

# Bibliography

- Abell, M. L., and J. P. Braselton (2004). *Differential Equations with Mathematica*. London, Academic Press.
- Abraham, R., and J. E. Marsden (1978). *Foundations of Mechanics*. Reading, Benjamin.
- Adrianova, L. Y. (1995). *Introduction to Linear Systems of Differential Equations*. Providence, AMS.
- Akhiezer, N. I. (1962). *The Calculus of Variations*, New York, Blaisdell Publishing.
- Alexander, J. C., B. R. Hunt, I. Kan, and J. A. Yorke (1996). "Intermingled Basins for the Triangle Map." *Ergodic Theory and Dynam. Systems* 16: 651–662.
- Allee, W. C., A. E. Emerson, O. Park, T. Park, and K. P. Schmidt (1949). *Principles of Animal Ecology*. Philadelphia, Saunders.
- Alligood, K. T., T. D. Sauer, and J. A. Yorke (1997). *Chaos*. New York, Springer-Verlag.
- Arnold, V. I. (1963). "Proof of a Theorem of A.N. Kolmogorov on the Invariance of Quasiperiodic Motions Under Small Perturbations of the Hamiltonian." *Russ. Math. Surveys* 18(5): 9–36.
- Arnold, V. I. (1978). *Mathematical Methods of Classical Mechanics*. New York, Springer.
- Arnold, V. I. (1983). *Geometrical Methods in the Theory of Ordinary Differential Equations*. New York, Springer-Verlag.
- Arnold, V. I., and A. Avez (1968). *Ergodic Problems of Classical Mechanics*. New York, Benjamin.
- Arnold, V. I., V. S. Afrajmovich, Y. S. Ilyashenko, and L. P. Shilnikov (1999). *Bifurcation Theory and Catastrophe Theory*. Berlin, Springer-Verlag.
- Arrowsmith, D. K., and C. M. Place (1992). *Dynamical Systems: Differential Equations, Maps and Chaotic Behavior*. London, Chapman and Hall.
- Barger, V. D., and M. G. Olsson (1973). *Classical Mechanics*. New York, McGraw-Hill.
- Baumann, G. (2004). *Mathematica for Theoretical Physics: Classical Mechanics and Non-linear Dynamics*. New York, Springer Science.

- Bielecki, A. (1956). "Une Remarque Sur la Méthode De Banach-Cacciopoli-Tikhonov Dans la Théorie Des Equations Différentiel les Ordinaires." *Bull. Acad. Pol. Sci.* 4: 261–264.
- Bogdanov, R. I. (1975). "Versal Deformation of a Singular Point of a Vector Field on the Plane in the Case of Zero Eigenvalues." *Funkcional Anal. i Priložen.* 9(2): 63.
- Bollt, E., and A. Klebanoff (2002). "A New and Simple Chaos Toy." *Internat. J. Bifur. Chaos* 12(8): 1843–1857.
- Bora, M. P., and D. Sarmah (2008). "Sawtooth Disruptions and Limit Cycle Oscillations." *Comm. Nonlinear Sci. Numer. Simul.*, 13 (2): 296–313.
- Carr, J. (1981). *Applications of Centre Manifold Theory*. New York, Springer-Verlag.
- Cartwright, M. L. (1952). "Non-linear Vibrations: A Chapter in Mathematical History." *Math. Gaz.* 26 (316):81–88.
- Cassels, J. W. S. (1957). *An Introduction to Diophantine Approximation*. Cambridge, UK, Cambridge University Press.
- Chicone, C. (1999). *Ordinary Differential Equations with Applications*. New York, Springer-Verlag.
- Chirikov, B. V. (1979). "A Universal Instability of Many-Dimensional Oscillator Systems." *Phys. Rep.* 52: 265–379.
- Chow, S. H., and J. K. Hale (1982). *Methods of Bifurcation Theory*. New York, Springer-Verlag.
- Chow, S. N., C. Li, and D. Wang (1994). *Normal Forms and Bifurcations of Planar Vector Fields*. Cambridge, UK, Cambridge University Press.
- Coddington, E. A., and N. Levinson (1955). *Theory of Ordinary Differential Equations*. New York, McGraw-Hill.
- Conley, C. (1978). *Isolated Invariant Sets and the Morse Index*. Providence, AMS.
- Cvitanovic, P. (1995). "Dynamical Averaging in Terms of Periodic Orbits." *Phys. D*, 83(1–3): 109–123.
- Davidson, R. C. (1972). *Methods in Nonlinear Plasma Theory*. New York, Academic Press.
- de la Llave, R. (2001). "A Tutorial on KAM Theory." In *Smooth Ergodic Theory and Its Applications (Seattle, WA, 1999)*. *Proc. Sympos. Pure Math.* 69. Providence, AMS 69: 175–292.
- Delshams, A., and T. M. Seara (1997). "Splitting of Separatrices in Hamiltonian Systems with One and a Half Degrees of Freedom." *Math. Phys. Electron. J.* 3: Paper 4 (electronic).
- Devaney, R. L. (1986). *An Introduction to Chaotic Dynamical Systems*. Menlo Park, NJ, Benjamin/Cummings.

