

Robert W. Easton
Professor
Department of Applied Mathematics
University of Colorado
Boulder, Colorado 80309-0526

BIRTHDATE December 8, 1941

EDUCATION: University of Wisconsin, B.S. June 1963
 University of Wisconsin, M.S. January 1965
 University of Wisconsin, Ph.D. August 1967

THESIS ADVISOR: Charles C. Conley

THESIS TITLE: On the existence of invariant sets inside a submanifold
 convex to a flow.

POSITIONS HELD:

| | | |
|------------------------------|---------------------------------|-----------|
| Research Associate | Division of Applied Mathematics | 1967-1968 |
| | Brown University | |
| Assistant Professor | Division of Applied Mathematics | 1968-1972 |
| | Brown University | |
| Visiting Assistant Professor | University of Colorado | 1972-1973 |
| Associate Professor | University of Colorado | 1973-1979 |
| Professor | University of Colorado | 1979-2001 |
| Emeritus Professor | University of Colorado | 2001- |

PUBLICATIONS:

1. Locating invariant sets, Proceedings of Symposia in Pure Mathematics, Vol. XIV, American Math. Soc., 55-59, (1969).
2. A flow near a degenerate critical point, Studies in Applied Mathematics, No. 5, SIAM, Philadelphia, PA, 1 p.(1969).
3. Isolated invariant sets and isolating blocks, (with C. Conley), Studies in Applied Mathematics, No. 5, SIAM, Philadelphia, PA, 97-104, (1969).
4. On the existence of invariant sets inside a submanifold convex to a flow, Journal of Differential Equations, Vol. 7, No.1, 54-68, (1970).
5. Flows near isolated invariant set in dimension 3, Periodic orbits, stability and resonances, G.E.O. Giacoglia, Ed., D. Reidel Pub. Co., 332-336, (1970).
6. Isolated invariant sets and isolating blocks, (with C. Conley), Transactions of the American Mathematical Society, Vol. 158, No. 1, 35-61., (1971).

7. Regularization of vector fields by surgery, *Journal of Differential Equations*, Vol. 10, No. 1, 92-99, (1971).
8. Some topology of the 3-body problem, *Journal of Differential Equations*, Vol. 10, No. 2, 371-377 (1971).
9. Isolating blocks, regularization and the 3-body problem, *Proceedings of the International Symposium on Dynamical Systems*, Salvador, Brazil, 75-96, (1971).
10. The topology of the regularized integral surfaces of the 3-body problem, *Journal of Differential Equations*, 361-384, (1972).
11. Isolating blocks and symbolic dynamics, *Journal of Differential Equations*, Vol. 17, No. 1, 96-118, (1975).
12. Some topology of n-body problems, *Journal of Differential Equations*, Vol. 19, No. 2, 258-269, (1975).
13. Some qualitative aspects of the 3-body flow, *Dynamical Systems, An International Symposium*, Vol. 2, Academic Press, Inc., 1-6, (1976).
14. Homoclinic phenomena in Hamiltonian systems with several degrees of freedom, *Journal of Differential Equations*, Vol. 29, No. 2, 241-252, (1978).
15. Chain transitivity and the domain of influences of an invariant set, *Lecture Notes in Mathematics*, Vol. 668, Springer-Verlag, 95-102, (1978).
16. Homoclinic phenomena for orbits doubly asymptotic to an invariant three sphere, (with R. McGehee), *Indiana J. of Mathematics*, Vol. 28, No. 2, 211-240, (1979).
17. Perturbed twist maps, homoclinic points, and ergodic zones, *Instabilities in Dynamical Systems*, V. Szebehely, Ed., D. Reidel Pub. Co., 41-49, (1979).
18. Ergodic properties of linked twist mappings, (with R. Burton), *Lecture Notes in Mathematics*, Vol. 819, Z. Nitecki and C. Robinson, Eds., Springer-Verlag, Inc., New York 35-49, (1980).
19. Homoclinic phenomena near orbits biasymptotic to invariant tori, *Classical Mechanics and Dynamical Systems*, R. Devaney, Z. Nitecki, Eds., Marcel Dekker, Inc., New York, 55-64, (1980).
20. *Ergodic Theory and Hamiltonian Dynamics, Applications of Modern Dynamics to Celestial Mechanics and Astrodynamics*, V. Szebehely, Ed., D. Reidel Pub. Co., 267-277, (1982).
21. Computing the dependence on a parameter of a family of unstable manifolds: Generalized Melnikov formulas, *Journal of NonLinear Analysis: Theory, Methods, and Applications*, Vol. 8, No.1, 1-4, (1984).

