

Curriculum Vitae

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Permanent Employment & Address:

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Education:

- Ph.D. in Applied Mathematics, June 1987, Michigan State University, East Lansing, Michigan.
- B.S. in Mathematics, January 1982, Fudan University, Shanghai, China. (复旦大学数学系77级)

Professional Employment:

- Aug. 2001 – present: Professor, Tenured, University of Nebraska-Lincoln.
- Aug. 1994 – Aug. 2001: Associate Professor, Tenured, University of Nebraska-Lincoln.
- May 1999 – Aug. 1999: Senior Research Fellow, The National University of Singapore.
- Oct. 1997 – December. 1998: Visiting Senior Fellow, The National University of Singapore, (Leave of Absence from UNL).
- Aug. 1988 – Aug. 1994: Assistant Professor, University of Nebraska-Lincoln.
- Aug. 1987 – Aug. 1988: Post Doctoral, Brown University, Providence, R.I. Postdoctoral Advisor: Jack Hale.
- Aug. 1985 – Aug. 1987: Teaching Assistant, Michigan State University.

Ph.D. Thesis:

Bifurcation of a unique and stable periodic orbit from a homoclinic orbit in some infinite dimensional systems (Thesis Advisor: Shui-Nee Chow)

Areas of Current Interest:

Mathematical Biology in: Bioinformatics, Neuroscience, Population Genetics, Ecology; Game Theory, Dynamical Systems, Bifurcation Theory

Refereed Publications:

- [P1] *Bifurcation of a unique and stable periodic orbit from a homoclinic orbit in some infinite dimensional systems* (with S.N. Chow), *Trans. A.M.S.*, 312(1989), pp.539–587. [\[PDF\]](#)
- [P2] *The Šil'nikov problem, exponential expansion, strong λ -lemma, C^1 -linearization, and homoclinic bifurcations*, *J.D.E.*, 79(1989), pp.189–231. [\[PDF\]](#)
- [P3] *Exponential expansion with Šil'nikov's saddle-focus*, *J.D.E.*, 82(1989), pp.156–173. [\[PDF\]](#)
- [P4] *Homoclinic bifurcations with nonhyperbolic equilibria*, *SIAM. J. Math. Anal.*, 21(1990), pp.693–719. [\[PDF\]](#)
- [P5] *Homoclinic bifurcation at resonant eigenvalues* (with S.N. Chow and B. Fiedler), *J.D.D.E.*, 2(1990), pp.177–244. [\[PDF\]](#)
- [P6] *The bifurcation of homoclinic and periodic orbits from heteroclinic orbits* (with S.N. Chow and D. Terman), *SIAM J. Appl. Math.*, 21(1990), pp.179–204.
- [P7] *The bifurcation of a homoclinic orbit from two heteroclinic orbits—a topological approach* (with S.N. Chow and D. Terman), *Applicable Analysis*, 42(1991), pp.275–299.

