Krešimir Josić

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Education

PENNSYLVANIA STATE UNIVERSITY, Ph.D., Mathematics   August 1999
    Advisor: C.E. Wayne
UNIVERSITY OF TEXAS AT AUSTIN, B.Sc., Mathematics and B.Sc., Physics   May 1994
    (Summa cum laude and departmental honors)

Professional Experience

Professor of Mathematics, with   Fall 2013 – present
    joint appointment in Biology and Biochemstry
Associate Professor of Mathematics   Fall 2007 – 2013
Assistant Professor of Mathematics   Fall 2002 – Spring 2007
    University of Houston
Visiting Assistant Professor in Dynamical Systems   Fall 1999 – Summer 2002
    Department of Mathematics and Center for BioDynamics,
    Boston University
Graduate Assistant   Spring 1994 – Fall 1999
    Department of Mathematics, Pennsylvania State University

Adjunct Appointments

University of Texas at Houston, School of Public Health and   Fall 2007 – present
    Graduate School of Biological Sciences
Rice University   2015 – present
    BioSciences

Book

K. Josić, J. Rubin, M. Matías and R. Romo, eds. *Coherent Behavior in Neuronal Networks.* Springer Verlag (2009).

Publications Under Review

Equal contributions are marked with a *.

1. M. Bhardwaj, R. van den Berg, W. Ma*, K Josić*. "Do humans take stimulus correlations into account in visual search?" Submitted (2015).

2. A. Veliz-Cuba, A. J. Hirning, A. A. Atanas, F. Hussain, F. Vancia, K. Josić*, M. R. Bennett*. "Measuring intrinsic and extrinsic noise in a synthetic gene oscillator." Submitted (2015).

Refereed Publications

3. J.K. Kim, K. Josić*, M. R. Bennett*. "The relationship between stochastic and deterministic quasi-steady state approximations." To appear in *BMC Systems Biology* (2015).

4. A. Veliz-Cuba, Z. Kilpatrick*, and K. Josić*. "Stochastic Models of Evidence Accumulation in Changing Environments." To appear in *SIAM Review* (2015).

5. A. Veliz-Cuba, H. Shouval, K. Josić*, and Z. Kilpatrick*. "Networks that learn the precise timing of event sequences." To appear in the *Journal of Computational Neuroscience* (2015).

6. Y. Chen*, J. K. Kim*, A. J. Hirning, K. Josić, M. R. Bennett. "Emergent genetic oscillations in a synthetic microbial consortium." *Science* **349**(6251): 986 (2015).

7. T. D. Nguyen-Huu, C. Gupta, B. Ma, W. Ott, K. Josić, M. R. Bennett. "Timing and variability of galactose metabolic gene activation depend on the rate of environmental change." To appear in *PLoS Computational Biology* (2015).

8. M. Bhardwaj, S. Carroll, W. Ma, K. Josić. "Visual Decisions in the Presence of Measurement and Stimulus Correlations." To appear in *Neural Computation* (2015).

9. D. Yatsenko, K. Josić, A. Ecker, E. Froudarakis, R. J. Cotton, A. Tolias. "Improved Estimation and Interpretation of Correlations in Neural Circuits." *PLoS Computational Biology* 11:3, e1004083 (2015).

10. A. Veliz-Cuba, A. Kumar, and K. Josić. "Piecewise linear and Boolean models of chemical reaction networks." *Bulletin of Mathematical Biology* **76**:29452984 (2014).

11. J. Trousdale, S. Carroll, F. Gabbiani, and K. Josić. "Near optimal decoding from coupled neuronal sub-populations in the fly". *Journal of Neuroscience* **34**(36):12206 (2014).

12. J.K. Kim, K. Josić* , and M. Bennett*. "The validity of quasi steady-state approximations in discrete stochastic simulations." *Biophysical Journal* **107**:783 (2014).

13. C. Gupta, M. Lopez, R. Azencott, M. Bennett, K. Josić, and W. Ott. "Modeling delay in genetic networks: From delay birth-death processes to delay stochastic differential equations." *Journal of Chemical Physics,* **140**:204108 (2014).

