

CURRICULUM VITAE

Ying-Cheng Lai
(United States Citizen)

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I. Education

- Ph.D. (1992)** Physics, University of Maryland, College Park (Thesis: *Nonhyperbolicity in Classical and Quantum Chaos*, under Celso Grebogi, James A. Yorke, and Edward Ott).
- M.S. (1989)** Physics, University of Maryland, College Park.
- M.S. (1985)** Optical Engineering, Zhejiang University (Thesis: *Optical Fiber Interferometry and Applications to High-Precision Vibration Measurement*).
- B.S. (1982)** Optical Engineering, Zhejiang University (Thesis: *The Design of Electrodes for CO₂ Lasers*).

II. Positions

- 2014 - present** Chair Professor of Electrical Engineering, Arizona State University.
- 2001 - present** Professor of Electrical Engineering, Arizona State University.
- May 2009 - June 2017** Sixth Century Chair in Electrical Engineering, University of Aberdeen, UK.
- 2004 - present** Affiliated Professor of Physics, Arizona State University.
- 2001 - 2004** Professor of Mathematics, Arizona State University.
- 1999 - 2001** Associate Professor of Electrical Engineering (50%) and of Mathematics (50%), Arizona State University.
- 1998 - 1999** Associate Professor of Physics (75%) and of Mathematics (25%), University of Kansas.
- 1994 - 1998** Assistant Professor of Physics (75%) and of Mathematics (25%), University of Kansas.
- 1992 - 1994** Postdoctoral Fellow, Department of Biomedical Engineering, Johns Hopkins University School of Medicine (Mentors: Raimond Winslow and Murray Sachs).
- 1992 - 1994** Research Associate (part-time, under Celso Grebogi), Institute for Plasma Research, University of Maryland, College Park.
- 1987 - 1992** Research Assistant, Quantum Electronics Laboratory and Institute for Plasma Research, University of Maryland, College Park.
- 1981 - 1986** Research Assistant, Laboratory of Modern Optics, Department of Optical Engineering, Zhejiang University.

III. Honors and Awards

- 2016** Vannevar Bush Faculty Fellow (formerly known as NSSEFF - National Security Science and Engineering Faculty Fellow), class of 2016 (15 selected nationwide in all areas of science and engineering), sponsored by the Basic Research Office of the Assistant Secretary of Defense for Research.
- 2008** Outstanding Referee Award, the American Physical Society.
- 2003** NSF ITR Award.
- 1999** Elected as a Fellow of the American Physical Society (Citation: **For his many contributions to the fundamentals of nonlinear dynamics and chaos**).
- 1998** Undergraduate Teaching Award, Department of Physics and Astronomy, University of Kansas.
- 1997** Presidential Early Career Award for Scientists and Engineers (PECASE). (Received a Presidential recognition in the White House on November 3, 1997. Citation: **For outstanding research innovation in theoretical studies of the effect of chaos in laser propagation**.)
- 1997** NSF Faculty Career Award (one of the eleven selected by the Division of Physics).
- 1991** Institute for Plasma Research Fellowship, University of Maryland.
- 1988** Ralph D. Myers Award for Outstanding Academic Achievement, University of Maryland.

IV. Visiting and Consulting Experience

- 2017 - present** Visiting Professor of Physics, Shaanxi Normal University, Xi'an, China.
- 2012 - present** Visiting Professor of Physics, Lanzhou University, China.
- 2006 - 2012** Visiting Chair Professor of Physics, Zhejiang University, China.
- 2001 - 2012** Visiting Professor of Physics, National University of Singapore.
- 2005 - 2008** Visiting Professor of Physics, Beijing Normal University.
- 2007** Consultant, EPIC Research & Diagnostics, Scottsdale, Arizona.
- 2000, 2004 - 2007** Consultant, Flint Hills Scientific LLC., Kansas.
- 2002** Visiting Professor (two weeks), National Center for Theoretical Science, Taiwan.
- 1998** Visiting Associate Professor (three weeks), National Chung Cheng University, Taiwan.
- 1997** Visiting Assistant Professor (two months), Department of Physics, University of Potsdam, Germany.
- 1995 - 1998** Visiting Assistant Professor (one summer month each year), Institute of Plasma Research, University of Maryland, College Park.
- 1995** Visiting Assistant Professor (one month). Institute of Theoretical Physics, Eötvös University, Hungary.

V. Grants

1. Y.-C. Lai, "Theoretical study of controlling chaos with applications to nonlinear optical systems," \$59, 585, AFOSR, 3/1/1996 - 2/28/1998.
2. Y.-C. Lai (PI) and R. D. Holt (Co-PI), "The study of supertransients in spatiotemporal chaotic dynamical systems with applications to nonequilibrium species coexistence in ecology," \$91, 956, NSF, 9/1/1996 - 8/31/1999.
3. B. Leimkuhler (PI), W. Huang (Co-PI), R. Byers (Co-PI), Y.-C. Lai (Co-PI), and D. Lerner (Co-PI), "Mathematics Sciences Computing Research Environments," NSF, \$75, 000, 8/1/1996 - 7/31/1998.
4. Y.-C. Lai, "Communicating with chaos," NSF Faculty Career Award, \$350, 000, 7/1/97-6/30/2002.

5. Y.-C. Lai, "Theoretical and experimental studies of chaotic dynamics with defense applications," Presidential Early Career Award for Scientists and Engineers, \$500,000, 4/1/1998-3/31/2003 (one of the two Air Force winners for this award in 1997).
6. Y.-C. Lai, "High-performance computing and electronic instrumentation for AFOSR-sponsored research on nonlinear dynamics and chaos," AFOSR DURIP, \$181,647, 6/1/2002-5/31/2003.
7. N. Ye (PI), Y.-C. Lai (Co-PI), and P. Dasgupta (Co-PI), "Computing equipment for AFOSR-sponsored research on dependable information infrastructure," AFOSR DURIP, \$110,000, 6/1/2002-5/31/2003.
8. E. J. Kostelich (PI) and Y.-C. Lai (Co-PI), "Dynamics Days Arizona 2003," ONR, \$20,000, 12/1/2002-9/30/2003.
9. Y.-C. Lai, "Research on nonlinear dynamics with defense applications," AFOSR, \$400,397, 5/1/2003-10/31/2005.
10. N. Ye (PI), Y.-C. Lai (Co-PI), and P. Dasgupta (Co-PI), "A complex adaptive system approach to QoS assurance and stateful resource management for dependable information infrastructure," AFOSR (DoD Critical Information Protection Program), \$2,133,095, 5/1/2001-4/30/2006.
11. Y.-C. Lai, "Information flow and security in complex networks," NSF (ITR Program), \$300,001, 9/15/2003-8/31/2006.
12. Y.-C. Lai, "Time-frequency filtering and carrier-phase ambiguity resolution for GPS-based TSPI systems in jamming environment," AFOSR, \$276,297, 2/15/2004-2/14/2007.
13. Y.-C. Lai, "Research on nonlinear and stochastic dynamics with defense applications," AFOSR, \$461,209, 1/1/2006-12/31/2008.
14. Y.-C. Lai, "Security of complex networks," AFOSR, \$408,701, 12/1/2006-11/30/2009.
15. Y.-C. Lai and R. A. Gatenby, "A network-science approach to normal-tissue organization and carcinogenesis," ASU-UA Collaborative on Biomedical Research (Competitiveness: 6/68), \$322,030, 3/1/2007 - 2/28/2009.
16. Y.-C. Lai, "Understanding and controlling blind spots in sensor networks," ONR (subcontract through West Virginia High Technology Consortium Foundation), \$300,000, 10/1/2007-12/31/2009.
17. Y.-C. Lai, "High-performance computing and electronic instrumentation for AFOSR-sponsored research on nonlinear dynamics and signal processing," AFOSR, \$170,867, 6/1/2007-5/31/2008.
18. Y.-C. Lai, "Exploiting nonlinear dynamics for sensor applications," ONR, \$240,000, 3/1/2008-2/28/2010.
19. Y.-C. Lai, "Nonlinear dynamics and quantum transport in small systems," AFOSR, \$588,152, 3/1/2009-11/30/2011.
20. Y.-C. Lai (PI) [Participants: F. I. Moxley (US Military Academy), M. North (U. Chicago and Argonne National Laboratory), and J. M. Ocampo (Trajectory Asset Management LLC)], "Financial liquidity and network theory," National Academies Keck Futures Initiative Award, \$50,000 (YCL's share: \$50,000), 9/1/2009-12/31/2012.
21. Y.-C. Lai, "Predicting and controlling complex networks," AFOSR, \$863,502, 4/1/2010-3/31/2015.
22. Y.-C. Lai, "Relativistic quantum chaotic scattering in open graphene systems" - Renewal of "Exploiting nonlinear dynamics for sensor applications," ONR, \$260,000, 3/1/2010-9/30/2012.
23. Y.-C. Lai (PI) and Dieter Armbruster (Co-PI), "Control, Design and Optimization of Complex Networked Systems," NSF BECS (Building Engineered Complex Systems) Program, \$310,000, 9/15/2010-9/14/2012.
24. Y.-C. Lai (PI) and Jieping Ye (Co-PI), "Data based prediction of complex networks with applications to systems biology," NSF CDI (Cyber-Enabled Discovery and Innovation) Program, \$540,000, 9/15/2010-9/30/2013.
25. Y.-C. Lai (PI) and Junseok Chae (Co-PI), "Anti-shock scheme based on dual-membrane structure in capacitive MEMS sensors and actuators," NSF EPDT (Electronics, Photonics, and Device Technologies) Program, \$368,000, 9/1/2011-8/31/2014.