- [P8] *The bifurcations of countable connections from a twisted heteroclinic loop*, SIAM J. Math. Anal., 22(1991), pp.653–679. [\[PDF\]](#)
- [P9] *The existence of infinitely many traveling front and back waves in FitzHugh-Nagumo equation*, SIAM J. Math. Anal., 22(1991), pp.1631–1650. [\[PDF\]](#)
- [P10] *The transverse homoclinic dynamics and its bifurcation with nonhyperbolic fixed points*, Trans. A.M.S., 331(1992), pp.15–53. [\[PDF\]](#)
- [P11] *Smooth conjugacy of center manifolds* (with A. Burchard and K.N. Lu), Proc. Royal Soc. Edinburgh, 120A(1992), pp.61–77. [\[PDF\]](#)
- [P12] *On Šil'nikov's homoclinic-saddle-focus theorem*, J.D.E., 102(1993), pp.305–329. [\[PDF\]](#)
- [P13] *Homoclinic twisting bifurcations and cusp horseshoe maps*, J.D.D.E., 5(1993), pp.417–467. [\[PDF\]](#)
- [P14] *A mathematical model that mimics the bursting oscillations in pancreatic β -cells*, Math. Biosciences, 119(1994), pp.241–250.
- [P15] *Inclination-flip bifurcations of homoclinic orbits*, to appear in the Proceedings of International Conference on Bifurcations of Differentiable Dynamics, Belgium.
- [P16] *Constructing homoclinic orbits and chaotic attractors*, Int. J. Bif. & Chaos, 4(1994), pp.823–841. [\[DOC\]](#)
- [P17] *Šil'nikov-Hopf bifurcations* (with K. Sakamoto), J.D.E., 119(1995), pp.1–23. [\[PDF\]](#)
- [P18] *Constructing Lorenz type attractors through singular perturbations*, Int. Bif. & Chaos, 5(1995), pp.1633–1642. [\[DOC\]](#)
- [P19] *Conjugation for polynomial mappings* (with G. H. Meisters and G. Zampieri), Z angew Math Phys, 46(1995), pp.872–882.
- [P20] *Spiral-plus-saddle attractors and elementary mechanisms for chaos generation*, Int. Bif. & Chaos, 6(1996), pp.513–527.
- [P21] *Folding at the genesis of chaos*, Proceedings of the First World Congress of Nonlinear Analysts, Vol. IV(1996), pp.3765–3777, Walter de Gruyter Publishers, Berlin.
- [P22] *Exponential expansion with principal eigenvalues*, Int. Bif. & Chaos, 6(1996), pp.1161–1167. [\[PDF\]](#)
- [P23] *Theory and application of a nongeneric heteroclinic loop bifurcation* (with S.N. Chow and M. J. Friedman), SIAM J. Appl. Math. **59**(1999), pp.1303–1321.
- [P24] *Glucose-induced period-doubling cascade in the electrical activity of pancreatic β -cells*, J. Math. Bio., 38(1999), pp.21–78.
- [P25] *Dynamic behavior of a ferroelectric actuator* (with Qing Jiang), Mechanics and Mathematics of Solids, 4(1999), pp.89–107.
- [P26] *Stress intensification due to polarization switching* (with H.Y. Fang and Q. Jiang), in Mathematics and Control in Smart Structures, Proceedings of the International Society of Optical Engineering, ed. V.V. Varadan, Vol.3323, 1998, pp.109–118.
- [P27] *On a nonlinear communication scheme*, (with S.-N. Chow and J.K. Hale), Int. J. Bif. & Chaos, 11(2001), pp.2227–2232.
- [P28] *Food chain chaos due to junction-fold point*, Chaos, 11(2001), pp.514–525. [\[PDF\]](#)
- [P29] *Chaotic attractors in one-dimension generated by a singular Shilnikov orbit*, (with K. Taylor), Int. J. Bif. & Chaos, 12(2001), pp.3059–3083. [\[PDF\]](#)
- [P30] *Singular perturbation of n -front traveling waves in the FitzHugh-Nagumo equations*, (with D. Bell), Nonlinear Analysis, Real World Applications, 3(2002), pp.515–541. [\[PDF\]](#)
- [P31] *Food chain chaos due to Shilnikov's orbit*, (with G. Hines), Chaos, 12(2002), pp.533–538. [\[PDF\]](#)
- [P32] *Food chain chaos due to transcritical point*, (with G. Hines), Chaos, 13(2003), pp.578–585. [\[PDF\]](#)
- [P33] *Food chain chaos with canard explosion*, Chaos, 14(2004), pp.1083–1092. [\[PDF\]](#)
- [P34] *Chaotic coexistence in a top-predator mediated competitive exclusive web*, (with B. Bockelman, E.Green, G. Hines, L. Lippitt, & J. Sherman), J. Dyna. Diff. Eq., 16(2004), pp.1062–1092. [\[PDF\]](#)