22. Parabolic orbits in the planar 3-body problem, *Journal of Differential Equations*, Vol. 52, No.1, 116-134, (1984).
23. Trellises formed by the stable and unstable manifolds of saddle points in the plane, *Transactions of the American Mathematical Society*, Vol 294, No. 2, 719-731, (1986).
24. Isolating Blocks and Epsilon Chains for Maps, *Physica D*, Vol. 39, No. 1, 95-110, (1989).
25. Transport through chaos, *Nonlinearity* 4. 583-590, (1991).
26. Capture orbits and Melnikov integrals in the planar 3-body problem, *Celestial Mechanics* 50: 283-297, (1991).
27. Exit times and transport for symplectic twist maps, (with J. Meiss and S. Carver), *Chaos* Vol.3 No. 2, 153-165 (1993).
28. Transport of phase space volume near isolated invariant sets, *Journal of Dynamics and Differential Equations*, Vol. 5, No. 3, 529-536, (1993).
29. *Geometric Methods for Discrete Dynamical Systems*, Graduate Text, Oxford University Press (1998).
30. Stability of Levitrons, (with H. Dullin), *Physica D* 126, 1-17 (1999).
31. Stability of Levitrons, (with H. Dullin), *Z. Angew. Math. Mech.* Vol. 79, 167-170.
32. Drift by Coupling to an Anti-Integrable Limit, (with J. D. Meiss and G. E. Roberts), *Physica D*.
33. Conley Index, in *Encyclopedia of Nonlinear Science*, Alwyn Scott Ed. Routledge, New York and London, 2005.
34. Changing Climate, More Damaging Weather, *Issues in Science and Technology*, Vol. 26, No. 2 (2010), with Robert Repetto,
35. Climate Change and Damages from Extreme Weather Events, *Environment* Vol. 52, No. 2 (2010), with Robert Repetto,.
36. A Forest Village Model (January 2009) This is a model of a simple economy within an ecosystem. It is supplemented by an interactive Matlab program that allows the user to make a sequence of land use and labor allocation updates to see how the system responds.
37. *Financial Alchemy* (2010). Manuscript for a book in progress.

38. Matlab programs (2010) for five increasingly complex economic models. These models supplement the Financial Alchemy manuscript.
39. Finance Dynamics (2011). Manuscript of a short technical article.
40. Overview of the Climate Dice 2013 model created by William Nordhaus. The model is reprogramed using Matlab from it's original GAMS version.

RESEARCH GRANTS:

NSF GR-38585; 1973-1977, \$24,700

NSF MCS 76-84420; 1978-1980, \$25,499

NSF MCS-8001526; 1980-1984, \$47,862

CRCW Research Grant; 1989, \$3,500

NSF DMS -9005805 (Co PI) Research Equipment , 1990, \$26,000

SELECTED TALKS

AMS Summer Institute on Global Analysis, Berkeley, California, 1968.
(60 minute talk)

International Conference on Periodic Orbits, Stability and Resonances in
Celestial Mechanics, Sao Paulo, Brazil, 1969. (60 minute talk)

International Conference on Dynamical Systems, Salvador, Brazil, 1971.
(60 minute talk)

International Symposium on Dynamical Systems at Brown University, August
1974. (20 minute talk)

A NATO Advanced Study Institute on Instabilities in Dynamical Systems with
Applications to Celestial Mechanics, Cortina D'Ampezzo, Italy, July 30 -
August 12, 1978. (50 minute talk)

International Conference on Mathematical Methods in Celestial Mechanics,
Oberwolfach, Germany, August 13-19, 1978. (50 minute talk)

International Conference on Dynamical Systems, Northwestern University,
June 1979. (20 minute talk)

CBMS Conference on Celestial Mechanics, Tufts University, August 1979.
(60 minute talk)

AMS 83rd Summer meeting, Special Session on Dynamical Systems,

University of Minnesota, Duluth, August 1979. (20 minute talk)