26. Y.-C. Lai, "Relativistic quantum transport in graphene systems," AFOSR, \$625, 375, 4/16/2012-4/15/2015.
27. Y.-C. Lai, "STIR: Multistability and chaos in a driven nanowire system," ARO, \$50, 000, 8/1/2012 - 5/31/2013.
28. Y.-C. Lai, "Relativistic quantum chaos," - Renewal of "Exploiting nonlinear dynamics for sensor applications," ONR, \$200, 000, 10/1/2012-9/30/2014.
29. Y.-C. Lai, "Compressive sensing for nonlinear and complex systems identification, prediction, and control," ARO, \$360, 000, 8/1/2014-7/31/2017.
30. T. Seager (PI), M. Chester (Co-PI), Y.-C. Lai (Co-PI), N. Johnson (Co-PI), and C. Miller (Co-PI), "Collaborative Research:RIPS Type 2: Resilience Simulation for Water, Power & Road Networks," NSF, \$1, 949, 788.00, 9/15/2014-8/31/2017.
31. Y.-C. Lai, "Superpersistent currents in Dirac fermion systems," AFOSR, \$619, 512, 6/1/2015 - 11/30/2017.
32. Y.-C. Lai, "Many-body relativistic quantum chaos," ONR, \$200, 000, 6/1/2015 - 5/31/2017.
33. Y.-C. Lai, "Relativistic quantum nonlinear dynamics and chaos," DoD Vannevar Bush Fellowship (formerly NSSEFF), \$3, 000, 000, 6/16/2016 - 6/15/2021.

VI. List of Publications

A. Book

- Y.-C. Lai and T. Tél, *Transient Chaos* (500 pages, Springer, 2011).

B. Journal Papers

- *Total citations received (as of August 31, 2017):* over **17, 500**; Google-Scholar based H-index: **65**; i-10 index: **290**.

1. Y.-C. Lai, "The study of spatial coherence of optical fibers," *Optical Instruments* **7**, 61-69 (1985). (*in Chinese*)
2. Y.-C. Lai and C. Grebogi, "Chaotic scattering in time-dependent Hamiltonian systems," *International Journal of Bifurcation and Chaos* **1**, 667-679 (1991).
3. Y.-C. Lai, C. Grebogi, R. Blümel and M. Ding, "Algebraic decay and phase-space metamorphoses in microwave ionization of hydrogen Rydberg atoms," *Physical Review A* **45**, 8284-8287 (1992).
4. Y.-C. Lai, R. Blümel, E. Ott and C. Grebogi, "Quantum manifestations of chaotic scattering," *Physical Review Letters* **68**, 3491-3494 (1992).
5. Y.-C. Lai, M. Ding, C. Grebogi and R. Blümel, "Algebraic decay and fluctuations of decay exponents in Hamiltonian systems," *Physical Review A* **46**, 4661-4669 (1992).
6. B. S. Park, C. Grebogi and Y.-C. Lai, "Abrupt dimension changes at basin boundary metamorphoses," *International Journal of Bifurcation and Chaos* **2**, 533-541 (1992).
7. Y.-C. Lai, M. Ding and C. Grebogi, "Controlling Hamiltonian chaos," *Physical Review E* **47**, 86-92 (1993).
8. Y.-C. Lai, E. Ott and C. Grebogi, "Temporal crossover from classical to quantum behavior: A Markov-chain approach," *Physics Letters A* **173**, 148-152 (1993).
9. Y.-C. Lai and C. Grebogi, "Synchronization of chaotic trajectories using control," *Physical Review E* **47**, 2357-2360 (1993).
10. Y.-C. Lai, C. Grebogi, J. A. Yorke and I. Kan, "How often are chaotic saddles nonhyperbolic?," *Nonlinearity* **6**, 779-797 (1993).
11. Y.-C. Lai, T. Tél and C. Grebogi, "Stabilizing chaotic scattering trajectories using control," *Physical Review E* **48**, 709-717 (1993).

12. Y.-C. Lai, C. Grebogi, R. Blümel and I. Kan, "Crisis in chaotic scattering," *Physical Review Letters* **71**, 2212-2215 (1993).
13. D. Cai, Y.-C. Lai and R. L. Winslow, "Complex dynamics in coupled cardiac pacemaker cells," *Physical Review Letters* **71**, 2501-2504 (1993).
14. Y.-C. Lai and C. Grebogi, "Converting transient chaos into sustained chaos by feedback control," *Physical Review E* **49**, 1094-1098 (1994).
15. Y.-C. Lai and R. L. Winslow, "Riddled parameter space in spatiotemporal chaotic dynamical systems," *Physical Review Letters* **72**, 1640-1643 (1994).
16. Y.-C. Lai, "Controlling chaos," *Computers in Physics* **8**, 62-67 (1994).
17. Y.-C. Lai and C. Grebogi, "Crisis and enhancement of chaotic scattering," *Physical Review E* **49**, 3761-3770 (1994).
18. Y.-C. Lai and R. L. Winslow, "Extreme sensitive dependence on parameters and initial conditions in spatiotemporal chaotic dynamical systems," *Physica D* **74**, 353-371 (1994).
19. Y.-C. Lai, R. L. Winslow and M. B. Sachs, "A model of selective processing of auditory-nerve inputs by stellate cells of the antero-ventral cochlear nucleus," *Journal of Computational Neuroscience* **1**(3), 167-194 (1994).
20. Y.-C. Lai, R. L. Winslow and M. B. Sachs, "The functional role of excitatory and inhibitory interactions in chopper cells of the antero-ventral cochlear nucleus," *Neural Computation* **6**, 1127-1140 (1994).
21. Y.-C. Lai and C. Grebogi, "Synchronization of spatiotemporal chaotic systems by feedback control," *Physical Review E* **50**, 1894-1899 (1994).
22. Y.-C. Lai and R. L. Winslow, "Fractal basin boundaries in coupled map lattices," *Physical Review E* **50**, 3470-3473 (1994).
23. Y.-C. Lai, C. Grebogi and E. J. Kostelich, "Extreme final state sensitivity in asymmetric spatiotemporal chaotic systems," *Physics Letters A* **196**, 206-212 (1994).
24. R. L. Winslow, D. Cai, A. Varghese and Y.-C. Lai, "Generation and propagation of normal and abnormal pacemaker activity in network models of cardiac sinus node and atrium," *Chaos, Solitons, and Fractals* **5** (3-4), 491-512 (1995).
25. Y.-C. Lai, "Unpredictability of asymptotic attractors of phase-coupled oscillators," *Physical Review E* **51**, 2902-2908 (1995).
26. Y.-C. Lai, "Persistence of supertransients of spatiotemporal chaotic dynamical systems in noisy environment," *Physics Letters A* **200**, 418-422 (1995).
27. Y. Nagai and Y.-C. Lai, "Selection of desirable chaotic phase using small feedback control," *Physical Review E* **51**, 3842-3848 (1995).
28. Y.-C. Lai and R. L. Winslow, "Geometric properties of the chaotic saddle responsible for supertransients in spatiotemporal chaotic systems," *Physical Review Letters* **74**, 5208-5211 (1995).
29. T. Yalcinkaya and Y.-C. Lai, "Chaotic scattering," *Computers in Physics* **9**, 511-518 (1995).
30. Y.-C. Lai and C. Grebogi, "Intermingled basins and two-state on-off intermittency," *Physical Review E (Rapid Communications)* **52**, R3313-R3316 (1995).
31. Y.-C. Lai, "Transition from strange nonchaotic to strange chaotic attractors," *Physical Review E* **53**, 57-65 (1996).
32. Y.-C. Lai and C. Grebogi, "Characterizing riddled fractal sets," *Physical Review E* **53**, 1371-1374 (1996).
33. Y.-C. Lai, "Symmetry-breaking bifurcation with on-off intermittency in chaotic dynamical systems," *Physical Review E (Rapid Communications)* **53**, R4267-R4270 (1996).