- Diacu, F., and P. J. Holmes (1996). *Celestial Encounters: The Origins of Chaos and Stability*. Princeton, Princeton University Press.
- Dieci, L., and E. S. van Vleck (2002). "Lyapunov Spectral Intervals: Theory and Computation." *SIAM J. Numer. Anal.* 40(2): 516–542.
- Dobson, A. P., A. D. Bradshaw, and J. M. Baker (1997). "Hopes for the Future: Restoration Ecology and Conservation Biology." *Science* 277: 515–522.
- Dombre, T., U. Frisch, J. M. Greene, M. Hénon, A. Mehr, and A. M. Soward (1986). "Chaotic Streamlines in the ABC Flows." *J. Fluid Mech.* 167: 353–391.
- Dubrovin, B. A., I. M. Krichever, and S. P. Novikov (1985). "Integrable Systems. I." *Current Prob. Math. Fund. Dir.*, 4: 179–284, 291.
- Dullin, H. R., and A. Wittek (1995). "Complete Poincaré Sections and Tangent Sets." *J. Phys. A* 28: 7157–7180.
- Dullin, H. R., M. Juhnke, and P. H. Richter (1994). "Action Integrals and Energy Surfaces of the Kovalevskaya Top." *Internat. J. Bifur. Chaos* 4(6): 1535–1562.
- Easton, R. W. (1998). *Geometric Methods for Discrete Dynamical Systems*. Cambridge, UK, Cambridge University Press.
- Eden, A., C. Foias, B. Nicolaenko, and R. Temam (1994). *Exponential Attractors for Dissipative Evolution Equations*. Paris, Masson.
- Enciso, G. A., and E. D. Sontag (2006). "Global Attractivity, I/O Monotone Small-Gain Theorems, and Biological Delay Systems." *Discrete Contin. Dynam. Syst.* 14(3): 549–578.
- Escande, D. F. (1985). "Stochasticity in Hamiltonian Systems: Universal Aspects." *Phys. Rep.* 121: 165–261.
- Falconer, K. J. (1990). *Fractal Geometry: Mathematical Foundations and Applications*. New York, Wiley.
- Farkas, M. (1984). "Zip Bifurcation in a Competition Model." *Nonlinear Anal.* 8(11): 1295–1309.
- Field, M. (1996). *Lectures on Bifurcations, Dynamics and Symmetry*. Harlow, UK, Longman.
- Field, M., and M. Golubitsky (1995). *Symmetry in Chaos: A Search for Patterns in Mathematics, Art and Nature*. New York, Oxford University Press.
- Floquet, G. (1883). "Sur les Équations Différentielles Linéaires à Coefficients Périodiques." *Ann. Sci. École Norm. Sup.* 12(2): 47–88.
- Friedman, A. (1982). *Foundations of Modern Analysis*, New York, Dover Publications.

