

DOUGLAS ROBERT ANDERSON

Mathematics and Computer Science
Concordia College
Moorhead, MN 56562 USA
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EDUCATION

Ph.D. Mathematics, August 1997

University of Nebraska–Lincoln

Thesis: *Discrete Hamiltonian Systems*, under Professor Allan C. Peterson

M.S. Mathematics, December 1994

University of Nebraska-Lincoln

B.A. Mathematics, *Summa Cum Laude*, May 1989

Augustana College, Sioux Falls, South Dakota

PROFESSIONAL EXPERIENCE

Chair, 2006– ; **Associate Professor**, 2003– ; **Assistant Professor**, 1997 – 2003;
Department of Mathematics and Computer Science, Concordia College

Courses taught:

Math 110 *Precalculus*

Math 121 *Calculus I*

Math 122 *Calculus II*

Math 203 *Finite Mathematics*

Math 210 *Linear Algebra*

Math 250 *Mathematics Pre-May Seminar*

Math 300 *Mathematics May Seminar Abroad*

Math 311 *Differential Equations*

Math 312 *Applied Mathematics*

Math 330 *Real Analysis I*

Math 380 *Discrete Dynamics and Chaos*

Math 402 *Senior Seminar*

Math 420 *Complex Analysis*

Math 430 *Real Analysis II*

Graduate Teaching Assistant, 1989 – 1990, 1993 – 1997

Department of Mathematics and Statistics, University of Nebraska–Lincoln

Courses taught as principal lecturer:

Math 101 *College Algebra*

Math 103 *Precalculus with Graphing Calculator*

Math 106 *Calculus I,II with Graphing Calculator*

Math 107 *Calculus II with Graphing Calculator*, SIPS Program

Stats 180 *Elementary Statistics*

Senior High School, 1991 – 1993

Nagoya Gakuin Kotogakko, Nagoya, Japan

Course taught:

Algebra (for exchange students from Australia and New Zealand)

Eikaiwa (English Conversation) for Japanese, 1990 – 1993

Musashino Ruuteru Kyokai, Tokyo, Japan

Nagoya Gakuin Chugaku, Nagoya, Japan

Kibo Ruuteru Kyokai, Nagoya

REFEREED JOURNAL PUBLICATIONS

1. Discrete trigonometric matrix functions, *PanAmerican Mathematical Journal*, 7:1 (1997) 39–54.
2. with R. I. Avery, and A. C. Peterson, Three positive solutions to a discrete focal boundary value problem, *Journal of Computational and Applied Mathematics*, 88:1 (1998) 103–118.
3. Green's function for an n -point discrete right focal boundary value problem, *PanAmerican Mathematical Journal*, 8:2 (1998) 45–70.
4. Multiple positive solutions for a three-point boundary value problem, *Mathematical and Computer Modelling*, 27:6 (1998) 49–57.
5. A $2n$ th-order linear difference equation, *Communications in Applied Analysis*, 2:4 (1998) 521–529.
6. Normalized prepared bases for discrete symplectic matrix systems, *Dynamic Systems and Applications*, 8 (1999) 335–344.
7. Positivity of Green's function for an n -point right focal boundary value problem on measure chains, *Mathematical and Computer Modelling*, 31 (2000) 29–50.
8. with A. C. Peterson, Asymptotic properties of solutions of a $2n$ th-order differential equation on a time scale, *Mathematical and Computer Modelling*, 32 (2000) 653–660.
9. with R. I. Avery, Multiple positive solutions to a third-order discrete focal boundary value problem, *Computers & Mathematics with Applications*, 42 (2001) 333–340.
10. with R. I. Avery and J. Henderson, Corollary to the five functionals fixed point theorem, *Journal of Nonlinear Studies*, 8:4 (2001) 451–464.
11. Eigenvalue intervals for a two-point boundary value problem on a measure chain, *Journal of Computational and Applied Mathematics*, 141:1-2 (2002) 57–64.
12. with R. I. Avery, Existence of three positive solutions to a second-order boundary value problem on a measure chain, *Journal of Computational and Applied Mathematics*, 141: 1-2 (2002) 65–73.
13. with J. M. Davis, Multiple solutions and eigenvalues for third-order right focal boundary value problems, *Journal of Mathematical Analysis and Applications*, 267:1 (2002) 135–157.
14. Solutions to a second-order three-point problem on time scales, *Journal of Difference Equations and Applications*, 8:8 (2002) 673–688.
15. Eigenvalue intervals for a second-order mixed-conditions problem on time scales, *International Journal of Nonlinear Differential Equations*, 7:1-2 (2002) 97–104.
16. with R. I. Avery, Fixed point theorem of cone expansion and compression of functional type, *Journal of Difference Equations and Applications*, 8:11 (2002) 1073–1083.
17. Taylor polynomials for nabla dynamic equations on time scales, *PanAmerican Mathematical Journal*, 12:4 (2002) 17–27.
18. A fourth-order nonlinear difference equation, *Journal of Difference Equations and Applications*, 9:1 (2003) 161–169.
19. with J. Hoffacker, Green's function for an even-order mixed derivative problem on time scales, *Dynamic Systems and Applications*, 12:1-2 (2003) 9–22.