- [P35] *Food web chaos without subchain oscillators*, (with B. Bockelman), Int. J. Bif. & Chaos, 15(2005), pp.3481–3492 [\[PDF\]](#)
- [P36] *Biological control does not imply paradox*, (with Shannon Jessie, Glenn Ledder, Alex Rand, Sarah Srodulski), J. Math. Biosciences, 208(2007), pp.26–32. [\[PDF\]](#)
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- [P38] *Equilibriumizing all food chain chaos through reproductive efficiency*, Chaos 16, 043125 (2006)(7 pages), DOI: 10.1063/1.2405711 [\[PDF\]](#)
- [P39] *The origin of 2 sexes through optimization of recombination entropy against time and energy*, Bulletin of Math. Biol., **69**(2007), pp.2105–2114. DOI 10.1007/s11538-007-9215-z. [\[PDF\]](#)
- [P40] *Competitive coexistence in stoichiometry chaos*, (with Irakli Loladze). Chaos 17, 033108 (2007) (14 pages), DOI: 10.1063/1.2752491 [\[PDF\]](#)
- [P41] *The Time Invariance Principle, the absence of ecological chaos, and a fundamental pitfall of discrete modeling*, accepted in Jan. 2008 for publication in Ecological Modeling, **215**(2008), pp.287–292. [\[PDF\]](#)
- [P42] *Can discrete modelers work without the TIP?* Ecological Modeling, **220**(2009), pp.2600–2601 . [\[PDF\]](#)
- [P43] *Conceptual circuit models of neurons*, Journal of Integrative Neuroscience, **8**(2009), pp.255–297. [\[PDF\]](#)
- [P44] *Metastability and plasticity in a conceptual model of neurons*, Journal of Integrative Neuroscience, **9**(2010), pp.31–47. [\[PDF\]](#)
- [P45] *From energy gradient and natural selection to biodiversity and stability of ecosystems*, The Open Ecology Journal, **3**(2010), pp.95–110. [\[PDF\]](#)
- [P46] *Neural spike renormalization. Part I – Universal number 1*, J. Diff. Eq., **250**(2011), pp.2940–2957. [\[PDF\]](#)
- [P47] *Neural spike renormalization. Part II – Multiversal chaos*, J. Diff. Eq., **250**(2011), pp.2958–2968. [\[PDF\]](#)
- [P48] *Analytic conjugation, global attractor, and the Jacobian conjecture*, Journal of Applied Analysis and Computation, Vol 1, No 1 (2011), pp.1–8. [\[PDF\]](#)
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- [P50] *Bioinformatic Game Theory and Its Application to Biological Affinity Networks*, Deng, B., B. Hinds, X. Zheng, & E. Moriyama, Applied Mathematics – Special Issue on Bioinformatics, 4(2013), pp.92–108. [\[PDF\]](#)
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- [P52] *An Inverse Problem: Trappers Drove Hares to Eat Lynx*, Acta Biotheor, Sep. 2018, 66(3), pp,213–242, doi: 10.1007/s10441-018-9333-z. [\[PDF\]](#)
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- [P54] *Numerical Proof For Chemostat Chaos of Shilnikov’s Type*, (M. Han, S.-B. Hsu), 2017 Mar;27(3):033106. doi: 10.1063/1.4977979. (14 pages) [\[PDF\]](#)
- [P55] *Alternative Models to Hodgkin-Huxley Equations*, Bulletin of Mathematical Biology, June 2017, Volume 79, Issue 6, pp 1390–1411 [\[PDF\]](#)
- [P56] *Numerical Method for Homoclinic and Heteroclinic Orbits of Neuron Models* Journal of Nonlinear Modeling and Analysis, March 2019, Volume 1, Issue 1, pp 27–45 [\[PDF\]](#)
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- [P59] *The existence of ω -limit set for a modified Nosé-Hoover oscillator*, with Q.Q. Han and X.-S. Yang, Discrete and Continuous Dynamical Systems Series B. 2022, Volume 27, Issue 12: 7275-7300. Doi: 10.3934/dcdsb.2022043 ([\[PDF\]](#))
- [P60] *Theory of Invariant Manifold and Foliation, and the Uniqueness of Center-Manifold Dynamics*. Journal of Dynamical Systems and Differential Equations. Accepted, 2022. ([\[PDF\]](#))

Citations([Google Scholar](#)):

- All: 1856 (as of Feb. 21, 2023)
- h-index: 21
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