 (1975), 174-196.

29. (Edited) *Calculus of Variations and Control Theory*; *Proc. Symp. Calc. of Var. and Contr. Thy.*, Mathematics Research Center, Univ. of Wisconsin, Madison, Sept. 1975. Academic Press, New York, 1976.

30. *A general theory of observation and control* (with S. Dolecki). *SIAM J. Contr. & Opt.* 13 (1977), 185-220.

31. *Asymptotic stability and energy decay rates for solutions of hyperbolic equations with boundary damping* (with J. P. Quinn). *J. Roy. Soc. Edinb., Series A (Mathematics)* 77A (1977), 97-127.

32. *Differential delay equations as canonical forms for controlled hyperbolic systems with applications to spectral assignment.* In *Control Theory of Systems Governed by Partial Differential Equations*; Aziz, Wingate & Balas, Eds., Academic Press, New York, 1977.

33. *Toward a general theory of control canonical structure.* Proc. 14th Allerton Conf. on Circ. & Syst. Thy., 1976. Pub. by the Electr. Eng. Dept. and the Coord. Sci. Lab., Univ. of Ill., Urbana-Champaign, 1977.
34. *Canonical forms and spectral determination for a class of hyperbolic distributed parameter control systems.* J. Math. Anal. Appl. 62 (1978), 186-225.
35. *Water waves and problems of infinite time control* (with R. Reid). Proc. Intl. Symp. Anal. & Opt. of Syst., Rocquencourt, France, December, 1978.
36. *Controllability and stabilizability theory for linear partial differential equations: Recent progress and open questions.* SIAM Review 20 (1978), 639-739.
37. *Closed-loop eigenvalue specification for augmented and deficient hyperbolic systems.* Math. Res. Ctr., Univ. of Wisc., Madison, Tech. Summ. Rept. No. 2021, 1979.
38. *Mathematics of Finite Dimensional Control Systems: Theory and Design.* Marcel Dekker, New York, 1979.
39. (With M. Eslami) *On stability with large parameter variations: stemming from the direct method of Lyapunov,* IEEE Trans. Auto. Contr., Vol. AC-25 (1980), pp. 1231-1234.
40. *A mathematical model for linear elastic systems with structural damping* (with G. Chen). Quart. Appl. Math., (1982), 433-454.
41. *Uniform bases of exponentials, neutral groups and a transform theory for the spaces $H^m[a, b]$.* Math. Res. Ctr., Univ. of Wisc., Madison, Tech. Summ. Rept. No. 2149.
42. *Exponential bases for the Sobolev spaces on an interval.* J. Math. Anal. Appl. 82 (1982), 528-550.
43. *Optimal orbital regulation in systems subject to Hopf bifurcation.* J. Diff. Eqns., 44 (1982), 188-223.

44. *Control canonical structure for a class of distributed parameter systems.* Proc. Third IMA Conf. on Cont. Thy., Sheffield, 1980. Published by Academic Press, New York, London.
45. *Functional equations as canonical forms for a class of distributed parameter control systems and a state space theory for a class of linear differential equations of infinite order.* Proc. Symp. on Funct. Eqns and Cont. Thy., Blacksburg, VA, June, 1981. Published by Marcel Dekker, Inc.
46. *Admissible input elements for linear systems in Hilbert space and a Carleson measure criterion* (with L. F. Ho). SIAM J. on Cont. & Opt., 21(1983), pp. 614 - 640.
47. *Boundary control and stability of linear water waves* (with R. M. Reid), SIAM J. Cont. & Opt., 23 (1985), pp. 111 - 121.
48. *On the Dirichlet-Neumann boundary control problem associated with Maxwell's equations in a cylindrical region.* SIAM Journal on Cont. & Opt., 24 (1986), pp. 199 - 229.
49. *Dual Paley-Wiener spaces and "regular" nonharmonic Fourier series.* To appear.
50. *Frequency/Period estimation and adaptive rejection of periodic disturbances.* Math. Res. Ctr., Univ. of Wisc., Madison: Technical Summary Report, October, 1984. SIAM J. on Cont. & Opt., 24 (1986), pp. 1276 - 1308.
51. *A transform theory for linear recursion equations with an application to the Floquet theory of linear Volterra equations with periodic coefficients.* J. Diff. Eqns., 68 (1987), pp. 41 - 71.
52. *Mathematical models for the elastic beam and their control-theoretic implications.* Proc. Autumn College on Semigroups and their Applications, Int'l Ctr. for Theor. Phys., Trieste, Italy, November, 1984. Published by Birkhauser.
53. *On the positive square root of the fourth derivative operator.* Quarterly