20. with **J. Bullock '02**, L. Erbe, A. Peterson, and H. Tran, Nabla dynamic equations on time scales, *PanAmerican Mathematical Journal*, 13:1 (2003) 1–47.
21. Existence of a solution to a higher-order discrete three-point problem, *Electronic Journal of Differential Equations*, 2003:40 (2003) 1–7.
22. with R. I. Avery and J. M. Davis, Existence and uniqueness of solutions to discrete diffusion equations, *Computers & Mathematics with Applications*, 45 (2003) 1075–1085.
23. Discrete third-order three-point right focal boundary value problems, *Computers & Mathematics with Applications*, 45 (2003) 861–871.
24. Green's function for a third-order generalized right focal problem, *Journal of Mathematical Analysis and Applications*, 288:1 (2003) 1–14.
25. Kamenev-type oscillation criteria for linear Hamiltonian systems, *PanAmerican Mathematics Journal*, 13:4 (2003) 71–75.
26. with J. Hoffacker, A stacked delta-nabla self-adjoint problem of even order, *Mathematical and Computer Modelling*, 38 (2003) 481–494.
27. Extension of a second-order multi-point problem to time scales, *Dynamic Systems and Applications*, 12:3-4 (2003) 393–404.
28. with R. I. Avery, An even-order three-point boundary value problem on time scales, *Journal of Mathematical Analysis and Applications*, 291:2 (2004) 514–525.
29. Nonlinear triple-point problems on time scales, *Electronic Journal of Differential Equations*, 2004:47 (2004) 1–12.
30. with R. I. Avery and J. Henderson, Existence of solutions for a one-dimensional p-Laplacian on time scales, *Journal of Difference Equations and Applications*, 10:10 (2004) 889–896.
31. Twin n -point boundary value problems, *Applied Mathematics Letters*, 17:9 (2004) 1053–1059.
32. Multiple periodic solutions for a second-order problem on periodic time scales, *Nonlinear Analysis TMA*, 60:1 (2005) 101–115.
33. with J. Hoffacker, Even-order self adjoint time scale problems, *Electronic Journal of Differential Equations*, 2005:24 (2005) 1–9.
34. Eigenvalue intervals for even-order Sturm-Liouville dynamic equations, *Communications on Applied Nonlinear Analysis*, 12:4 (2005) 1–13.
35. Time-scale integral inequalities, *Journal of Inequalities in Pure and Applied Mathematics*, 6:3:66 (2005) 1-15.
36. with **N. G. Myran '05** and **D. L. White '05**, Basins of attraction in a Cournot duopoly model of Kopel, *Journal of Difference Equations and Applications*, 11:10 (2005) 879–887.
37. Existence of solutions for nonlinear multi-point problems on time scales, *Dynamic Systems and Applications*, 15 (2006) 21–34.
38. with R. I. Avery and R. J. Krueger, An extension of the fixed point theorem of cone expansion and compression of functional type, *Communications on Applied Nonlinear Analysis*, 13:1 (2006) 15–26.
39. with **T. O. Anderson '06** and **M. M. Kleber '06**, Green's function and existence of solutions for a functional focal differential equation, *Electronic Journal of Differential Equations*, 2006 (2006), No. 12, 1–14.