- Gander, W., and J. Hrebíček (2004). *Solving Problems in Scientific Computing Using Maple and MATLAB*. Berlin, Springer-Verlag.
- Goldstein, H., C. P. Poole, and J. L. Safko (2002). *Classical Mechanics*. Reading, MA, Addison-Wesley.
- Golubitsky, M., and D. G. Schaeffer (1985). *Singularities and Groups in Bifurcation Theory I*. New York, Springer-Verlag.
- Golubitsky, M., and I. Stewart (2002). *The Symmetry Perspective: From Equilibrium to Chaos in Phase Space and Physical Space*. Basel, Birkhäuser.
- Golubitsky, M., I. Stewart, and D. G. Schaeffer (1988). *Singularities and Groups in Bifurcation Theory II*. New York, Springer-Verlag.
- Guckenheimer, J., and P. Holmes (1983). *Nonlinear Oscillations, Dynamical Systems, and Bifurcations of Vector Fields*. New York, Springer-Verlag.
- Guenther, R. B., and J. W. Lee (1996). *Partial Differential Equations of Mathematical Physics and Integral Equations*. New York, Dover Publications.
- Hall, B. C. (2003). *Lie Groups, Lie Algebras, and Representations: An Elementary Introduction*. New York, Springer-Verlag.
- Hamilton, W. R. (1834). "On a General Method in Dynamics; by Which the Study of the Motions of All Free Systems of Attracting or Repelling Points Is Reduced to the Search and Differentiation of One Central Relation, or Characteristic Function." *Phil. Trans. Roy. Soc.*, II: 247–308.
- Hardy, G. H., and E. M. Wright (1979). *An Introduction to the Theory of Numbers*. Oxford, UK, Oxford University Press.
- Harris, Jr., W. A., J. P. Fillmore, and D.R. Smith (2001). "Matrix Exponentials—Another Approach." *SIAM Rev.* 43: 694–706.
- Hénon, M., and C. Heiles (1964). "The Applicability of the Third Integral of Motion: Some Numerical Experiments." *Astron. J.* 69: 73–79.
- Hilbert, D. (1900). "Mathematische Probleme." *Göttinger Nachr.* 253–297.
- Hirsch, M. W. (1976). *Differential Topology*. New York, Springer-Verlag.
- Hirsch, M. W., and S. Smale (1974). *Differential Equations, Dynamical Systems and Linear Algebra*. New York, Academic Press.
- Hirsch, M. W., C. Pugh, and M. Shub (1977). *Invariant Manifolds*. New York, Springer-Verlag.
- Hocking, J. G., and G. S. Young (1961). *Topology*. Mineola, Dover.

- Holmes, P., J. Marsden, and J. Scheurle (1988). "Exponentially Small Splittings of Separatrices with Applications to KAM Theory and Degenerate Bifurcations." In *Hamiltonian Dynamical Systems (Boulder, CO, 1987)* Contemp. Math. 81. Providence, AMS. 213–244.
- Hydon, P. E. (2000). *Symmetry Methods for Differential Equations: A Beginner's Guide*. Cambridge, UK, Cambridge University Press.
- Ilyashenko, Y., and S. Yakovenko, Eds. (1995). *Concerning the Hilbert 16th Problem*. Providence, AMS.
- Ince, E. L. (1956). *Ordinary Differential Equations*. New York, Dover.
- Isham, C. J. (1999). *Modern Differential Geometry for Physicists*. Singapore, World Scientific.
- Katok, A. B., and B. Hasselblatt (1999). *Introduction to the Modern Theory of Dynamical Systems*. Cambridge, UK, Cambridge University Press.
- Kim, J. W., S. Y. Kim, B. Hunt, and E. Ott (2003). "Fractal Properties of Robust Strange Nonchaotic Attractors in Maps of Two or More Dimensions." *Phy. Rev. E* (3). 67: 036211.
- Kovalevskaya, S. (1889). "Sur le Problème De la Rotation D'un Corps Solide D'un Point Fixe." *Acta Math.* 12: 177–232.
- Kuznetsov, Y. A. (1995). *Elements of Bifurcation Theory*. New York, Springer-Verlag.
- Lanczos, C. (1962). *The Variational Principles of Mechanics*. Toronto, University of Toronto.
- Lee, H. J., and W. E. Schiesser (2003). *Ordinary and Partial Differential Equation Routines in C, C++, Fortran, Java, Maple, and MATLAB*. Boca Raton, FL, Chapman and Hall.
- Li, T. Y., and J. A. Yorke (1975). "Period Three Implies Chaos." *Amer. Math. Monthly* 82: 985–992.
- Lichtenberg, A. J., and M. A. Leiberman (1992). *Regular and Chaotic Motion*. New York, Springer-Verlag.
- Lorenz, E. N. (1963). "Deterministic Nonperiodic Flow." *J. Atmos. Sci.* 20: 130–141.
- Lynch, S. (2001). *Dynamical Systems with Applications using Maple*. Boston, Birkhäuser.
- Lynch, S. (2004). *Dynamical Systems with Applications using Matlab*. Boston, Birkhäuser.
- MacDonald, N. (1978). *Time Lags in Biological Models*. New York, Springer-Verlag.
- MacKay, R. S. (1993). *Renormalisation in Area-Preserving Maps*. Singapore, World Scientific.
- MacKay, R. S., and J. D. Meiss, Eds. (1987). *Hamiltonian Dynamical Systems: A Reprint Selection*. London, Adam-Hilgar Press.