34. Y.-C. Lai, "Distinct small-distance scaling behaviors of on-off intermittency in chaotic dynamical systems," *Physical Review E* **54**, 321-327 (1996).
35. Y.-C. Lai, D. Lerner and R. Hayden, "An upper bound for the proper delay time in chaotic time series analysis," *Physics Letters A* **218**, 30-34 (1996).
36. Y.-C. Lai, C. Grebogi, J. A. Yorke, and S. C. Venkataramani, "Riddling bifurcation in chaotic dynamical systems," *Physical Review Letters* **77**, 55-58 (1996).
37. Y. Nagai, X. D. Hua and Y.-C. Lai, "Controlling on-off intermittent dynamics," *Physical Review E* **54**, 1190-1199 (1996).
38. Y.-C. Lai, "Driving trajectories to a desirable attractor by using small control," *Physics Letters A* **221**, 375-383 (1996).
39. K. G. Szabó, Y.-C. Lai, T. Tél, and C. Grebogi, "Critical exponent for gap-filling at crisis," *Physical Review Letters* **77**, 3102-3105 (1996).
40. Y.-C. Lai and C. Grebogi, "Complexity in Hamiltonian-driven dissipative chaotic dynamical systems," *Physical Review E* **54**, 4667-4676 (1996).
41. Y.-C. Lai, U. Feudel, and C. Grebogi, "Scaling behaviors in the transition to chaos in quasiperiodically driven dynamical systems," *Physical Review E* **54**, 6070-6073 (1996).
42. T. Yalcinkaya and Y.-C. Lai, "Blowout bifurcation route to strange nonchaotic attractors," *Physical Review Letters* **77**, 5039-5042 (1996).
43. Y.-C. Lai and C. Grebogi, "Noise-induced riddling in chaotic dynamical systems," *Physical Review Letters* **77**, 5047-5050 (1996).
44. Y. Nagai and Y.-C. Lai, "Characterization of blowout bifurcation by unstable periodic orbits," *Physical Review E (Rapid Communications)* **55**, R1251-R1254 (1997).
45. Y.-C. Lai, "Synchronism in symmetric hyperchaotic systems," *Physical Review E (Rapid Communications)* **55**, R4861-4864 (1997).
46. Y.-C. Lai, "Scaling laws for symmetry breaking by blowout bifurcation in chaotic systems," *Physical Review E* **56**, 1407-1413 (1997).
47. Y.-C. Lai, Y. Nagai, and C. Grebogi, "Characterization of the natural measure by unstable periodic orbits in chaotic attractors," *Physical Review Letters* **79**, 649-652 (1997).
48. T. Yalcinkaya and Y.-C. Lai, "Bifurcation to strange nonchaotic attractors," *Physical Review E* **56**, 1623-1632 (1997).
49. C. Grebogi, Y.-C. Lai, and S. Hayes "Control and applications of chaos," *International Journal of Bifurcation and Chaos* **7**, 2175-2198 (1997); also in *Journal of Franklin Institute* **334B**, 1115-1146 (1997).
50. C. Grebogi and Y.-C. Lai "Controlling chaotic dynamical systems," *Systems and Control Letters* **31**, 307-312 (1997).
51. Y.-C. Lai, "Scaling laws for noise-induced temporal riddling in chaotic systems," *Physical Review E* **56**, 3897-3908 (1997).
52. Y. Nagai and Y.-C. Lai, "Periodic-orbit theory of the blowout bifurcation," *Physical Review E* **56**, 4031-4041 (1997).
53. C. Grebogi and Y.-C. Lai, "Controlling chaos in high dimensions," *IEEE Transaction on Circuits and Systems* **44**, 971-975 (1997).
54. E. Bollt, Y.-C. Lai, and C. Grebogi, "Coding, channel capacity, and noise resistance in communicating with chaos," *Physical Review Letters* **79**, 3787-3790 (1997).
55. T. Yalcinkaya and Y.-C. Lai, "Phase characterization of chaos," *Physical Review Letters* **79**, 3885-3888 (1997).

56. Y.-C. Lai, "Characterization of the natural measure by unstable periodic orbits in nonhyperbolic chaotic systems," *Physical Review E* **56**, 6531-6539 (1997).
57. Y.-C. Lai and D. Lerner, "Effective scaling regime for computing the correlation dimension in chaotic time-series analysis," *Physica D* **115**, 1-18 (1998).
58. L.-Y. Cao and Y.-C. Lai, "Anti-phase synchronism in chaotic systems," *Physical Review E* **58**, 382-386 (1998).
59. E. Bollt and Y.-C. Lai, "Dynamics of coding in communicating with chaos," *Physical Review E* **58**, 1724-1736 (1998).
60. U. Feudel, A. Witt, Y.-C. Lai, and C. Grebogi, "Basin bifurcation in quasiperiodically forced systems," *Physical Review E* **58**, 3060-3066 (1998).
61. Y.-C. Lai, "Analytic signals and transition to chaos in deterministic flows," *Physical Review E (Rapid Communications)* **58**, R6911-R6914 (1998).
62. X. Pei, K. Dolan, F. Moss, and Y.-C. Lai, "Counting unstable periodic orbits in noisy chaotic systems: a scaling relation connecting experiment with theory," *Chaos* **8** (4), 853-860 (1998).
63. M. Dhamala and Y.-C. Lai, "Controlling transient chaos in deterministic flows with applications to electrical power systems and ecology," *Physical Review E* **59**, 1646-1655 (1999).
64. Y.-C. Lai, C. Grebogi, and J. Kurths, "Modeling of deterministic chaotic systems," *Physical Review E* **59**, 2907-2910 (1999).
65. M. A. F. Harrison and Y.-C. Lai, "A route to high-dimensional chaos," *Physical Review E (Rapid Communications)* **59**, R3799-R3802 (1999).
66. Y.-C. Lai, "Unstable dimension variability and complexity in chaotic systems," *Physical Review E (Rapid Communications)* **59**, R3807-R3810 (1999).
67. Y.-C. Lai, K. Zyczkowski, and C. Grebogi, "Universal behavior in the parameter evolution of chaotic saddles," *Physical Review E* **59**, 5261-5265 (1999).
68. Y.-C. Lai, E. Bollt, and C. Grebogi, "Communicating with chaos using two-dimensional symbolic dynamics," *Physics Letters A* **255**, 75-81 (1999).
69. Y.-C. Lai and C. Grebogi, "Modeling of coupled chaotic oscillators," *Physical Review Letters* **82**, 4803-4806 (1999).
70. S. Taherion and Y.-C. Lai, "Observability of lag synchronization in coupled chaotic oscillators," *Physical Review E (Rapid Communications)* **59**, R6247-R6250 (1999).
71. Y.-C. Lai, "Transient fractal behavior in snapshot attractors of driven chaotic systems," *Physical Review E* **60**, 1558-1562 (1999).
72. Y.-C. Lai and C. Grebogi, "Riddling of chaotic sets in periodic windows," *Physical Review Letters* **83**, 2926-2929 (1999).
Y.-C. Lai and C. Grebogi, "Reply to 'Comment on 'Riddling of chaotic sets in in periodic windows,' ' " *Physical Review Letters* **85**, 473 (2000).
73. T. Kapitaniak, Y.-C. Lai, and C. Grebogi, "Metamorphosis of chaotic saddles," *Physics Letters A* **259**, 445-450 (1999).
74. Y.-C. Lai, D. Lerner, K. Williams, and C. Grebogi, "Unstable dimension variability in coupled chaotic oscillators," *Physical Review E* **60**, 5445-5454 (1999).
75. R. L. Davidchack and Y.-C. Lai, "An efficient algorithm for detecting unstable periodic orbits in chaotic systems," *Physical Review E* **60**, 6172-6175 (1999).
76. M. Dhamala and Y.-C. Lai, "Unstable periodic orbits and the natural measure of nonhyperbolic chaotic saddles," *Physical Review E* **60**, 6176-6179 (1999).