40. with J. Hoffacker, Positive periodic time-scale solutions for functional dynamic equations, *Australian Journal of Mathematical Analysis and Applications*, 3:1:5 (2006) 1–14.
41. with R. J. Krueger and A. C. Peterson, Delay dynamic equations with stability, *Advances in Difference Equations*, 2006 (2006), Article ID 94051, 19 pages.
42. with R. I. Avery, A fourth-order four-point right focal boundary value problem, *Rocky Mountain Journal of Mathematics*, 36:2 (2006) 367–380.
43. with G. Sh. Guseinov and J. Hoffacker, Higher-order self adjoint boundary value problems on time scales, *Journal of Computational and Applied Mathematics*, 194:2 (2006) 309–342.
44. with R. Ma, Second-order n -point eigenvalue problems on time scales, *Advances in Difference Equations*, 2006 (2006), Article ID 59572, 17 pages.
45. Asymptotic behavior of solutions for neutral delay dynamic equations on time scales, *Advances in Difference Equations*, 2006 (2006), Article ID 80850, 11 pages.
46. with J. Hoffacker, Existence of solutions for a cantilever beam problem, *Journal of Mathematical Analysis and Applications*, 323 (2006) 958–973.
47. with A. Cabada, Third-order right-focal multi-point problems on time scales, *Journal of Difference Equations and Applications*, 12:9 (2006) 919–935.
48. Second-order n -point problems on time scales with changing-sign nonlinearity, *Advances in Dynamical Systems and Applications*, 1:1 (2006) 17–27.
49. Boundedness and vanishing of solutions for a forced delay dynamic equation, *Advances in Difference Equations*, 2006 (2006), Article ID 35063, 17 pages.
50. with **Z. R. Kenz '08**, Global asymptotic behavior for delay dynamic equations, *Nonlinear Analysis*, 66 (2007) 1633–1644.
51. with C. C. Tisdell, Third-order nonlocal problems with sign-changing nonlinearity on time scales, *Electronic Journal of Differential Equations*, 2007 (2007), No. 19, 1–12.
52. with I. Rachůnková and C. C. Tisdell, Solvability of discrete Neumann boundary value problems, *Journal of Mathematical Analysis and Applications*, 331 (2007) 736–741.
53. with B. Buchholz, Self-adjoint matrix equations on time scales, *PanAmerican Mathematical Journal*, 17:2 (2007) 81–104.
54. Oscillation of second-order forced functional dynamic equations with oscillatory potentials, *Journal of Difference Equations and Applications*, 13:5 (2007) 407–421.
55. with **L. M. Moats '10**, q -Dominant and q -recessive matrix solutions for linear quantum systems, *Electronic Journal of Qualitative Theory of Differential Equations*, 2007:11 (2007) 1–29.
56. with Z. Liu, J. S. Ume, and S. M. Kang, Twin monotone positive solutions to a singular nonlinear third order differential equation, *Journal of Mathematical Analysis and Applications*, 334 (2007) 299–313.
57. with J. Hoffacker, Existence of solutions to a third-order multi-point problem on time scales, *Electronic Journal of Differential Equations*, 2007(2007), No. 107, pp. 1–15.
58. Young's integral inequality on time scales revisited, *Journal of Inequalities in Pure and Applied Mathematics*, 8 (2007), Issue 3, Article 64, 5 pages.