- Markley, N. G. (2004). *Principles of Differential Equations*. Hoboken, NJ, John Wiley and Sons.
- Markus, L., and H. Yamabe (1960). "Global Stability Criteria for Differential Systems." *Osaka Math. J.* 12: 305–317.
- Mather, J. N. (1991). "Action Minimizing Invariant Measures for Positive Definite Lagrangian Systems." *Math. Z.* 207: 169–207.
- McGehee, R. (1974). "Triple Collision in the Collinear Three-Body Problem." *Invent. Math.* 27: 191–227.
- Meiss, J. D. (1992). "Symplectic Maps, Variational Principles, and Transport." *Rev. Modern Phys.* 64(3): 795–848.
- Meyer, K. R., and G. R. Hall (1992). *Introduction to the Theory of Hamiltonian Systems*. New York, Springer-Verlag.
- Michaelis, L., and M. L. Menten (1913). "Die Kinetic Der Invertinwirkung." *Biochem. Z.* 49: 333–369.
- Milnor, J. (1985a). "On the Concept of Attractor." *Comm. Math. Phys.* 99: 177–195.
- Milnor, J. (1985b). "On the Concept of Attractor: Correction and Remarks." *Comm. Math. Phys.* 102(3): 517–519.
- Moler, C., and C. van Loan (1978). "Nineteen Dubious Ways to Compute the Exponential of a Matrix." *SIAM Rev.* 20: 801–836.
- Morrison, P. J. (1998). "Hamiltonian Description of the Ideal Fluid." *Rev. Mod. Phys.* 70(2): 467–521.
- Moser, J. K. (1962). "On Invariant Curves of Area-Preserving Mappings of an Annulus." *Nachr. Akad. Wiss. Göttingen II Math. Phys.* 1: 1–20.
- Murray, J. D. (1993). *Mathematical Biology*. New York, Springer-Verlag.
- Nayfeh, A. H., and D. T. Mook (1979). *Nonlinear Oscillations*. New York, John Wiley and Sons.
- Olver, P. J. (1993). *Applications of Lie Groups to Differential Equations*. New York, Springer-Verlag.
- Olver, P. J., and C. Shakiban (2006). *Applied Linear Algebra*. Upper Saddle River, NJ, Pearson Prentice-Hall.
- Perko, L. (2000). *Differential Equations and Dynamical Systems*. New York, Springer-Verlag.
- Poincaré, H. (1890). "Sur le Problème Des Trois Corps Et les Équations De la Dynamique." *Acta Math.*: 1–270.

- Poincaré, H. (1892). *Les Methodes Nouvelles de la Mechanique Celeste*. Three vols. Paris, Gauthier-Villars. (Translated as (1992) *New Methods in Celestial Mechanics*. New York, Springer-Verlag.)
- Poincaré, H. (1908). *Science et Méthode*. Paris, Flammarion (Translated as (1952) *Science and Method*. New York, Dover).
- Poincaré, H. (1914). *La Valeur de la Science*. Paris, Flammarion (Translated as (2001) *The Value of Science: Essential Writings of Henri Poincaré*. New York, Modern Library).
- Pöschel, J. (1982). "Integrability of Hamiltonian Systems on Cantor Sets." *Comm. Pure Appl. Math.* 35(5): 653–696.
- Pöschel, J. (2001). "A Lecture on the Classical KAM Theorem." In *Smooth Ergodic Theory and Its Applications (Seattle, WA 1999)*. *Proc. Sympos. Pure Math.* 69. Providence, AMS 69: 707–732.
- Robinson, C. (1999). *Dynamical Systems: Stability, Symbolic Dynamics, and Chaos*. Boca Raton, FL, CRC Press.
- Rod, D. L., and R. C. Churchill (1985). "A Guide to the Hénon-Heiles Hamiltonian." In *Singularities and Dynamical Systems (Iraklion, 1983)*. North-Holland Math. Stud. 103. Amsterdam, North-Holland 385–395.
- Romeiras, F. J., and E. Ott (1987). "Strange Nonchaotic Attractors of the Damped Pendulum with Quasiperiodic Forcing." *Phys. Rev. A* 35(10): 4404–4412.
- Rosenweig, M. L. (1973). "Exploitation in Three Trophic Levels." *Amer. Naturalist* 107: 275–294.
- Rössler, O. E. (1976). "An Equation for Continuous Chaos." *Phys. Lett. A* 57: 397–398.
- Ruelle, D. (1981). "Small Random Perturbations of Dynamical Systems and the Definition of Attractors." *Comm. Math. Phys.* 82: 137–151.
- Rusbridge, M. G. (1979). "Motion of the Sprung Pendulum." *Amer. J. Phys.* 48: 146–151.
- Segur, H. (1993). "Asymptotics Beyond All Orders—A Survey." In *Chaos in Australia (Sydney, 1990)*. River Edge, NJ, World Sci. Publ. 150–172.
- Shi, S. L. (1988). "A Counterexample to a Proposed Solution of Hilbert's Sixteenth Problem for Quadratic Systems." *Bull. London Math. Soc.* 20(6): 597–599.
- Shilnikov, A. L. (1993). "On Bifurcations of the Lorenz Attractor in the Shimizu-Morioka Model." *Phys. D* 62: 338–346.
- Shilnikov, L. P., A. L. Shilnikov, D. V. Turaev, and L. O. Chua (1998). *Methods of Qualitative Theory in Nonlinear Dynamics, Part I*. Singapore, World Scientific.
- Siegel, C. L., and J. K. Moser (1971). *Lectures on Celestial Mechanics*. New York, Springer-Verlag.