77. L. Shulenburger, Y.-C. Lai, T. Yalcinkaya, and R. D. Holt, "Controlling transient chaos to prevent species extinction," *Physics Letters A* **260**, 156-161 (1999).
78. T. Kapitaniak, Y.-C. Lai, and C. Grebogi, "Blowout bifurcation of chaotic saddles," *Discrete Dynamics in Nature and Society* **3**, 9-13 (1999).
79. Y.-C. Lai, "Abrupt bifurcation to chaotic scattering with discontinuous change in fractal dimension," *Physical Review E (Rapid Communications)* **60**, R6283-R6286 (1999).
80. R. L. Davidchack, Y.-C. Lai, E. Bollt, and M. Dhamala, "Estimating the generating partition of chaotic systems by unstable periodic orbits," *Physical Review E* **61**, 1353-1356 (2000).
81. V. Andrade, R. L. Davidchack, and Y.-C. Lai, "Noise scaling in phase synchronization of chaos," *Physical Review E* **61**, 3230-3233 (2000).
82. S. Boccaletti, C. Grebogi, Y.-C. Lai, H. Mancini, and D. Maza, "The control of chaos: theory and applications," *Physics Reports* **329**, 103-197 (2000).
83. R. L. Davidchack, Y.-C. Lai, A. Gavrielides, and V. Kovanis, "Dynamical origin of low-frequency fluctuations in external cavity semiconductor lasers," *Physics Letters A* **267**, 350-356 (2000).
84. K. G. Szabó, Y.-C. Lai, T. Tél, and C. Grebogi, "Topological scaling and gap filling at crisis," *Physical Review E* **61**, 5019-5032 (2000).
85. Y.-C. Lai and C. Grebogi, "Obstruction to deterministic modeling of chaotic systems with invariant manifold," *International Journal of Bifurcation and Chaos* **10**, 683-693 (2000).
86. M. Dhamala, Y.-C. Lai, and E. J. Kostelich, "Detecting unstable periodic orbits from transient chaotic time series," *Physical Review E* **61**, 6485-6489 (2000).
87. K. Zyczkowski and Y.-C. Lai, "Devil-staircase behavior of dynamical invariants in chaotic scattering," *Physica D* **142**, 197-216 (2000).
88. Y.-C. Lai "Encoding digital information using transient chaos," *International Journal of Bifurcation and Chaos* **10**, 787-795 (2000).
89. R. L. Davidchack and Y.-C. Lai, "Characterization of transition to chaos with multiple positive Lyapunov exponents by unstable periodic orbits," *Physics Letters A* **270**, 308-313 (2000).
90. Y.-C. Lai, D. Armbruster, and E. J. Kostelich, "Intermittency in chaotic rotations," *Physical Review E (Rapid Communications)* **62**, R29-R32 (2000).
Y.-C. Lai, D. Armbruster, and E. J. Kostelich, "Reply to 'Comment on 'Intermittency in chaotic rotations,' '" *Physical Review E* **64**, 058204(1-3) (2001).
91. R. L. Davidchack, Y.-C. Lai, A. Gavrielides, and V. Kovanis, "Chaotic transitions and low-frequency fluctuations in semiconductor lasers with optical feedback," *Physica D* **145**, 130-143 (2000).
92. M. A. Harrison and Y.-C. Lai, "Bifurcation to high-dimensional chaos," *International Journal of Bifurcation and Chaos* **10**(6), 1471-1483 (2000).
93. Y.-C. Lai, "Catastrophe of riddling," *Physical Review E (Rapid Communications)* **62**, R4505-R4508 (2000).
94. M. S. Baptista, C. Grebogi, E. E. Macau, Y.-C. Lai, and E. Rosa, "Integrated chaotic communication scheme," *Physical Review E* **62**, 4835-4845 (2000).
95. E. Bollt, T. Stanford, Y.-C. Lai, and K. Zyczkowski, "Validity of threshold-crossing analysis of symbolic dynamics from chaotic time series," *Physical Review Letters* **85**, 3524-3527 (2000).
96. Y.-C. Lai, A. P. S. de Moura, and C. Grebogi, "Topology of high-dimensional chaotic scattering," *Physical Review E* **62**, 6421-6428 (2000).
97. S. Taherion and Y.-C. Lai, "Experimental observation of lag synchronization in coupled chaotic systems," *International Journal of Bifurcation and Chaos* **10**, 2587-2594 (2000).

98. R. Tonelli, Y.-C. Lai, and C. Grebogi, "Feedback synchronization using pole-placement control," *International Journal of Bifurcation and Chaos* **10**, 2611-2617 (2000).
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C. Preprints

1. Y.-Z. Chen and Y.-C. Lai, “Structural estimator and dynamics approximator for complex networks,” submitted to *Physical Review X*.
2. L. Ying and Y.-C. Lai, “Robustness of persistent currents in two-dimensional Dirac systems with disorders,” submitted to *Physical Review B*.
3. J.-J. Jiang, Z.-G. Huang, W. Lin, T. P. Seager, C. Grebogi, A. Hastings, and Y.-C. Lai, “Predicting tipping points in mutualistic networks through dimension reduction,” submitted to *PNAS*.
4. X.-Y. Yan, W.-X. Wang, Z.-Y. Gao, and Y.-C. Lai, “Universal model of individual and population mobility on diverse spatial scales,” submitted to *Nature Communications*.
5. G.-L. Wang, H.-Y. Xu, and Y.-C. Lai, “Disappearance of thermalization gap in disordered non-Hermitian photonic systems,” submitted to *Physical Review A*.
6. B.-S. Kim, Y.-H. Do, S. Altmeyer, B.-S. Jang, and Y.-C. Lai, “Universal mobility scaling of extreme events in spatiotemporal dynamical systems,” submitted to *Chaos*.
7. Z.-L. Hu, Z.-S. Shen, B. Podobnik, W.-X. Wang, and Y.-C. Lai, “Locating multiple diffusion sources in time varying networks from sparse observations,” submitted to *Scientific Reports*.
8. X. Li, R.-C. Zhang, Z.-G. Huang, J.-X. Li, T. P. Seager, and Y.-C. Lai, “Instantaneous success and influence promotion in cyberspace - how do they occur?” submitted to *EPJ Data Science*.
9. Z.-S. Shen, W.-X. Wang, H.-J. Zhou, Z.-Y. Gao, A. Mochizuki, and Y.-C. Lai, “Control paradigm for nonlinear dynamical networks,” submitted to *Science Advances*.
10. C.-Z. Wang, H.-Y. Xu, L. Huang, and Y.-C. Lai, “Enhanced nonequilibrium transport of pseudospin-1 Dirac-Weyl particles,” submitted to *Physical Review B*.
11. Y.-Z. Sun, S.-Y. Leng, Y.-C. Lai, C. Grebogi, and W. Lin, “Closed-loop control of complex networks: A trade-off between time and energy,” submitted to *Physical Review Letters*.
12. D.-M. Song, Y.-F. Wang, X. Gao, S.-X. Qu, Y.-C. Lai, and X.-G. Wang, “Effect of network structural perturbations on pattern formation and transition,” submitted to *Chaos*.
13. H. Yang, G.-P. Jiang, W. K. S. Tang, G.-R. Chen, and Y.-C. Lai, “Multi-carrier differential chaos shift keying system with subcarrier allocation for noise reduction,” submitted to *IEEE Transactions on Circuits and Systems II: Express Briefs*.
14. Z.-D. Zhao, J.-J. Jiang, S.-X. Qu, X.-G. Wang, W. Lin, and Y.-C. Lai, “Ascertaining causation from rare and noisy time series,” submitted to *Physical Review Letters*.

15. G.-L. Wang, H.-Y. Xu, and Y.-C. Lai, "Emergence, evolution, and control of multistability in a hybrid topological quantum/classical system," Submitted to *Chaos*.
16. H.-W. Fan, Y.-C. Lai, S.-X. Qu, and X.-G. Wang, "Phase control of complex nonlinear dynamical networks," to be submitted to *Physical Review Letters*.
17. R.-R. Liu, D. Eisenberg, T. P. Seager, and Y.-C. Lai, "Mixed percolation transitions in interdependent networked systems," to be submitted to *New Journal of Physics*.
18. Y.-C. Lai, H.-Y. Xu, L. Huang, and C. Grebogi, "Colloquium: Relativistic quantum chaos: an emergent interdisciplinary field," submitted to *Review of Modern Physics*.
19. C. Ma, H.-S. Chen, Y.-C. Lai, and H.-F. Zhang, "A statistical inference approach to structural reconstruction of complex networks from binary time series," submitted to *Physical Review E*.
20. Q.-H. Liu, W. Wang, S.-M. Cai, M. Tang, and Y.-C. Lai, "Synergistic interactions promote spreading and alter phase transition in multiplex networks," to be submitted to *Physical Review E*.

D. Book Chapters and Conference Proceeding Papers

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4. Y.-C. Lai and C. Grebogi, "Synchronization of a chaotic optical system using control," pp. 91-102 in *Chaos in Communications, San Diego '93*, SPIE Proceedings, Vol. 2038, 1993.
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28. Y.-C. Lai, X.-G. Wang, and C. H. Lai, "Physics of network security," pp. 3-10 in *Proceedings of the International Symposium on Topological Aspects of Critical Systems and Networks*, Sapporo, Japan (World Scientific Publishing Co., 2007).
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31. Y.-C. Lai, "Superpersistent chaotic transients," pp. 131-152 in *Nonlinear Dynamics and Chaos: Advances and Perspectives*, eds. M. Thiel, A. P. S. de Moura, and C. Grebogi, Springer-Verlag, Berlin, 2010.
32. D. K. Ferry, L. Huang, R. Yang, Y.-C. Lai, and R. Akis, "Open quantum dots in graphene: scaling relativistic pointer states," *Progress in Nonequilibrium Green's Functions IV - Journal of Physics: Conference Series* **220**, 012015, 1-14 (2010).
33. Y.-C. Lai, "Applications of Nonlinear Dynamics and Chaos in Micro- and Nano-Scale Systems," *International Conference on Applications in Nonlinear Dynamics*, AIP Conference Proceedings **1339**, 88-95 (2011).
34. S. Yang, L. Yuan, Y.-C. Lai, X.-T. Shen, P. Wonka, and J.-P. Ye, "Feature grouping and selection over an undirected graph," pp. 922-930 in *Proceedings of the 18th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (ACM - Association for Computing Machinery, 2012)*.
35. Y.-C. Lai, "Exploiting chaos for quantum control," pp. 3-10 in *International Conference on Theory and Application in Nonlinear Dynamics (ICAND 2012): Understanding Complex Systems*, eds. V. In, P. Longhini, and A. Palacios (Springer International Publishing, Switzerland, 2014).
36. Y.-C. Lai, "Reverse engineering of complex dynamical systems based on compressive sensing," pp. 203-214 in *Chaotic Signal Processing*, edited by H. Leung (Higher Education Press, Beijing, 2014).
37. C. Grebogi, Y.-C. Lai, and W.-X. Wang, "Microscopic approach to species coexistence based on evolutionary game dynamics," Chapter 18 in *Chaos, Information Processing and Paradoxical Games - The Legacy of John S Nicolis*, eds. G. Nicolis and V. Basios (World Scientific, Singapore, 2015).
38. Y.-C. Lai, "Multistability in Nanosystems," pp. 53-64 in *Proceedings of the 4th International Conference on Application in Nonlinear Dynamics (ICAND 2016)*, eds. V. In, P. Longhini, and A. Palacios (Springer, 2017).

