

CURRICULUM VITAE

KATHLEEN A. HOFFMAN (née Rogers)

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Education

Ph.D. 1997 University of Maryland, College Park Applied Mathematics
Advisor: Prof. J. H. Maddocks

B.S. 1991 University of New Hampshire Mathematics and Physics
Summa Cum Laude, University Honors, Honors in Major

Professional Experience

Experience in Higher Education

September 1999-present UMBC *Assistant Professor* Dept. of Math. and Stat.

Sept. 1997-Sept. 1999 UMN *Postdoctoral Member* Inst. for Math. and its Apps.

Summer 1997 UMCP *Postdoctoral Member* Inst. for Phys. Science and Tech.

August 1993-May 1997 UMCP *Grad. Research Asst.* Inst. for Phys. Science and Tech.

Summer 1992-1993 UMCP *Grad. Research Asst.* Inst. for Phys. Science and Tech.

1991-1993, 1996 UMCP *Grad. Teaching Asst.* Math. Dept.

Experience in other than Higher Education

1997-1999 *Minnesota Center for Industrial Mathematics* Worked on a project for GM

1995 *Industrial Mathematical Modeling Workshop* Wind tunnel modelling

1995 *Summer Research Assistant:* Sandia National Lab

Honors and Awards Received*Professional Awards:*

2000 Cover illustration: International Journal for Bifurcation and Chaos

Student Awards:

1991 Graduated Univ. Honors, Honors in Major, Summa Cum Laude from UNH

1991 W. Edwards Deming Award

Honor Societies:

Phi Beta Kappa

Phi Kappa Phi

Pi Mu Epsilon (Math Honor Society)

Sigma Phi Sigma (Physics Honor Society)

Research Support

2000	\$ 1500	<i>Arts and Science Travel Fund, UMBC</i> Partial funding to attend the International Congress of Industrial and Applied Mathematics Conference in Lausanne Switzerland, where I was an invited speaker
2000	\$ 4000	<i>Summer Faculty Fellowship, UMBC</i> Completed research that led to a paper in the Journal of Elasticity on the stability of solutions of elastic loops with inherent curvature.
2001	\$ 2500	<i>Summer Faculty Fellowship, UMBC</i> Completed research that led to two papers in SIADS on stability of a twisted elastic rod subject to endloading and one on the slow flow of the forced van der Pol equation.
2002	\$ 3000	<i>Summer Faculty Fellowship, UMBC</i> Completed research that led to one paper on canards in the reduced system of the forced van der Pol equations in SIADS and one paper on link, twist, energy, and the stability of DNA Minicircles in Biopolymers
2003	\$ 2500	<i>Summer Faculty Fellowship, UMBC</i> Completed two grant proposals, one of which is still pending
2003	\$ 1000	<i>AWM Travel Award</i> Full funding to attend the SIAM Dynamical Systems Meeting in Snowbird, Utah, where I organized two minisymposia and was an invited speaker
2003	\$ 500	<i>Oberwolfach Fellowship</i> Partial funding to attend the Conference on Structured Dynamical Systems at the Mathematical Conference Center in Oberwolfach, Germany

2004 \$ 2500 *Summer Faculty Fellowship, UMBC*
 Completed code to compute equilibria of the soft-contact problem.

Ph.D. Students

Samuel Webster	2004	Member
Jiyuan Tao	2004	Member
Jing Zhou	anticipated 2005	Member
Valeriy Korostyshevskiy	anticipated 2005	Reader

Master's Committees

Jennifer Deering	2002	Reader
Jonathan Desi	2004	Reader

Undergraduate Students

Erica Lockwood	Meyerhoff Mentor
Chantal Edwards	Meyerhoff Mentor

Publications:

Articles in refereed journals:

1. K. Hoffman, "Distinguish Bifurcation Diagrams for Isoperimetric Calculus of Variations Problems and the Stability of a Twisted Elastic Loop", accepted (see attached letter) to the Proceedings of the Royal Society, Series A: Mathematical and Physical Sciences.
2. K.A. Hoffman, "Methods for Determining Stability in Continuum Elastic Rod Models of DNA", *Phil. Trans. Roy.Soc.*, vol. 362, no. 1820, p. 1301-1315, 2004.
3. K. Bold, C. Edwards, J. Guckenheimer, K. Hoffman, R. Oliva, W. Weckesser, "The forced van der Pol Equation II: Canards in the Reduced System", *SIAM Journal on Applied Dynamical Systems*, vol. 2, no. 4, p. 570-608, 2003.
4. K.A. Hoffman, J.H. Maddocks, & R.Manning, "Link, Twist, Energy, and the Stability of DNA Minicircles", *Biopolymers*, vol.70, no 2, p.145-157, 2003.
5. K. Hoffman & F. Santosa, "A Simple Model of Sheet Metal Assembly", *SIAM Review*, vol 45 No 3, 558-573, 2003.
6. J. Guckenheimer, K. Hoffman, W. Weckesser, "The Forced van der Pol Equation I: The Slow Flow and its Bifurcations", *SIAM J. on Applied Dynamical Systems*, Vol 2, No. 1, p.1-35, 2003.
7. K. Hoffman, R. Manning and R. Paffenroth, "Calculation of the Stability Index in Parameter-Dependent Calculus of Variations Problems: Buckling of a Twisted Elastic Strut", *SIAM J. on Applied Dynamical Systems*, vol.1, no. 1, p.115-145, 2002.
8. R. Manning & K. Hoffman, "Stability of n -Covered Circles for Elastic Rods with Constant Planar Intrinsic Curvature", *Journal of Elasticity*, 62, 1-23, 2001.
9. J. Guckenheimer, K. Hoffman & W. Weckesser, "Numerical Computation of Canards", *International Journal for Bifurcation and Chaos*, 10, 2669-2688, Dec 2000.

10. L. Greenberg, J.H. Maddocks, & K.A. (Rogers) Hoffman, “The Bordered Operator and the Index of a Constrained Critical Point”, *Mathematische Nachrichten*, 219, 109-124, 2000.
11. R.S. Manning, K.A. Rogers, & J.H. Maddocks, “Isoperimetric Conjugate Points with Applications to the Stability of DNA Minicircles”, *Proceedings of the Royal Society of London: Mathematical, Physical and Engineering Sciences*, 454, 3047-3074, 1998.
12. J.H. Maddocks, R.S. Manning, R.C. Paffenroth, K.A. Rogers, and J.A. Warner, “Interactive Computation, Parameter Continuation, and Visualization”, *International Journal of Bifurcation and Chaos*, 7, 1699-1715, 1997.

Book Chapters:

13. J. Guckenheimer, K. Hoffman, and W. Weckesser, “Global Bifurcations of Periodic Orbits in the Forced Van der Pol Equation”, in *Global Analysis of Dynamical Systems*, eds H.W. Broer, B. Krauskopf and G. Vegter, Institute of Physics Publishing, Dirac House, 2001.

Proceedings Papers:

14. H.V.Ly, G.A. Pinter, K.A.Rogers, R.C. del Rosario, & D.E. Vaughan, “Modeling the Chimera Domain Decomposition Approach to Solving Conservation Laws”, *Proceedings for the Industrial Mathematical Modeling Workshop for Graduate Students*, Editors B.G. Fitzpatrick & H.T.Tran, Center for Research in Scientific Computation, Technical Report CRSC-TR96-7, February 1996.

Computer Codes:

15. K.Rogers, R.C. Paffenroth, & S. Kehrbaum, Interactive Computer Code: SLINKY.

Manuscripts in Preparation:

16. Guckenheimer, Hoffman, Weckesser, Analysis of the Folded Saddle
17. Hoffman & Manning, Stability of Elastic Rods with Self-Contact

Invited Presentations:

(last five years only—does not include contributed talks or posters)

Conference Presentations:

1. *Global Analysis of the Forced van der Pol Equation: The Slow Flow and Canard Solutions*, Dynamics of Structured Systems, Oberwolfach, Germany, December 2003.
2. *Global Analysis of the Forced van der Pol Equation: The Slow Flow and Canard Solutions*, Women in Applied Mathematics: Research and Leadership Conference, College Park, October 2003.
3. *Calculation of the Stability Index for Buckling of a Twisted Elastic Strut*, SIAM Dynamical Systems Meeting, Snowbird UT, May 2003.
4. *A Simple Model of Sheet Metal Assembly*, IMA Workshop: Connecting Women in Mathematics with Industry, Sept 2000.

5. *Stability Results for Elastic Rods*, IMACS 2000, Lausanne Switzerland, Aug. 2000
6. *A Numerical Study of Relaxation Oscillators Coupled with Reciprocal Inhibition*, SIAM Annual Meeting, Atlanta Ga, May 1999.