- Smale, S. (1998). "Mathematical Problems for the Next Century." *Math. Intell.* 20(2): 7–15.
- Sprott, J. C. (1994). "Some Simple Chaotic Flows." *Phys. Rev. E* 50: R647–R650.
- Sternberg, S. (1958). "On the Structure of Local Homeomorphisms of Euclidean Space, II." *Amer. J. Math.* 81: 623–631.
- Strang, G. (1988). *Linear Algebra and Its Applications*. Boca Raton, FL, Brooks/Cole.
- Strogatz, S. H. (1994). *Nonlinear Dynamics and Chaos: With Applications in Physics, Biology, Chemistry, and Engineering*. Reading, MA, Addison–Wesley.
- Takens, F. (2001). "Forced Oscillations and Bifurcations." In *Global Analysis of Dynamical Systems*. Bristol, Inst. Phys. 1–61.
- Taylor, A. E., and W. R. Mann (1983). *Advanced Calculus*. New York, John Wiley and Sons.
- Toral, R., M. San Miguel, and R. Gallego (2000). "Period Stabilization in the Busse-Heikes Model of the Küppers-Lortz Instability." *Phys. A* 280: 315–336.
- Tucker, W. (2002). "A Rigorous ODE Solver and Smale's 14th Problem." *Found. Comput. Math.* 2(1): 53–117.
- van der Meer, J.-C. (1985). *The Hamiltonian Hopf Bifurcation*. Berlin, Springer-Verlag.
- van der Pol, B. (1922). "On Oscillation Hysteresis in a Simple Triode Generator." *Phil. Mag.* 43: 700–719.
- Vinograd, R. E. (1957). "The Inadequacy of the Method of Characteristic Exponents for the Study of Nonlinear Differential Equations." *Mat. Sb.* 41: 431–438.
- Viswanath, D. (2004). "The Fractal Property of the Lorenz Attractor." *Phys. D* 190: 115–128.
- Weissert, T. P. (1997). *The Genesis of Simulation in Dynamics: Pursing the Fermi-Pasta-Ulam Problem*. New York, Springer-Verlag.
- Wiggins, S. (2003). *Introduction to Applied Nonlinear Dynamical Systems and Chaos*. New York, Springer-Verlag.
- Wisdom, J., S. J. Peale, and F. Mignard (1983). "The Chaotic Rotation of Hyperion." *Icarus* 58: 137–152.
- Wolfram, S. (1983). "Statistical Mechanics of Cellular Automata." *Rev. Modern Phys.* 55(3): 601–644.
- Yakubovitch, V. A., and V. M. Starzhinskii (1975). *Linear Differential Equations with Periodic Coefficients*. New York, John Wiley and Sons.
- Zakharov, V. E., Ed. (1991). *What Is Integrability?* Springer Series in Nonlinear Dynamics. Berlin, Springer-Verlag.