VII. Invited Talks in the Past Five Years

(Talks are one-hour long unless otherwise specified)

• 2012

1. "Transient Chaos," Plenary talk, International Workshop on Anomalous Statistics, Generalized Entropies, and Information Geometry, Nara Women's University, Nara, Japan; March 7, 2012.
2. "Complete solution of the Dirac equation in confined geometry," Invited talk, AFOSR Workshop on Effect of High-Power Microwave on Circuits and Wave Chaos, AFRL, Albuquerque, NM, with synchronous satellite meeting via video at Wright Patterson AFB, Dayton, OH; March 28, 2012.
3. "Uncovering complex-network topologies and dynamical systems based on compressive sensing," Plenary lecture, International Symposium on Compressed Sensing: Theory and Applications, Tianjin University, Tianjin, China; June 9, 2012.
4. "Transient Chaos," Colloquium, School of Electrical Engineering and Automation, Tianjin University, Tianjin, China; June 10, 2012.
5. "Controlling complex networks," Plenary talk, 5th Shanghai International Symposium on Nonlinear Science and Applications, Fudan University, Shanghai, China; June 28, 2012.
6. "Complex networks: controllability and control of collective dynamics," Graduate Colloquium, School of Physics, Lanzhou University, Lanzhou, China; July 4, 2012.
7. "Chaos-based quantum control," Undergraduate colloquium, Lanzhou University, Lanzhou, China; July 5, 2012.
8. "Complex networks: controllability and control of collective dynamics," Colloquium, School of Electrical Engineering and Automation, Xi'an University of Technology, Xi'an, China; July 9, 2012.

9. "Transient chaos," Plenary talk, Dynamics Days Asia Pacific 7 - The 7th International Conference on Non-linear Science & the 11th Taiwan International Symposium on Statistical Physics, Academia Sinica, Taipei, Taiwan; August 6, 2012.
10. "Application of chaos in harnessing quantum systems: Modulating quantum transport by transient chaos," Plenary talk, International Conference on Theory and Applications in Nonlinear Dynamics; Seattle, WA; August 27, 2012.
11. "Research on nonlinear dynamics and complex systems for applied mathematics - a vision," Distinguished University Lecture (hosted by the President of the University), Kyungpook National University, Daegu, South Korea; September 11, 2012.
12. "Controlling complex networks," Invited talk, AFOSR PI meeting on Information Operations & Security, Arlington, VA; October 2, 2012.
13. "Predicting dynamical systems and complex networks via compressive sensing," Colloquium, Department of Applied Mathematics, Ulsan National Institute of Science and Technology, Ulsan, South Korea; November 14, 2012.
14. "Predicting complex dynamical systems via compressive sensing," Seminar, Department of Mathematics, Kyungpook National University, Daegu, South Korea; December 6, 2012.

- **2013**

1. "Reverse engineering of nonlinear dynamical systems and complex networks," Invited talk, NSF Workshop on Building Engineered Complex Systems, Arlington, VA; January 24, 2013.
2. "Recent advances in complex networks," Graduate Seminar Series (fifteen 90-minute seminars), on Sabbatical Leave at Kyungpook National University, South Korea; March 4 - June 10, 2013.
3. "Relativistic quantum chaos and fractal branched waves in optical media," Invited talk, AFOSR Workshop on Effect of High-Power Microwave on Circuits and Wave Chaos, AFRL, Albuquerque, NM, with synchronous satellite meeting via video at Wright Patterson AFB, Dayton, OH; April 9, 2013.
4. "Chaos-based quantum control," Invited talk, minisymposium on Quantum Chaos and Transport, SIAM Conference on Applied Dynamical Systems, Snowbird, UT; May 20, 2013.
5. "Relativistic quantum chaos in Dirac fermion and graphene systems," Colloquium, Department of Physics and Center for Graphene Research, National University of Singapore; June 26, 2013.
6. "Hidden nodes, extreme events, human-interest dynamics, and quantum entanglement," Invited talk, Invited-Only ARO Workshop on Information in Complex Dynamical Systems, Burlington, VM; July 18, 2013.
7. "Nonlinear dynamics and complex systems - a mathematical paradigm for cutting-edge, interdisciplinary research," Invited Keynote talk, IBS (Institute for Basic Sciences) International Symposium on "Towards a mathematical theory of nonlinear dynamical and complex systems," Seoul, South Korea; August 1, 2013.
8. "Controlling extreme events on complex networks," Invited talk, AFOSR PI meeting on Information Operations & Security, Arlington, VA; August 8, 2013.
9. "Relativistic quantum chaos in Dirac fermion and graphene systems," Colloquium, School of Natural and Computing Sciences, University of Aberdeen, Scotland, UK; October 16, 2013.

- **2014**

1. "Controlling nonlinear dynamics on complex networks," Invited talk, Satellite Symposium of NetSci 2014 (International School and Conference on Network Science), Berkeley, California; June 2, 2014.
2. "Graphene: the wonder material for research on relativistic quantum chaos," Invited talk, The 8th OCPA International Conference on Physics Education and Frontier Physics, Nanyang Technological University, Singapore; June 23, 2014.

3. “Controlling nonlinear dynamics on complex networks,” Plenary talk, The 6th Shanghai International Symposium on Nonlinear Sciences and Applications, Fudan University, Shanghai, China; June 29, 2014.
4. “Superpersistent currents in chaotic Dirac fermion systems,” Plenary talk, The 13th Experimental Chaos Conference, University of Aberdeen, Scotland, UK; August 27, 2014.
5. “Data based reconstruction of complex networks and energy optimization,” Keynote lecture, North America-East Asia Workshop on Big Data Analytics for Infrastructure and Building Sustainability and Resilience (IBSR) Research, Beijing, China; September 19, 2014.
6. “Transient dynamics in nonlinear and complex systems,” Invited talk, ARO Workshop on Cyber Security Dynamics, University of North Carolina, Chapel Hill; September 23, 2014.
7. “Superpersistent currents and whispering gallery modes in chaotic Dirac fermion systems,” Invited talk, AFOSR Program Review meeting on Nonlinear Optics, Arlington, VA; October 2, 2014.
8. “Data based reconstruction of complex dynamical systems,” Colloquium, University of Missouri, Columbia, MO; October 30, 2014.

• **2015**

1. “Nonlinear dynamics and complex systems - a paradigm for cutting-edge, interdisciplinary research,” Physics Colloquium, Shanxi Normal University, Xi’an, China; March 11, 2015.
2. “Big data: new age of complex systems science,” Mathematics Colloquium, Kyungpook National University, South Korea; May 26, 2015.
3. “Physical controllability of complex networks and control of nonlinear dynamical networks,” Plenary Lecture, The Protein Network Workshop, Institute for Mathematical Sciences, National University of Singapore, Singapore; June 10, 2015.
4. “Controlling nonlinear dynamics on complex networks,” Colloquium, Institute of Industrial Science, The University of Tokyo, Tokyo, Japan; June 18, 2015.
5. “Big data: new age of complex systems science,” Colloquium, School of Mathematics and Systems Science, Beihang University, Beijing, China; July 7, 2015.
6. “Controlling complex networks: energy and nonlinear dynamics,” Colloquium, School of Systems Science, Beijing Normal University, Beijing, China; July 9, 2015.
7. “Relativistic quantum chaos,” Opening plenary talk, Third National Statistical Physics and Complex Systems Conference, Lanzhou, China; July 22, 2015.
8. “Big data analysis: new age of complex systems science,” Invited lecture, Summer School of Computational Systems Biology, Fudan University, Shanghai, China; August 17, 2015.
9. “Controlling complex networks,” Seminar, Institute for Systems Biology, Chinese Academy of Sciences, Shanghai, China; August 18, 2015.
10. “Exploiting nonlinear dynamics for applications in spintronics,” Invited talk, AFOSR Program Review meeting on Nonlinear Optics, Arlington, VA; October 8, 2015.

• **2016**

1. “Nonlinear dynamics and chaos in micro/nano-scale systems and applications,” Invited talk, Session of Engineered Micro Systems/Devices, IMAPS 12th International Conference and Exhibition on Device Packaging, Fountain Hills, Arizona; March 16, 2016.
2. “Controlling complex networks,” Colloquium, College of Computer Science and Engineering, University of Electronic Science and Technology of China, Chengdu, China; May 23, 2016.
3. “Data based identification and prediction of complex dynamical systems,” Seminar, Center for Big Data Research, University of Electronic Science and Technology of China, Chengdu, China; May 24, 2016.