59. with J. Hoffacker, Higher-dimensional functional dynamic equations on periodic time scales, *Journal of Difference Equations and Applications*, 14:1 (2008) 83–89.
60. Dynamic double integral inequalities in two independent variables on time scales, *Journal of Mathematical Inequalities*, 2:2 (2008) 163–184.
61. Existence of solutions for first-order multi-point problems with changing-sign nonlinearity, *Journal of Difference Equations and Applications*, 14:6 (2008) 657-666.
62. Nonlinear dynamic integral inequalities in two independent variables on time scale pairs, *Advances in Dynamical Systems and Applications*, 3:1 (2008) accepted 10 September 2007.
63. Global attractivity for nonlinear delay dynamic equations, *International Journal of Difference Equations*, 3:1 (2008) accepted 03 March 2008.

TALKS

1. **Joint Mathematics Meetings** San Diego, California, January 1997
2. **Conference on Applied Mathematics** University of Central Oklahoma, March 1997
3. **Rocky Mountain Mathematics Consortium Summer Conference** Topic: Difference Equations, University of Wyoming, July 1997
4. **Tri-College Mathematics Colloquium** Presenter, North Dakota State University, Fargo, April 1998
5. **Special Session in Boundary Value Problems for Differential Equations** AMS Southeastern section meeting, Chair of afternoon session, Louisville, Kentucky, April 1998 (invited paper)
6. **Third International Conference on Dynamic Systems and Applications** Morehouse College, Atlanta, May 1999 (invited paper)
7. **American Mathematical Society Meeting** Central Section, University of Notre Dame, April 2000 (invited paper)
8. **Third World Congress of Nonlinear Analysts** Catania, Sicily, Italy, July 2000 (invited paper)
9. **Rocky Mountain Mathematics Consortium Summer Conference** Topic: Dynamic Equations on Time Scales, University of Wyoming, July 2002
10. **American Mathematical Society Meeting** Central Section, Indiana University, 4-6 April 2003 (invited paper)
11. **Sigurdson Mathematics Symposium** Augustana College (Sioux Falls), 24-25 April 2003 (invited paper)
12. **Joint Mathematics Meetings** Phoenix, Arizona, January 2004 (invited paper)
13. **Physics and Chemistry Colloquium** “Using Calc I to Explore Periodic Differential Equations,” 25 March 2004
14. **American Mathematical Society Meeting** Western Section, University of Southern California, 3-4 April 2004 (invited paper)

15. **Seventh Regional Workshop on the Mathematical Sciences** (9 students) University of Nebraska-Lincoln, 5-6 November 2004
16. **Joint Mathematics Meetings** Atlanta, Georgia, January 2005 (invited paper)
17. **International Workshop on Dynamic Equations on Time Scales** Bahçeşehir Üniversitesi, İstanbul, Turkey, 27 June - July 1 2005 (invited paper)
18. **Joint Mathematics Meetings** San Antonio, Texas, January 2006 (invited paper)
19. **Joint Mathematics Meetings** New Orleans, Louisiana, January 2007 (invited paper)
20. **MAA North Central Section Fall Meeting**, Bemidji State University, Bemidji, Minnesota, 19-20 October 2007
21. **Joint Mathematics Meetings** San Diego, California, January 2008
22. **Tri-College Mathematics Colloquium** Presenter, North Dakota State University, Fargo, April 1, 2008
23. **Mathematics on the Northern Plains**, North Dakota State University, Fargo, April 26, 2008 (Invited Plenary Lecture)
24. **6th International Conference on Differential Equations and Dynamical Systems**, Morgan State University, Baltimore, May 22-26, 2008 (invited paper)