14. J.K. Kim, Z. Kilpatrick, M. Bennett, and K. Josić. "Molecular mechanisms that regulate the coupled period of the mammalian circadian clock." *Biophysical Journal,* **106**: 9, p. 2071 (2014).

15. Y. Hu, J. Trousdale, K. Josić, and E. Shea-Brown. "Local paths to global coherence: Cutting networks down to size." *Physical Review E* **89**:032802 (2014).

16. F. Hussain, C. Gupta, A. J. Hirning, W. Ott, K. Matthews, K. Josić, and M. Bennet. "Engineered temperature compensation in a synthetic genetic clock." *Proceedings of the National Academy of Sciences* **111**(3): 972 (2014).

17. S. Carroll, K. Josić, and Z. Kilpatrick. "Encoding certainty in bump attractors." *Journal of Computational Neuroscience* **37**:29–48 (2014).

18. C. Gupta, M. Lopez, W. Ott, K. Josić*, and M. Bennett*. "Delay Stabilizes Bistable Systems." *Physical Review Letters* **111** 058104 (2013).

19. J. Trousdale. Y. Hu, E. Shea-Brown, and K. Josić. "A generative spike train model with time-structured higher order correlations." *Frontiers in Computational Neuroscience* **7**:84 (2013).

20. Y. Hu, J. Trousdale, K. Josić, and E. Shea-Brown. "Motif Statistics and Spike Correlations in Neuronal Networks." *Journal of Statistical Physics*, P03012 (2013).

21. E. A. Pnevmatikakis, K. Kelleher, R. Chen, P. Saggau, K. Josić, and L. Paninski. "Fast spatiotemporal smoothing of calcium measurements in dendritic trees." *PLoS Computational Biology* 8(6): e1002569 (2012).

22. A. Hazra, R. Rosenbaum, B. Bodmann, S. Kao, K. Josić, and J. Žiburkus. "β-Adrenergic modulation of spontaneous spatiotemporal activity patterns and synchrony in hyperexcitable hippocampal circuits ." *Journal of Neurophysiology* **108**:2, 658-671 (2012).

23. J. Trousdale, Y. Hu, E. Shea-Brown, and K. Josić. "Impact of network structure and cellular response on spike time correlations." *PLoS Computational Biology* **8**(3): e1002408. doi:10.1371/journal.pcbi.1002408 (2012).

24. R. van den Berg, M. Vogel, K. Josić, and W. Ma. "Optimal inference of sameness." *PNAS* , **109**:8, 3178-3183 (2012).

25. R. Rosenbaum and K. Josić. "Membrane potential and spike train statistics depend distinctly on input statistics." *Physical Review E* **84**:5, article 051902 (2011).

26. K. Josić, W. Ott, J. M. Lopez, L.-J. Shiau and M. Bennett. "Stochastic delay accelerates signaling in gene networks." *PLoS Computational Biology* **7**:11: e1002264. doi:10.1371/journal.pcbi.1002264 (2011).

27. Y. Wang, B. Iliescu, J. Ma, K. Josić and V. Dragoi. "Adaptive changes in neuronal synchronization in macaque V4." *Journal of Neuroscience* **31:**37, 13204-13213 (2011).

28. R. Rosenbaum, F. Marpeau, J. Ma, A. Barua and K. Josić. "Finite volume and asymptotic methods for stochastic neuron models with correlated inputs." *Journal of Mathematical Biology* **65:**1, 1-34 (2012).

29. R. Rosenbaum, J. Trousdale and K. Josić. "The effects of pooling on correlated neural variability." *Frontiers in Neuroscience* **5:**58. doi: 10.3389/fnins.2011.00058 (2011).

30. A. Kumar and K. Josić. "Reduced models of networks of coupled enzymatic reactions." *Journal of Theoretical Biology* **278:**1, 87-106 (2011).

31. R. Rosenbaum and K. Josić. "Mechanisms that modulate transfer of spiking correlations." *Neural Computation* **23**:5, 1261-1305 (2011).