4. “Tipping point in networked dynamical systems: early warning, control and recovery,” Plenary talk, 6th Shanghai International Symposium on Nonlinear Science and Applications, Zhangjiajie, China; July 18, 2016.
5. “Relativistic Quantum Chaos,” Plenary talk, International Conference on Perspective in Nonlinear Dynamics 2016, Humboldt Universitaet zu Berlin, Berlin, Germany; July 25, 2016.
6. “Nonlinear dynamics induced anomalous Hall effect in topological insulators,” Invited talk, 4th International Conference on Application of Nonlinear Dynamics, Denver, Colorado; August 29, 2016.
7. “Controlling complex networks,” Invited talk, Theoretical Biology Workshop on Controlling Complex Network Systems in Biology,” RIKEN Wako, Tokyo, Japan; September 5, 2016.
8. “Tipping point in networked dynamical systems: control and recovery,” Invited minisymposium talk, Annual Meeting of Japanese Society of Mathematical Biology,” Fukuoka, Japan; September 7, 2016.
9. “Revival resonant scattering, perfect caustics and isotropic transport of pseudospin-1 particles,” Invited talk, AFOSR Program Review Meeting on Nonlinear Optics, Arlington, VA; September 27, 2016.
10. “Multistability in nanosystems,” Invited talk, International Seminar and Workshop on Multistability and Tipping: from Mathematics and Physics to Climate and Brain, Max-Planck Institute for Physics of Complex Systems, Dresden, Germany; October 7, 2016.
11. “Relativistic quantum chaos,” Plenary talk, 9th Dynamics Days Asia Pacific (DDAP9) - International Conference on Dynamical Systems, Hong Kong Baptist University, Hong Kong; December 14, 2016.

● **2017**

1. “Controlling complex networks,” Colloquium, School of Science, Northwestern Polytechnical University, Xi’an, China; January 5, 2017.
2. “Tipping point in complex dynamical systems: prediction and control,” Colloquium, School of Science, Northwestern Polytechnical University, Xi’an, China; January 6, 2017.
3. “Relativistic quantum chaos,” Invited talk, Pentagon Basic Research Office Weekly Forum, Arlington, VA; January 19, 2017.
4. “Super persistent chaotic transients,” Invited talk, NSF Working Group on Long Transients in Ecology, University of Tennessee, Knoxville, TN; March 1, 2017.
5. “Superscattering in a pseudospin-1 photonic lattice,” Invited talk, 2017 Annual Review of Theoretical Nonlinear Optics Contractors, Arlington, VA; March 8, 2017.
6. “Relativistic quantum chaos,” DoD 2017 Vannevar Bush Faculty Fellowship Spring Meeting, Dayton, OH; April 25, 2017.
7. “Quasiperiodicity and multistability in nonlinear dynamical systems,” Plenary lecture, International Symposium on Recent Advances in Nonlinear Dynamics and Complex Structures,” University of Oldenburg, Oldenburg, Germany; June 2, 2017.
8. “Relativistic quantum chaos,” Plenary lecture, The 25th Nonlinear Dynamics of Electronic Systems Conference (NDES 2017), Zerne, Switzerland; June 6, 2017.
9. “Data analysis - a paradigm of complex systems science,” Colloquium, School of Physics and Information Sciences, Shaanxi Normal University, Xi’an, China; June 28, 2017.
10. “Data analysis - a paradigm of complex systems science,” seminar, School of Automation and Information Engineering, Xi’an University of Technology, Xi’an, China; June 30, 2017.
11. “Introduction to nonlinear dynamics, complex systems, and quantum chaos,” Opening talk, The 6th Annual Meeting of the Aberdeen-Lanzhou-Tempe Joint Research Center for Computation and Complexity and Workshop on Chaos and Complexity, Lanzhou University, Lanzhou, China; July 3, 2017.
12. “Controlling complex nonlinear dynamical networks,” Plenary talk, Fourth National Statistical Physics and Complex Systems Conference, Xi’an, China; July 19, 2017.

13. “Data based identification and prediction of complex dynamical systems,” Invited lecture, Summer School on the Frontiers of Statistical Physics and Complex Systems (organized by the Chinese Physical Society), Shaanxi Normal University, Xi’an, China; July 25, 2017.
14. “Relativistic quantum chaos,” Invited lecture, Summer School on the Frontiers of Statistical Physics and Complex Systems (organized by the Chinese Physical Society), Shaanxi Normal University, Xi’an, China; July 26, 2017.

VIII. Teaching

1. **MATH 321** *Differential Equations - Honors* (Undergraduate Mathematics), University of Kansas, two times.
2. **MATH 320** *Elementary Differential Equations* (Undergraduate Mathematics), University of Kansas, one time.
3. **PHSX 212** *General Physics II* (Undergraduate Physics), University of Kansas, three times.
4. **PHSX 721** *Chaotic Dynamics* (Graduate Physics, Mathematics, and Engineering), University of Kansas, three times.
5. **MATH 796** *Advanced Chaotic Dynamics* (Graduate Mathematics, Physics, and Engineering), University of Kansas, one time.
6. **PHSX 798** *Mathematical Physics* (Graduate Physics and Electrical Engineering), University of Kansas, one time.
7. **PHSX 671** *Statistical and Thermal Physics* (Advanced Undergraduate and Beginning Graduate Physics), University of Kansas, one time.
8. **MAT 342** *Linear Algebra* (Undergraduate Mathematics), ASU, one time.
9. **EEE 350** *Random Signal Processing* (Undergraduate Electrical Engineering), ASU, one time.
10. **MAT 271** *Calculus II* (Undergraduate Mathematics), ASU, one time.
11. **EEE 303** *Signals and Systems* (Undergraduate Electrical Engineering), ASU, two times.
12. **EEE 340** *Electromagnetics I* (Undergraduate Electrical Engineering), ASU, one time.
13. **MAT 274** *Elementary Differential Equations* (Undergraduate Mathematics), ASU, one time.
14. **EEE 598/MAT 598** *Nonlinear Dynamics for Engineers* (Advanced Graduate Engineering and Mathematics), ASU, two times.
15. **EEE 554** *Random Signal Theory* (Graduate, Electrical Engineering), ASU, one time.
16. **EEE 302** *Electrical Circuits (II)* (Undergraduate, Electrical Engineering), ASU, one time.
17. **ECE 334** *Microelectronic Circuits* (Undergraduate, Electrical Engineering), ASU, one time.
18. **EEE 352** *Electronic Properties of Materials* (Junior and Undergraduate Electrical Engineering), ASU, one time.
19. **EEE 436/591** *Solid State Devices* (Senior Undergraduate and beginning graduate, Electrical Engineering), ASU, six times.
20. **EEE 535** *Quantum Transport in Nanostructures* (Graduate), ASU, three times.
21. **EEE 241** *Electromagnetics* (Undergraduate), ASU, one time.
22. **EEE 434/591** *Quantum Mechanics for Engineers* (Senior Undergraduate and beginning graduate, Electrical Engineering), ASU, Fall 2013.
23. **EEE 598** *Introduction to Complex Networks* (Graduate), ASU, Spring 2014.
24. **EEE/CSE 120** *Digital Design Fundamentals* (Undergraduate), ASU, Spring 2015.

25. **EEE 539**, *Solid State Electronics* (Graduate), ASU, Fall 2015.
26. **EEE 203**, *Signals and Systems* (Undergraduate Honors), ASU, Spring 2016.
27. **EEE 581**, *Filtering Stochastic Signals (Kalman Filtering)* (Graduate), ASU, Spring 2017.

IX. Ph.D. & Master Students, Post-Doctoral Fellows, and Visitors

A. Ph.D. Dissertations Supervised

1. Yoshihiko Nagai, Physics, University of Kansas, 1998. Dissertation: *Controlling chaos, blowout bifurcation, and periodic-orbit theory in chaotic dynamics*.
2. Tolga Yalcinkaya, Physics, University of Kansas, 1998. Dissertation: *Phase characterization and controlling chaos in deterministic flows*.
3. Saeed Taherion, Physics, University of Kansas, 1999. Dissertation: *Experimental and numerical studies of synchronization in nonlinear chaotic oscillators and effect of filtering on topological entropy*.
4. Mukeshwar Dhamala, Physics, University of Kansas, 2000. Dissertation: *Transient chaos*.
5. Lonnie Sauter, Mathematics, University of Kansas, 2001. Dissertation: *Generalized synchronism, low-dimensional chaos, and phase synchronization in coupled chaotic systems*.
6. Mary Ann Harrison, Physics, University of Kansas, 2001. Dissertation (with honor): *On-off intermittency and patterning in spatially extended dynamical systems*.
7. Victor Andrade, Physics, University of Kansas, 2002. Dissertation: *Superpersistent chaotic transient and bifurcation from riddled to fractal basins*.
8. Chita Evardone, Mathematics, MSU-Iligan Institute of Technology, Philippines, 2002. Dissertation: *Stability of statistical averages at blowout bifurcation* (Y.-C. Lai's role: suggested dissertation topic and acted as Foreign Advisor).
9. Younghae Do, Mathematics, ASU, May 2004. Dissertation: *Shadowing and noise-induced transient chaos*.
10. Liqiang Zhu, Electrical Engineering, ASU, August 2004. Dissertation: *Neural learning with applications to brain-machine interface*.
11. Antonio Rinaldi, Mechanical Engineering, ASU, December 2004. Dissertation: *Bridging the scales with statistical damage mechanics* (Joint supervision with Prof. Dusan Krajcinovic from ASU Department of Mechanical and Aerospace Engineering).
12. Ruth P. Serquina, Mathematics, MSU-Iligan Institute of Technology, Philippines, 2008. Dissertation: *The dynamics of the Ikeda-Hammel-Jones-Moloney (IHJM) map as a nonstationary chaotic system* (Y.-C. Lai's role: suggested dissertation topic and acted as Foreign Advisor).
13. Liang Huang, Electrical Engineering, ASU, December 2008. Dissertation: *Dynamics and security of complex clustered network systems*; **Recipient of 2008-2009 Palais Outstanding Doctoral Student Award, ASU ECEE**.
14. Qingfei Chen, Electrical Engineering, ASU, May 2010. Dissertation: *Dynamics, control and shock mitigation in nonlinear microelectromechanical and nanoelectromechanical resonant devices*; **Recipient of 2009-2010 Palais Outstanding Doctoral Student Award, ASU ECEE**.
15. Rui Yang, Electrical Engineering, ASU, May 2012. Dissertation: *System reconstruction via compressive sensing, complex-network dynamics, and electronic transport in graphene systems*.
16. Xuan Ni, Electrical Engineering, ASU, May 2013. Dissertation: *Effect of chaos on relativistic quantum tunneling*; **Recipient of 2012-2013 Palais Outstanding Doctoral Student Award, ASU ECEE**.
17. Riqi Su, Electrical Engineering, ASU, December 2015. Dissertation: *Reconstructing and controlling nonlinear complex systems*. (Joint supervision with Prof. Xiao Wang from ASU Bioengineering)