- of Applied Mathematics, 46 (1988), pp. 751 - 773.
54. *Spectral and asymptotic properties of linear elastic systems with internal damping*. Proc. IFIP Conf. on Boundary Stabilization and Control of Systems, Clermont Ferrand, France, June, 1988. Published as *Control of Boundaries and Stabilization*, J. Simon, Ed., Vol. 125, *Lecture Notes in Control and Information Science*, Springer-Verlag, New York, 1989, pp. 31-50
55. (With G. Chen et al) *Modelling, analysis and testing of dissipative beam joints - experiments and data smoothing*, Mathematical Computation and Modelling, 11 (1988), pp. 1011 - 1016.
56. (with T. P. Svobodny) *Phase identification in linear time-periodic systems*. IEEE Transactions, Vol. AC 34 (1989), pp. 218-220.
57. (With G. Chen et al) *Analysis, Designs and Behavior of Dissipative Joints for Coupled Beams*, SIAM J. Appl. Math. 49 (1989), pp. 1665-1693.
58. *On mathematical models for the elastic beam with frequency proportional damping*, in "Control and Estimation in Distributed Parameter Systems, H. T. Banks, Ed., SIAM Publ., Philad., 1992.
59. *Computational study of the Korteweg - de Vriess equation with localized control action*, in *Distributed Parameter Control Systems: New Trends and Applications*, G. Chen, E. B. Lee, W. Littman and L. Markus, Eds., Marcel Dekker, Inc., New York, 1990, pp. 195 - 203.
60. *Approximation of input-output operators for distributed parameter systems*, Proc. 1990 IEEE-SIAM Conf. on Dec. & Cont., Honolulu, December 1990.
61. *A comparison of certain elastic dissipation mechanisms via decoupling and projection techniques*, Quart. Appl. Math., XLIX (1991), pp. 373 - 396.
62. *Neutral FDE canonical representations of hyperbolic systems*, Jour. Int. Eq'ns. 3 (1991), 129 - 166.
63. (With V. Komornik and B.-Y. Zhang) *Stabilisation de l'equation de*

- Korteweg-de Vries*, C. R. Acad. Sci. Paris, 312 (1991), pp. 841 - 843.
64. *A general framework for elastic systems with indirect damping*, J. Math. Anal. Appl., Vol. 173 (1993), pp. 339 - 358.
65. (With B.-Y. Zhang) *Controllability and stabilizability of the third order linear dispersion equation on a periodic domain*, SIAM J. on Contr. & Opt., Vol.31 (1993), pp. 659-676.
66. *Remarks on experimental determination of modal damping rates in elastic beams*, guest chapter in *Vibration and Damping in Distributed Systems* Vol. II, by G. Chen and J. Zhou, CRC Press, Ann Arbor, 1993.
67. (With G. Weiss) *A general necessary condition for exact observability*, SIAM J. Cont. Opt., Vol.32 (1994).
68. (With L. W. White) *Formulation and validation of dynamical models for narrow plate motion*, J. Applied Math. & Opt., 1993.
69. (With X. Zhang) *Extending Linear - Quadratic Optimal Control Laws to Nonlinear Systems and/or Non-Quadratic Cost Criteria*, in *Differential Equations, Dynamical Systems and Control Science*, K.D. Elworthy, W. N. Everitt and E. B. Lee, Eds., Marcel Dekker, New York, 1993.
70. *Synthesizing Optimal Controls for Nonlinear Systems with Nonquadratic Cost Criteria*, in *Trends and Developments in Ordinary Differential Equations*, Y. Alavi and P.-F. Hsieh, Eds., World Scientific Press, 1994.
71. (With B. Y. Zhang) *Smoothing and decay properties of solutions of the Korteweg - de Vries equation on a periodic domain with point dissipation*, IMA Preprint Series No. 1083, Inst. for Math. & Appl., University of Minnesota, December, 1992 Appeared subsequently in J. Math. Anal. Appl., **190** (1995), pp. 449-488.
72. *Synthesizing optimal controls for nonlinear systems with nonquadratic cost criteria*, in *Trends and Developments in Ordinary Differential Equations*, Y. Alavi and P.-F. Hsieh, Eds., World Scientific Press, Singapore, New Jersey, London, Hong Kong, 1994, pp. 255 - 270

