

## Publications:

1. Stability of Linear Hamiltonian Systems With Periodic Coefficients. IBM Research Report, 1977.
2. With F.C. Hoppensteadt, W.L. Miranker, Dynamics of the Josephson Junction, Quarterly of Applied Mathematics, July 1978.
3. Relaxation Oscillations With Periodic Forcing, Proc. Conf. on Dynamical Systems at Northwestern, June 1979.
4. Adiabatic Invariants of Linear Hamiltonian Systems. In Classical Mechanics and Dynamical Systems, R. Devaney and Z. Nitecki, Eds. Marcel Dekker, Inc. New York and Basel, 1981, pp. 123-124.
5. Adiabatic Invariants of Linear Hamiltonian Systems with Periodic Coefficients, J. Diff. Eq., V.42, No.1(1981), P.47-71.
6. Qualitative Analysis of the Periodically Forced Relaxation Oscillations, Mem. AMS #244, 1981.
7. Random Behavior in Deterministic Systems, Proceedings of Joint Automatic Control Conference, University of Virginia, Charlottesville, 1981.
8. On Stability of Symplectic Maps, J. Diff. Eq., Vol.50 No.3(1981), pp.441- 443.
9. With J. Baillieul, Dynamics of Rotating Flexible Space Structures, in Proc. of the CDC IEEE Conf., San Antonio, TX, 1983.
10. Soviet Research on Dynamical Systems, in "Report on Soviet Applied Mathematics", Science Applications, Inc., McLean, VA, 1984.
11. A Note on the Minimal Polyhedra Circumscribed Around a Convex Body, MSRI 059-84-5 (1984).
12. Beating Modes in the Josephson Junction in "Chaos in Nonlinear Systems", J. Chandra, Ed., SIAM, Philadelphia, 1984.
13. With J. Baillieul, The Mechanics of Rotating Structures, in Theory and Appl. of Nonlinear Control Systems, C. Byrnes, A. Lindquist, Ed., Elsevier, pp. 497-505, 1986.
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15. with H. Kurland, Transversal Heteroclinic Intersections in Slowly Varying Hamiltonian Systems, in Dynamical Systems Approaches to Nonlinear Problems in Systems and Circuits, F. Salam and M. Levi, eds., pp. 29-38, SIAM, Philadelphia, 1988.
16. Stability of the Inverted Pendulum – a Topological Explanation. SIAM Review, v.30(4), 1988, pp. 639-644.
17. Non-chaotic Behavior in the Josephson Junction, Phys. Rev. A, 37(3) (1988), pp. 927-931.
18. Caterpillar Solutions in Coupled Pendula, Erg. Th.& Dyn. Sys., 8\*(1988) (C.C. Conley memorial issue), pp. 153-174.
19. Morse Theory of a Model Space Structure, Contemp. Math. vol. 97, pp. 209-216, 1989.
20. KAM theory for particles in periodic potentials, Erg. Th.& Dyn. Sys., Vol. 10 (1990), 777-785.

21. Dynamics of discrete Frenkel–Kontorova Models. Analysis, et cetera, (A collection of papers dedicated to J. Moser’s 60th birthday). P. Rabinowitz and E. Zehnder, Eds., Academic Press, Inc., pp. 471–494, 1990.
22. A Period–adding phenomenon, *SIAM J. Appl. Math.* Vol. 50, No. 4, pp. 943–955, June 1990.
23. With S. Laederich, Invariant curves in time–dependent potentials, *Ergod. Th. & Dynam. Sys.* (1991), 11, 365–378.
24. With M. Henderson and F. Odeh, Geometry and computation of the dynamics of coupled pendula, *Int. J. Bifurcation and Chaos*, Vol. 1, No. 1, 1991, 27–50.
25. With J. Baillieul, Constrained relative motions in rotational mechanics, *Arch. Rational Mech. Anal.* 115 (1991) 101–135.
26. Quasiperiodic motions in superquadratic time–periodic potentials. *Comm. Math. Phys.* 143, 43–83 (1991).
27. With S. Laederich, Qualitative dynamics of planar chains, *Physica D* 54 (1992) 173–182.
28. On Littlewood’s counterexample of unbounded motions in superquadratic potentials. *Dynamics Reported*, 1 (New Series), 113–124, 1992.
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32. Geometric Phases in the Motion of Rigid Bodies, *Arch. Rational Mech. Anal.* 122(1993) 213–229.
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39. A new randomness–generating mechanism in forced relaxation oscillations. *Physica D* 114(1998) 230–236.
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44. With J. Moser, A Lagrangian proof of the invariant curve theorem for twist mappings. *Proc. Symp. Pure Math.*, Vol. 69, 2001, pp. 733-746.
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47. On a problem by Arnold on periodic motions in magnetic fields, *Comm. Pure Appl. Math.* Vol. LVI, No. 8, pp. 1165-1177, 2003.
48. Geometrical Methods in Mechanics, in *MASS Selecta*, S. Katok, A. Sossinsky, S. Tabachnikov, Eds., AMS, 2003.
49. With Q. Ren, Geodesics on vibrating surfaces and curvature of the normal family. *Nonlinearity*, *Nonlinearity* 18 (2005), 2737-2743.
50. Geometry of vibrational stabilization and some applications. *Int. J. Bifurcation and Chaos*, *Int. J. Bif. Chaos*, Vol. 15, No. 9 (2005), 2747-2756.
51. With S. Tabachnikov, The Poncelet grid and billiards in ellipses. *Amer. Math. Monthly* 114 (2007), no. 10, 895–908.
52. Riemann mapping theorem by steepest descent. *Amer. Math. Monthly* 114 (2007), no. 3, 246–251.
53. With V. Kaloshin, An example of Arnold diffusion for near-integrable Hamiltonians. *Bull. Amer. Math. Soc. (N.S.)* 45 (2008), no. 3, 409-427.
54. With V. Kaloshin, Geometry of Arnold Diffusion. *SIAM Review*, Vol.50 (2008), No. 4, pp. 702-720.
55. With S. Kaplan and R. Montgomery, Making the moon reverse its orbit, or, stuttering in the planar three-body problem. *Discrete Contin. Dyn. Syst. Ser. B* 10 (2008), no. 2-3, 569–595.
56. With S. Tabachnikov, On bicycle tire tracks geometry, hatchet planimeter, Menzin’s conjecture and oscillation of unicycle tracks, to appear in *Experimental Mathematics*.

**Manuscripts in progress or submitted:**

57. Dripping Faucets, Torus Flows and Morse-Thue sequences, a preprint.
58. On non-exact area-preserving maps, a preprint.
59. Universality in forced relaxation oscillations, a preprint.
60. With H. Broer and C. Simo, Geometry of stability zones of Hill’s equations. A preprint.
61. Waves in ropes, a preprint.
62. Unbounded energy growth in Hamiltonian Systems, a preprint.
63. With J. Pan, Minimal capacity points and the lowest eigenfunctions of Laplacians. A preprint.
64. Non-exact symplectic maps and periodic motions in magnetic fields.

**Book Chapter:** ”Lectures on Geometrical Methods in Mechanics”, in “Classical and Celestial Mechanics – the Recife Lectures”, Cabral and Diacu, Eds., Princeton University Press, 2002.