WORKSHOPS, CONFERENCES, and COLLOQUIA

1. **Rocky Mountain Mathematics Consortium Summer Conference** Topic: Math Modeling and Epidemiology, University of Wyoming, July 1998
2. **The Art and Science of Model Building: A Workshop for College Mathematics Teachers**, University of Montana, July 1998 & 1999
3. **Mathematical Association of America Meeting** North Central Section, Chair of afternoon session, Moorhead, Minnesota September 1998
4. **Computational Science in Undergraduate Education** Gustavus Adolphus College, March 1999
5. **21st Annual Pi Mu Epsilon Conference for Undergraduates** St. John's University, 9-10 April 1999
6. **Tri-College Differential Equations Seminar** Presenter and Participant, North Dakota State University, Fall 1999
7. **Mathematics on the Northern Plains** South Dakota State University, 15 April 2000
8. **Midwest Differential Equations Conference** Concordia College, Moorhead, MN, 20-21 October 2000, Host
9. **Third Regional Workshop on the Mathematical Sciences** (10 students) University of Nebraska-Lincoln, 27-28 October 2000
10. **23rd Annual Pi Mu Epsilon Conference for Undergraduates** (18 students) St. John's University, 30-31 March 2001

11. **Mathematics on the Northern Plains** University of South Dakota, 21 April 2001
12. **Fourth Regional Workshop on the Mathematical Sciences** (19 students) University of Nebraska-Lincoln, 2-3 November 2001
13. **Mathematics on the Northern Plains** South Dakota State University, 6 April 2002
14. **24th Annual Pi Mu Epsilon Conference for Undergraduates** (11 students) St. John's University, 12-13 April 2002
15. **Mathematical Association of America Meeting** North Central Section, Minnesota State University Moorhead, 25 October 2002
16. **Mathematics on the Northern Plains** University of South Dakota, 29 March 2003
17. **Rocky Mountain Mathematics Consortium Summer Conference** Topic: Discrete Dynamical Systems and Their Application to Population Dynamics, University of Wyoming, July 2003.
18. **Sixth Regional Workshop on the Mathematical Sciences** (7 students) University of Nebraska-Lincoln, 7-8 November 2003
19. **26th Annual Pi Mu Epsilon Conference for Undergraduates** (4 students) St. John's University, 26-27 March 2004
20. **Mathematical Association of America Meeting** North Central Section, North Dakota State University, 29-30 October 2004
21. **28th Annual Pi Mu Epsilon Conference for Undergraduates** (9 students) St. John's University, 7-8 April 2006
22. **Eighth Regional Workshop on the Mathematical Sciences** (5 students) University of Nebraska-Lincoln, 27-28 October 2006
23. **29th Annual Pi Mu Epsilon Conference for Undergraduates** (4 students) St. John's University, 20-21 April 2007
24. **MAA North Central Section 2007 Summer Seminar** Experimental Mathematics in Action with Jonathan Borwein, Carleton College, Northfield, Minnesota, 16-20 July 2007