18. Yuzhong Chen, Electrical Engineering, ASU, May 2016. Dissertation: *Predicting and controlling complex networks*.
19. Lei Ying, Electrical Engineering, ASU, August 2016. Dissertation: *Quantum nonlinear dynamics in graphene, optomechanical, and semiconductor superlattice systems*.
20. Hong-Ya Xu, Electrical Engineering, ASU, May 2017. Dissertation: *Electrical, spin, and valley transport in two-dimensional Dirac systems*.
21. Guanglei Wang, Electrical Engineering, ASU, May 2017. Dissertation: *Quantum Nonlinear Dynamics and Chaos in Photonic and Nano Systems*.

B. Master's Theses Supervised (YCL's role: sole advisor unless otherwise noted)

1. Robert Hayden, Mathematics, University of Kansas, 1995. Thesis: *Can the correlation dimension distinguish between seizure and non-seizure activities?* (YCL's role: co-advisor - with Prof. D. Lerner from KU Mathematics).
2. Xuan-Dong Hua, Physics, University of Kansas, 1996. Thesis: *Controlling on-off intermittent dynamics*.
3. Tolga Yalcinkaya, Physics, University of Kansas, 1996. Thesis: *Chaotic scattering and the blowout bifurcation route to strange nonchaotic attractors*.
4. Kaj Williams, Mathematics, University of Kansas, 1998. Thesis: *Unstable dimension variability in coupled chaotic systems* (YCL's role: co-advisor - with Prof. D. Lerner from KU Mathematics).
5. Mukeshwar Dhamala, Physics, University of Kansas, 1999. Thesis: *Controlling transient chaos in deterministic flows with applications to electrical power systems and ecology*.
6. Mary Ann Harrison, Physics, University of Kansas, 1999. Thesis: *Transition to high-dimensional chaos*.
7. Arvind Raghu, Electrical Engineering, ASU, 2001. Thesis: *Double coherence resonance in chaotic systems and experimental observation*.
8. Bin Xu, Electrical Engineering, ASU, 2003. Thesis: *Shadowing of statistical averages in chaotic systems*.
9. Yirong Liu, Mathematics, ASU, May 2004. Thesis: *Noise promotes species diversity in nature*.
10. Mayur Shah, Electrical Engineering, ASU, August 2004. Thesis: *Integer ambiguity resolution with GPS signals in jamming environment*.
11. Anil K. Kandangath, Electrical Engineering, ASU, December 2004. Thesis: *Inducing chaos in electronic circuits by resonant perturbations*.
12. Suprada Urval, Electrical Engineering, ASU, May 2005. Thesis: *Antijamming of GPS signals*.
13. Sabrabh Gupta, Electrical Engineering, ASU, July 2005. Thesis: *Synchronization in modular complex networks*.
14. Satish Krishamoorthy, Electrical Engineering, ASU, November 2005. Thesis: *Stochastic resonance and noise-induced synchronization in electronic circuits*.
15. Lakshmi Rajagopalan, Electrical Engineering, ASU, May 2006. Thesis: *Noise induced intermittent energy bursts in nonlinear waves*.
16. Vinayak Kamath, Electrical Engineering, ASU, December 2006. Thesis: *Signal-processing techniques for antijamming with GPS signals and noise reduction in chaotic dynamical systems*.
17. Anusha Rammohan, Electrical Engineering, ASU, May 2007. Thesis: *Integer-ambiguity resolution in global positioning systems using particle filters*.
18. Srinivasan Gopal, Electrical Engineering, ASU, May 2007. Thesis: *Experimental study of chaotic MOS oscillators*.
19. Aditya Rao, Electrical Engineering, ASU, October 2007. Thesis: *Inducing robust chaos in electronic circuits*.

20. Abhijeeth P. Aarey, Electrical Engineering, ASU, October 2008. Thesis: *Stabilization of high-dimensional chaotic oscillators using resonant negative feedback*.
21. Amogh S. Deshpande, Electrical Engineering, ASU, April 2010. Thesis: *Observability of robust chaos in piecewise linear maps and effect of noise on Lorenz-type of chaotic systems*.

C. Current and new Students

1. Lezhi Wang, Ph.D. student in Electrical Engineering, ASU, to graduate in 2017 (joint supervision with Prof. Xiao Wang from ASU Bioengineering).
2. John McCann, Ph.D. student in Electrical Engineering, ASU, ongoing (joint supervision with Prof. James Aberle from ASU Electrical Engineering).
3. Junjie Jiang, Ph.D. student in Electrical Engineering, ASU, ongoing.
4. Chengzhen Wang, Ph.D. student in Electrical Engineering, ASU, ongoing.
5. Zhidan Zhao, Ph.D. student in Electrical Engineering, ASU, ongoing.
6. Chendi Han, Ph.D. student in Electrical Engineering, ASU, new (Fall 2017).
7. Marko Milosavljevic, Ph.D. student in Physics, ASU, new (Fall 2017).
8. Ling-Wei Kong, Ph.D. student in Physics, ASU, new (Fall 2017).

D. Post-Doctoral Fellows and Research Assistant Professors Supported

1. Dr. Ruslan Davidchack [Ph.D. in Physics (1998), University of Kansas], 1/1/98 - 12/31/99.
2. Dr. Awadhesh Prasad [Ph.D. in Physics (1999), Jawaharlal Nehru University, India], 3/1/00 - 2/28/01.
3. Dr. Zonghua Liu [Ph.D. in Applied Physics (1998) from Institute of Applied Physics and Computational Mathematics, Chinese Academy of Science], 3/1/00 - 7/10/03.
4. Dr. Alessandro P. S. De Moura [Ph.D. in Physics (1999) from Universidade Estadual de Campinas, Brazil], 1/1/01 - 12/31/01.
5. Dr. Takashi Nishikawa [Ph.D. in Mathematics (2000) from University of Maryland, College Park], 2/1/01 - 8/15/03.
6. Dr. Adilson Motter [Ph.D. in Physics from Universidade Estadual de Campinas, Brazil], 3/1/02 - 6/30/03.
7. Dr. Liang Zhao [Ph.D. in Computer Science (1998) from Instituto Tecnológico de Aeronáutica, Brazil], 3/1/03 - 12/31/04.
8. Dr. Jong-Won Kim [Ph.D. in Physics (2002) from University of Maryland, College Park], 3/1/04 - 1/31/05.
9. Dr. Liqiang Zhu [Ph.D. in Electrical Engineering from ASU], 9/1/04 - 2/28/05.
10. Dr. Kwangho Park [Ph.D. in Physics (1997) from Konkuk University, Korea], 10/1/03 - 12/31/07.
11. Dr. Wen-Xu Wang [Ph.D. in Physics (2007) from University of Science and Technology of China], Post-Doctoral Fellow and then Research Assistant Professor in Electrical Engineering, 3/21/2008 - 12/31/2011.
12. Dr. Liang Huang [Ph.D. in Electrical Engineering (2008) from Arizona State University], Post-Doctoral Fellow and then Research Assistant Professor in Electrical Engineering, 11/1/2008 - 7/31/2011.
13. Dr. Zigang Huang [Ph.D. in Physics (2008) from Lanzhou University, China], Research Scientist in Electrical Engineering, 8/1/2013 - 12/31/2015.
14. Dr. Hongya Xu [Ph.D. in Electrical Engineering (2017) from ASU], Post-doctoral fellow, 5/1/2017 - present.

E. Visitors

1. Chita Evardone, Fulbright Fellow (from Philippines), 8/15/00 - 1/31/01.
2. Manuel Matias, Visiting Professor (from Spain), 1/1/01 - 6/15/01.
3. Adilson Motter, Visiting Ph.D. student (from Brazil), 3/1/01 - 11/30/01.