A NATO Advanced Study Institute on Applications of Modern Dynamics to Celestial Mechanics and Astrodynamics, Cortina D'Ampezzo, Italy, August 2 - August 14, 1981. (Two 90 minute invited lectures)

AMS Annual Meeting, Special Session on Celestial Mechanics, Anaheim, CA, January 11, 1985. (20 minute talk)

AMS Summer Meeting, Special Session on Dynamical Systems, August 21, 1985. (20 minute talk)

Midwest Dynamical Systems Conference, Cincinnati, OH, April 26, 1985. (50 minute talk)

U.S.-Japan Workshop on Nonlinear Dynamics with Applications to Plasma Physics, Boulder, CO, July 24-28, 1989. (20 minute talk)

MSI Workshop on Classical and Quantum Transport in Hamiltonian Systems, Cornell University, November 17-20, 1989. (60 minute talk)

International Dynamical Systems Conference, Northwestern University, March 24-28, 1991. (60 minute talk).

SIAM Conference on Applications of Dynamical Systems, Snowbird Utah, Oct. 1992, (20 minute talk)

SIAM Conference on Applications of Dynamical Systems, Snowbird Utah, May, 1995, Organizer of the Minisymposium on the Conley Index, (20 minute talk).

FELLOWSHIPS:

University of Colorado Faculty Fellowship, 1979-1980.

Ph.D STUDENTS

Charles Meyers, (1983),
Patrick Quillen, (1986),
Fred Jones, (1991).
Rodney Anderson (I was a thesis committee member, for Aerospace Engineering) (2005)

M.S. STUDENTS

Yang Fen Yerng, (1986), Brian Clark, (1987), Jeffrey Lawson, (1988),
Sung-Hwan Lee, (1988), John Taylor, (1988), Lee Cox, (1989).
Hegland, Beth, (2010)

PROFESSIONAL SERVICE TO THE DEPARTMENT OF MATHEMATICS

Graduate Committee, 1973-1974
New Appointments Committee, 1973-1974, 1974-1975, 1977-1978
Math-Physics Steering Committee, 1974-1978
Organized Math-Physics seminar, 1975-1976
Chairman, Graduate Committee, 1978-1979
Personnel Committee, 1980-1981, 1981-1982
Chairman, New Appointments Committee, 1981-1982
Associate Chairman, 1981-1982
Undergraduate Committee, 1982-1984
Mathematics Department Constitution Committee, 1983-1984
Organized the Midwest Dynamical Systems Conference, April 7-9, 1983
Chairman, Graduate Committee, 1984-1985
Graduate Committee, Spring 1986
Undergraduate Committee, 1986-1987
Research Evaluation Committee, 1986-1987
Graduate Committee, 1987-1988
Applied Mathematics Program Executive Committee, 1987-1988

PROFESSIONAL SERVICE TO THE PROGRAM IN APPLIED MATHEMATICS

Computing Search Committee 1989-1990
Chair, Undergraduate Committee 1990-1993
Analysis Search Committee 1990-1991
College of Engineering Undergraduate Affairs Committee 1989-1991
Chair, College of Engineering Educational Policy and Planning Committee 1991-1993
College of Engineering Administrative Council, 1991-1993.
Program in Applied Mathematics Chair Undergraduate Committee 1991-1993
Program in Applied Mathematics Associate Director 1993-1994
Instructor Search Committees 1993-1995
Director Program in Applied Mathematics 1994-1995

GRADUATE INSTRUCTION

| | | |
|---------|----------|---|
| 1972-73 | 647-648 | Differential Equations |
| 1973-74 | 607-608 | Differential Topology |
| 1974-75 | 502 | Topology |
| 1975-76 | 523-524 | Differential Geometry |
| 1976-77 | 606-608 | Differential Topology |
| 1977-78 | 502 | Topology |
| 1978-79 | 551 | Celestial Mechanics |
| 1980-81 | 501-502 | Topology |
| 1983-84 | 691 | Dynamical Systems |
| 1984-85 | 502, 647 | Topology, Differential Equations |
| 1985-86 | 501, 502 | Topology |
| 1986-87 | 543, 693 | Differential Equations, Dynamical Systems Seminar |

| | | |
|---------|----------|-----------------------------------|
| 1987-88 | 501, 502 | Topology |
| 1991-92 | 7100 | Introduction to Dynamical Systems |
| 1994-95 | 7100 | Dynamical Systems and Chaos |