SERVICE: REFEREE

1. *Acta Mathematica Sinica*: 1 manuscript
2. *Advances in Difference Equations*: 3 manuscripts
3. *Advances in Dynamical Systems and Applications*: 1 manuscript
4. *Analysis and Applications*: 1 manuscript
5. *Applied Mathematical Modelling*: 1 manuscript
6. *Applied Mathematics Letters*: 11 manuscripts
7. *Communications on Applied Nonlinear Analysis*: 1 manuscript
8. *Computers & Mathematics with Applications*: 5 manuscripts
9. *Discrete and Continuous Dynamical Systems*: 1 manuscript
10. *Discrete Dynamics in Nature and Society*: 3 manuscripts
11. *Dynamic Systems and Applications*: 3 manuscripts
12. *Electronic Journal of Differential Equations*: 8 manuscripts
13. *Electronic Journal of Qualitative Theory of Differential Equations*: 1 manuscript
14. *Georgian Mathematical Journal*: 1 manuscript
15. *Indian Journal of Pure and Applied Mathematics*: 4 manuscripts
16. *International Journal of Applied Mathematical Sciences*: 1 manuscript
17. *International Journal of Difference Equations*: 2 manuscripts
18. *International Journal of Mathematics and Mathematical Sciences*: 1 manuscript
19. *Journal of Computational and Applied Mathematics*: 5 manuscripts
20. *Journal of Difference Equations and Applications*: 8 manuscripts
21. *Journal of Inequalities and Applications*: 3 manuscripts
22. *Journal of Mathematical Analysis and Applications*: 15 manuscripts
23. *London Mathematical Society*: 2 manuscripts
24. *Mathematical and Computer Modelling*: 4 manuscripts
25. *Monatshefte fuer Mathematik*: 2 manuscripts
26. *Nonlinear Analysis*: 9 manuscripts
27. *Nonlinear Dynamics and Systems Theory*: 2 manuscripts
28. *PanAmerican Mathematical Journal*: 2 manuscripts
29. *Proceedings of the Indian Academy of Sciences*: 1 manuscript
30. *Rocky Mountain Journal of Mathematics*: 1 manuscript
31. *Southeast Asian Bulletin of Mathematics*: 1 manuscript

PROFESSIONAL ACTIVITIES

Chair Department of Mathematics and Computer Science, 2006–
Member American Mathematical Society, Mathematical Association of America, 1997–
Member International Society of Difference Equations, 2005–
Faculty Advisor, 1998–
Member Faculty Senate, 2005–
Member Off-Campus Programs, 2008–
Member Core Committee, 2005 – 2008
Member Budget Planning Committee, 2000 – 2003, 2004 – 2005
Member Student Responsibility Board, 1999 – 2000
Department Captain United Way campus campaign, 1998 – 2007
Member Faculty evaluation committee for Roger Haglund and Tim Mosser, 1999
Member Faculty evaluation committee for Troy Odegaard, 2002
Chair Faculty evaluation committee for Vijayakumar Shanmugasundaram, 2004
Author Mathematics Self-Study Report, 2004
Summer Advisor for new students, 2000 – 2002, 2004 – 2007
Faculty Advisor Habitat for Humanity Spring Break trip to Tampa, FL 1999;
Winterhaven, FL 2002; Jacksonville, FL 2005; Laredo, TX 2006
Faculty Advisor Justice Journeys' Fall break trip to Pine Ridge, SD 1997
Facilitator for Faculty/Presidential Scholars interviews, 2001 – 2004, 2006–
Faculty Advisor Pi Mu Epsilon Math Club, 2000 – 2006
Faculty Advisor Concordia Cycling Club Fall break trip to Duluth, 2003, 2004
Director Tri-College mathematics contest: 1998, 2001, 2004
Chair Afternoon session, MAA North Central Section meeting,
Concordia-Moorhead, 1998
Chair Afternoon special session on boundary value problems,
AMS Southeastern Section meeting, Louisville, 1998
Convener for all sections of the Precalculus course at UNL, 1994 – 95

FELLOWSHIPS and AWARDS

Ole and Lucy Flaot Distinguished Scholarship Award, 2004 – 2006
NSF “Keeping Research Alive” Grant, University of Nebraska-Lincoln, 2005
Carl L. Bailey Centennial Faculty Scholar, 2004 – 2005
Concordia College Summer Study Grant, 1998 (\$450), 2000 (\$1250), 2001 (\$940),
2003 (\$233), 2005 (\$1000), 2007 (\$825)
University of Nebraska Foundation Fellowship, 1996 – 1997
**UNL Department of Mathematics and Statistics Emeritus Faculty
Fellowship**, 1994
**UNL Department of Mathematics and Statistics Outstanding
Qualifying Exams**, 1994
NCAA Postgraduate Scholarship, 1989
GTE Academic All-American, Cross Country, 1987 – 1988
GTE Academic All-American, Cross Country and Track, 1986 – 1987