73. (With F. Liu) *The Boussinesq equation on periodic domains*, J. Math. Anal. & Appl., **194** (1995), pp. 78 - 102
74. (With B.Y. Zhang) *Exact controllability and stabilizability of the Korteweg - de Vries equation with periodic boundary conditions*, Trans. Amer. Math. Soc. **348** (1996), 3643-3672.
75. (With D. Y. Gao) *A finite element approach to optimal control of a "smart" beam*, in *Proc. Int. Conf. Comp. Methods in Struct. and Geotech. Eng.*, P.K.K. Lee, L. G. Tham, and Y. K. Cheung, Eds., Hong Kong, December, 1994
76. *A static formation theory for active elastic materials*, Proceedings of the IFIP Conference on Control of Distributed Parameter Systems, Laredo, Spain, September, 1994; published by Marcel Dekker, Inc., New York, 1995
77. *An introduction to the formation theory of active materials*, in *Optimal Design and Control*, J. Borggaard, J. Burkardt, M. Gunzburger and J. Peterson, Eds., Birkhauser, 1995
78. (With B.-Y. Zhang) *Smoothing and decay properties of solutions of the Korteweg - de Vries equation on a periodic domain with point dissipation*, J. Math. Anal. Appl., **190** (1995), pp. 449 -488
79. *Observability Theory for Infinite Dimensional Systems*, CRC Handbook on Linear Systems Theory, W. S. Levine, Ed., CRC Press, Boca Raton, 1996, pp. 1169 - 1175
80. (With L. W. White) *Identification of Parameters in Narrow Plate Models from Spectral Data*, J. Math. Anal. & Appl. **197**, (1996), pp. 679 - 707
81. (With D. Y. Gao) *An extended beam theory for smart materials applications; Part I: Extended beam models, duality theory, and finite element simulations*, Appl. Math. & Opt., **34** (1996), pp. 279-298
82. (With D. Y. Gao) *An Extended Beam Theory for Smart Materials Applications; Part II: Static Formation Problems*, Appl. Math.& Opt. **38** (1998), pp. 71-94.

83. (With D. Y. Gao) *Finite deformation extended beam theory and nonlinear buckling analysis*, in *Contemporary Research in the Mechanics and Mathematics of Materials*, R. C. Batra and M.F. Beatty, Eds., CIMNE, Barcelona, 1996, pp. 431-441
84. (With L. W. White) *An elementary nonlinear beam theory with finite buckling deformation properties*, submitted to SIAM J. Appl. Math.
85. (With L. W. White) *On the development of a static formation theory for active materials*, Appl. Math. Modelling, 21 (1997), pp. 345 - 362
86. (With D.-Y. Gao) *Finitely deformed thick beam theory and dual variational principles*, Proc. 14th U. S. Army Symp. on Solid Mech., K.R. Iyer, S. Chou, Eds., Battelle Press, Columbus, Richland, 1997
87. *On the development of a mechanics of smart materials*, Proc. 14th U. S. Army Symp. on Solid Mech., K.R. Iyer, S. Chou, Eds., Battelle Press, Columbus, Richland, 1997
88. *Approximate and exact formability of two-dimensional elastic structures; complete and incomplete actuator families*, in Optimization Methods in Partial Differential Equations, S. Cox, I. Lasiecka, Eds., Vol. 209 of Contemporary Mathematics, Amer. Math. Soc., Providence, RI, 1997
89. *On the formation theory of linear elastic structures*, manuscript of lectures given at Pole Universitaire Leonard de Vinci, Paris, April, 1997; issued by INRIA, Rocquencourt.
90. (With D. Y. Gao) *An Extended Beam Theory for Smart Materials Applications; Part II: Static Formation Problems*, Appl. Math. Optim. 38 (1998), No. 1, pp. 69–94.
91. (With S.-M. Sun) *Non-constant stationary solutions of the periodic Korteweg-de Vries equation and their stability properties*, to appear in Applicable Analysis
92. (With S.-M. Sun) *Non-constant stationary solutions of the periodic Korteweg - de Vries equation; a period/integral relationship*, to appear in J.

Math. Anal. Appl

93. With G. Huang) *Asymptotic properties of solutions of a KdV- Burgers equation with localized dissipation*, Journal of Math. Syst., Est. & Contr., 8 (1998), pp. 467 ff.

94. (With T. Lin) *A superconvergent method for approximating the bending moment of elastic beams with hysteresis damping*, Applied Numerical Mathematics 38 (2001), pp. 145-165

95. (With L. W. White) *The bowed narrow plate model*, Electronic Journal of Differential Equations, vol. 2000, No. 27, pp. 1-19

96. *Approximate boundary formability with volume actuation*, Math. Models and Methods in Appl. Sci., 7 (1998), pp.1243 ff.

97. (with M. Renardy) *Formability of linear elastic structures with volume - type actuation*, Arch. Rat. Mech. & Anal., 149 (1999), pp. 97-122.