4. Takashi Nishikawa, Visiting Assistant Professor, 5/16/04-8/15/04.
5. Gang Hu, Visiting Professor (from Beijing, China), 5/6/05-5/20/05.
6. Tamás Tél, Visiting Professor (from Hungary), 8/26/04-9/10/04, 1/06/08-1/24/08.
7. Jesus Seoane, Visiting Ph.D. student (from Spain), 9/15/04-12/15/04, 6/01/06-8/31/06, 4/11/08-4/24/08.
8. Ruth Serquina, Fulbright Fellow (from Philippines), 8/15/06 - 4/30/07.
9. Lin Du, Visiting Ph.D. student (from Northwest Polytechnical University, China), 10/1/07 - 9/30/08.
10. Yan Wang, Visiting Ph.D. student (from Beijing Normal University, China), 9/1/07 - 8/31/09
11. Xiaojuan Ma, Visiting Ph.D. student (from Beijing Normal University, China), 9/1/07 - 8/31/09.
12. Yuzhu Xiao, Visiting Ph.D. student (from Northwest Polytechnical University, China), 9/1/08-8/31/09.
13. Hongjing Shi, Visiting Ph.D. student (from Peking University, China), 11/15/08 - 11/15/09.
14. Luoluo Jiang, Visiting Ph.D. student (from University of Science and Technology of China), 8/10/09 - 3/1/010.
15. Hongming Deng, Visiting Associate Professor (from Sichuan University, China), 9/1/09 - 9/1/010.
16. Zhongke Guo, Visiting Ph.D. student (from Tianjing University, China), 11/5/09 - 11/30/010.
17. Hanxin Yang, Visiting Ph.D. student (from University of Science and Technology of China), 9/2/010 - 3/1/011.
18. Renran Liu, Visiting Ph.D. student (from University of Science and Technology of China), 9/2/010 - 3/1/011.
19. Jie Ren, Visiting Ph.D. student (from National University of Singapore), 3/25/2011 - 5/25/2011.
20. Lianren Wu, Visiting Ph.D. student (from Beijing University of POsts and Telecommunications, China), 12/1/2011 - 11/30/2012.
21. Ying-Li Wu, Visiting Associate Professor (from Xidian University, China), 1/1/2012 - 12/31/2012.
22. Chao Liu, Visiting Associate Professor (from Shanghai University of Finance and Economics, China), 2/26/2012 - 8/26/2012.
23. Dongzhu Feng, Visiting Associate Professor (from Xidian University, China), 8/1/2012 - 7/31/2013.
24. Zhigang Huang, Visiting Associate Professor (from Lanzhou University, China), 8/1/2012 - 7/31/2013.
25. Li Zhao, Visiting Associate Professor (from Lanzhou University, China), 8/1/2012 - 7/31/2013.
26. Diyi Chen, Visiting Associate Professor (from North West A&F University, China), 8/1/2012 - 7/31/2013.
27. Nan Yao, Visiting Ph.D. Student (from Beijing Normal University, China), 9/1/2012 - 8/31/2014.
28. Hongyan Cheng, Visiting Associate Professor (from Beijing University of Posts and Telecommunications, China), 2/4/2013 - 2/4/2014.
29. Xiaoshan Zhao, Visiting Associate Professor (from Tianjin Technological University, China), 2/6/2013 - 8/5/2013.
30. Zhidan Zhao, Visiting Ph.D. student (from University of Electronic Science and Technology of China), 2/28/2013 - 2/28/2014.
31. Qinghua Chen, Visiting Associate Professor (from Beijing Normal University, China), 3/11/2013 - 3/11/2014.
32. Haifeng Zhang, Visiting Associate Professor (from Anhui University, China), 7/1/2013 - 6/30/2014.
33. Weigang Shen, Visiting Associate Professor (from Hangzhou Dianzi University, China), 8/1/2013 - 1/31/2014.
34. Fengquan Song, Visiting Undergraduate Student (from Lanzhou University, China), 9/1/2013 - 5/10/2014.
35. Junjie Jiang, Visiting Undergraduate Student (from Lanzhou University, China), 9/1/2013 - present.
36. Hongya Xu, Visiting Ph.D. student (from Lanzhou University, China), 9/1/2013 - 6/30/2014.
37. Long Ma, Visiting Undergraduate Student (From Tianjin University, China), 5/21/2014 - 6/30/2014.
38. Jun Zhang, Visiting Ph.D. student (from Dalian University of Technology, China), 9/1/2015 - 8/31/2016.
39. Filipe Verri, Visiting Ph.D. Student (from University of San Paulo, Brazil), 2/1/2016 - 2/1/2017.

40. Xifeng Li, Visiting Associate Professor (from University of Electronic Science and Technology of China), 3/1/2016-3/1/2017.
41. Ya Li, Visiting Associate Professor (from Southwestern University, China), 8/1/2016 - 7/31/2017.
42. Xingang Wang, Visiting Professor (from Shanxi Normal University, China), 9/1/2016 - 2/28/2017.
43. Cun-Fang Feng, Visiting Associate Professor (from Wuhan Textile University, China), 8/1/2016 - 7/31/2017.
44. Rongcan Yang, Visiting Associate Professor (from Fujian Normal University, China), 12/20/2016 - 12/19/2017.
45. Runran Liu, Visiting Associate Professor (from Hangzhou Normal University, China), 1/9/2017 - 1/8/2018.
46. Hua Yang, Visiting Associate Professor (from Nanjing University of Posts and Telecommunications, China), 1/28/2017-6/28/2017.

X. Services

A. For Profession

- June 2015 - present, member of Editorial Board of *Scientific Reports*.
- January 2012 - present, member of Editorial Board of *Physical Review E*.
- August 2011 - present, member of Editorial Board of *Philosophical Transactions A, Royal Society*.
- October 2014 - present, Associate Editor, *International Journal of Bifurcation and Chaos*.
- 2010 - 2014, Co-Editor, *Europhysics Letters*.
- December 2012, Co-organizer (with Younghae Do, Kyungpook National Univ., and Seung-Yeal Ha, Seoul National Univ.), International Conference for Nonlinear Dynamics and Complex Systems, NIMS (National Institute for Mathematical Sciences), South Korea.
- March 2001, February 2005, February 2008, March 2012, National Science Foundation Panelist.
- February 2012, Panel on Early-Career Award, DOE.
- January 2011, Study Section on Modeling and Analysis of Biological Systems, NIH.
- August 2005 - present, Editorial Board, *Frontiers of Physics in China* (Springer Physics Journal).
- August 2003 - present, Co-Editor, *Mathematical Biosciences and Engineering* (American Institute of Mathematics).
- January 2002 - December 2002, co-editor of CHAOS Focused Issue on control, synchronization, and communication in chaotic systems.
- January 2002 - May 2003, co-organizer (with Eric Kostelich), Dynamics Days Conference 2003.
- January 2002, co-organizer (with M. Anghel and S. Peacock from LANL, and P. Hagerty from U. of A), LANL/Arizona Nonlinear Science Workshop.
- June 17-22, 2001, Discussion Leader, First Gordon Conference on Nonlinear Science.
- March 2000 - March 2001, Program Chair, Section on Statistical and Nonlinear Physics, American Physical Society's March 2001 Meeting (responsible for organizing three Invited Sessions, four Focused Sessions, and seven Contributed Sessions).
- Co-organizer, two International Workshops on *Control and Synchronization of Chaos*, Max-Planck Institute for Physics of Complex Systems, Dresden, Germany, October and November, 2001.
- 1995 - present, organized various minisymposia for the SIAM Conferences (biannual) on Dynamical Systems.
- 1992 - present, reviewed 20+ papers per year for a dozen of research journals including *Physical Review Letters*, *Physical Review E*, *Physica D*, *Physics Letters A*, and *International Journal of Bifurcation and Chaos*.
- 1998 - present, served as external mail reviewer for the National Science Foundation.

B. For Arizona State University

- August 2007 - present, Dean's Personnel Advisory Committee, Fulton Schools of Engineering.
- May 2005 - May 2007, Graduate Committee, Electrical Engineering.
- August 2004 - May 2005, Undergraduate Committee, Electrical Engineering.
- 2004-2005, Faculty Mentor, CLAS.
- Spring 2004, Analysis Search Committee, Mathematics.
- 2003-2004, Research Awards Committee, CLAS.
- August 2000 - December 2004, Computing Committee, Mathematics.
- May 2000 - May 2001, Personnel and Budget Committee, Mathematics.
- August 2000 - May 2001, Visiting-Assistant-Professor Search Committee, Mathematics.
- August 1999 - May 2000, Colloquium Committee, Mathematics. (took charge in inviting the main speaker for the Mathematics Awareness Month).
- August 1999 - present, served in Ph.D. and Master's defense committees.

C. For University of Kansas

- 1994 - 1999, served in the following committees: Graduate Committee (Physics, 5 terms), Evaluation Committee (Physics, 1 term), Graduate Recruiting Committee (Physics, 1 term), Computer Committee (Mathematics, 1 term), Hiring Committee (Mathematics, 1 term).
- 1994 - 1999, served in more than a dozen of Ph.D. and Master's defense and comprehensive exam committees.