Other Professional Presentations

7. *Global Analysis of the Forced van der Pol Equation: The Slow Flow and Canard Solutions*, Colloquium, CSEE Department UMBC, April 2004
8. *Global Analysis of the Forced van der Pol Equation: The Slow Flow and Canard Solutions*, Dynamics Seminar, Cornell University, November 2003.
9. *Some Examples from Mathematical Biology*, Summer Program for Women in Mathematics, GWU, July 2003.
10. *Stability Results for Elastic Rods*, Applied Mathematics Seminar, University of Delaware, April 2001.
11. *Some Results from Mathematical Models of Two Biological Systems: Supercoiling of DNA and Reciprocally Inhibited Neurons*, Faculty Colloquium, Biology Department, UMBC, March 2001.
12. *Stability Results for Elastic Rods*, Applied Mathematics Seminar, UMCP, Nov 2000
13. *Some Examples from Mathematical Biology*, Mathematical Biology REU, Penn State Erie-Behrend, July 2000.
14. *Stability in Continuum Models of DNA Minicircles*, Mathematics Colloquium, Drexel University, Philadelphia Pa, Feb 1999.
15. *Stability in Continuum Models of DNA Minicircles*, Nonlinear Science Seminar, NRL, Washington DC, February 1999.
16. *Stability in Continuum Models of DNA Minicircles*, Mathematics Colloquium, George Mason University, Fairfax Va, Feb 1999.
17. *Stability in Continuum Models of DNA Minicircles*, Research Colloquium, Southern Methodist University, Dallas TX, Feb 1999.
18. *Stability in Continuum Models of DNA Minicircles*, Mathematics Colloquium, University of Florida, Gainesville Fl, Feb 1999.
19. *Stability in Continuum Models of DNA Minicircles*, Dynamics Seminar, Boston University, Boston Ma, Feb 1999.
20. *Stability in Continuum Models of DNA Minicircles*, Applied Mathematics Colloquium, UMBC, Baltimore, MD Jan 1999.
21. *Stability in Continuum Models of DNA Minicircles*, Mathematics Colloquium, CWRU, Cleveland, OH Jan 1999.
22. *Stability in Continuum Models of DNA Minicircles*, Postdoc Seminar, IMA, UMN, Minneapolis MN Jan 1999.

Service Activities**Departmental Service**

<i>Date</i>	<i>Position</i>
2003-2004	Graduate Committee Dept. organizer of recruiting WISE meetings Co-organized undergraduate mentoring luncheon Co-organized graduate mentoring luncheon
2002-2003	Search Committee for Assistant Professor Position Dept. organizer of recruiting WISE meetings
2001-2002	Faculty Advisor to the Council of Majors and Pi Mu Epsilon Dept. organizer of recruiting WISE meetings
2000-2001	Undergraduate Committee Faculty Advisor to the Council of Majors and Pi Mu Epsilon Dept. organizer of recruiting WISE meetings
1999-2000	Undergraduate Committee Panelist at the Departmental Recruiting Open House

University Service

<i>Date</i>	<i>Position</i>
2003-2004	Co-organizer of WISE event associated with Linda Petzold's visit Examiner for the English exam for TAs
2000-2001	Panelist at the new faculty followup, UMBC

Service to the Profession

<i>Date</i>	<i>Position</i>
2003-2004	Career panelist, Summer Program for Women in Mathematics, GWU, July 2004 NSF Review Panel, Division of Mathematical Sciences
2002-2003	Invited Speaker, Summer Program for Women in Mathematics, GMU Co-organizer of two invited minisymposia for SIAM Dynamical Systems Conference,
2001-2002	Invited Mentor, Mentoring Women in Mathematics, University of Akron
2000-2001	Career Panelist at Sonia Kovalevsky Day, Towson Univ. Graduate Student Mentor at the IMA Workshop: Connecting Women Math. to Industry Organized two day workshop for Mathematical Biology REU at Penn State Erie-Behrend
Winter 1998	Organizer of Postdoctoral Seminar: IMA

Editorial Service

Refereed papers for the Phil. Trans. Roy. Soc., J. Physics A, and UMBC Review

Professional Societies & Affiliations

American Mathematical Society
Society of Industrial and Applied Mathematics,
Association for Women in Mathematics
Neural and Cognitive Science Group at UMBC
Women in Science and Engineering at UMBC