98. (with L.W. White) *A Large displacement framework for buckling and formation studies of elastic plates*, Control & Cybernetics, Vol. 28 (1999), No. 3, pp. 583-609

99. (with S. Avdonin and S. Ivanov) *Exponential bases in Sobolev spaces in control and observation problems*, Proc. Conf. On Optimal Control of Partial Differential Equations (Chemnitz, 1998), pp. 33-42, Internat . Ser. Numer. Math., 133, Birkhuser, Basel, 1999

100. (with S. Avdonin and S. Ivanov) *Exponential bases in Sobolev spaces in control and observation problems for the wave equation*, Proc. Royal Soc. Edinburgh, vol. 130A(2000), No. 5, pp. 947-970

101. (with L. W. White) *Static buckling in a supported nonlinear elastic beam*, Proc. Conf. On Control of Nonlinear Distributed Parameter Systems, in Control of Nonlinear Distributed Parameter Systems, G. Chen, I. Lasiecka and J. Zhou, Eds., Marcel Dekker, New York, 2001

102. *Freely propagating waves in a supported nonlinear elastic beam*, in *Nons-*

mooth/ Nonconvex Mechanics, D.Y. Gao, R.W. Ogden and G. E. Stavroulakis (eds), Kluwer Academic Publishers, 2000

103. (with L.W. White) *An elementary nonlinear beam theory with finite buckling deformation properties*, SIAM J. Appl. Math., 62 (2002), pp. 1394-1413.

104. *Forced propagation of steady state waves in a supported elastic beam*, Discrete and Continuous Dynamical Systems, 6(2001), pp. 337-348.

105. *Boundary output specification in certain distributed parameter systems*, Dynamics of Continuous, Discrete and Impulsive Systems, Series B: Applications and Algorithms, 9(2002), No.3, 335-346

106. (with David R. Schenck) *A Formation Problem in Plane Elasticity*, Systems and Control Letters, 48 (2002), pp. 281 - 288.

107. *Distributed Parameter Systems; an Overview*, Encyclopedia of Life Support Sciences, published by UNESCO.

108. (with L. W. White) *A nonlinear elastic beam system with inelastic contact constraints*, Appl. Math. Optim. 46 (2002), pp. 291-312

109. (with Liu, Kangsheng) *New meaning of exact controllability of linear systems in Hilbert spaces*, in *Control of distributed parameter and stochastic systems*, (Hangzhou, 1998), Kluwer Acad. Publ., Boston, 1999, pp. 103-110.

110. (with H. L. Johnson) *Transfer function approach to output specification in certain linear distributed parameter systems*, Proc. 4th Intl. Conf. Dyn. Syst. & Diff. Eqns, Wilmington, NC, 2002, Disc. & Cont. Dyn. Syst., Supplementary Volume, AIMS Press, 2003, pp. 449-458.

111. *Dynamics and Stabilization of an Elastic Tape Moving Axially Between Two Sets of Rollers*, Operator Thy.: Adv. & Appl., 149(2004), pp. 525-538.

112. (with H. L. Johnson) *Boundary output determination for the internally actuated Euler-Bernoulli beam by transfer and Green's function methods*, Int. J. Pur. Appl. Math., 9(2003), pp. 293-317.

113. (with Z.-Y. Liu) *Model Structure and Boundary Stabilization of an Axially Moving Elastic Tape*, in "Control Theory of Partial Differential Equations", O. Imanuvilov, G. Leugering, R. Triggiani and B.-Y. Zhang, eds., CRC Press, Boca Raton, 2005.
114. (with M. Renardy) *A discrete systems approach to cardinal spline Hermite interpolation*, *Lin. Alg. Appl.*, 406 (2005), pp. 77-98.
115. *Forward Stabilized Spline Interpolation*, *SIAM Journal on Control and Optimization*, Vol. 45 (2006), No. 4, pp. 1314-1328.
116. *Homogenization in the Modeling of Volume-Controlled Elastic Structures*, *Appl. Math. & Opt.*, Volume 55 (2007), No. 2, pp. 273-284.
117. *The Betti Reciprocity Principle and the Normal Boundary Component Control Problem for Linear Elastic Systems*, *Journal of Global Optimization*, 40 (2008) No. 4, pp. 575-588.
118. *On Some Modifications of the Harmonic Wavelets of T. Morita*, *Interdisc. Inf. Sci.*, 12(2006), No. 2, pp. 1-10.
119. *Computing Convex Spline Approximations*, to appear in *Intl. J. of Inf. Syst. & Sciences*, 2009.
120. *On Optimal Control for Stationary Linear Systems*, to appear in *Appl. Math. & Opt.*
121. *Nonlinear Systems for Highly Compressive Elasticity Simulations*, submitted to *Appl. Math. Sci.*