32. E. Elhaik, D. Graur, K. Josić and G. Landan. "Identifying compositionally homogeneous and nonhomogeneous domains within the human genome using a novel segmentation algorithm." *Nucleic Acids Research* **38:**15, e158 (2010).

33. R. Rosenbaum, J. Trousdale and K. Josić. "Pooling and correlated neural activity." *Frontiers in Computational Neuroscience* **4**:9, doi:10.3389/fncom.2010.00009 (2010).

34. D. Gutnisky and K. Josić. "Generation of spatio-temporally correlated spike-trains and local-field potentials using a multivariate autoregressive process." *Journal of Neurophysiology* **103:**5, 2912-2030 (2010).

35. E. Elhaik, D. Graur and K. Josić. "'Genome order index' should not be used for defining compositional constraints in nucleotide sequences - a case study of the Z-curve." *Biology Direct* **5**:10 (online) (2010).

36. E. Elhaik, D. Graur and K. Josić. "Comparative testing of DNA segmentation algorithms using benchmark simulations." *Molecular Biology and Evolution* **27**:5, 1015-1024 (2010).

37. Y. Sun, B. Danila, K. Josić and K. E. Bassler. "Improved community structure detection using a modified fine tuning strategy." *Europhysics Letters* **86**, 28004 (2009).

38. K. Josić, E. Shea-Brown, B. Doiron, and J. de la Rocha. "Stimulus-dependent correlations and population codes." *Neural Computation* **21**:10, 2774–2804 (2009).

39. D. Nevozhay, R. Adams, K. Murphy, K. Josić and G. Balazsi,"Negative autoregulation linearizes the dose response and suppresses the heterogeneity of gene expression." *PNAS* **106**, 5123-5128 (2009).

40. D. Dingli, C. Offord, R. Myers, K–W. Peng, T. W. Carr, K. Josić, S. J. Russell and Ž Bajzer. "Dynamics of Multiple Myeloma Tumor Therapy with a Recombinant Measles Virus," *Cancer Gene Therapy* **16**, 873–882 (2009).

41. F. Marpeau, A. Barua and K. Josić. "A finite volume method for stochastic integrate–and–fire models." *Journal of Computational Neuroscience* **26** 445-57 (2009).

42. (*) K. Josić and R. Rosenbaum. "Instability in non-autonomous linear ODEs." *SIAM Review* **50** 570–584 (2008).

43. K. Kelleher, V. Hajdik, K. Josić and C. Colbert. "Learning by structural remodeling in a class of single cell models." *Journal of Computational Neuroscience* **25**:2, 282–295(2008).

44. Y. Timofeeva, S.J. Cox, S. Coombes and K. Josić. "Democratization in a passive dendritic tree: an analytical investigation." *Journal of Computational Neuroscience* **25**:2, 228–244 (2008).

45. E. Shea-Brown, K. Josić, B. Doiron, and J. de la Rocha. "Universal properties of correlation transfer in integrate-and-fire neurons." *Physical Review Letters* **100**, 108102 (2008).

46. (*) Ž. Bajzer, T. Carr, K. Josić, S.J. Russell, and D. Dingli. "Modeling of cancer virotherapy with recombinant measles viruses." *Journal of Theoretical Biology* **252**:1, 109–122 (2008).

47. (*) R.E.L. DeVille, A. Harkin, M. Holzer, K. Josić, and T. Kaper. "Analysis of a Renormalization Group Method for Solving Perturbed Ordinary Differential Equations." *Physica D* **237**: 8, 1029–1052 (2008).

48. E. Elhaik, D. Graur, and K. Josić. "'Genome order index' should not be used for defining compositional constraints in nucleotide sequences" *Computational Biology and Chemistry,* **32**, 147 (2008).

49. J. de la Rocha, B. Doiron, E. Shea-Brown, K. Josić, and A. Reyes. "Correlation between neural spike trains increases with firing rate," *Nature* **448**, 802–806 (2007).

50. (*) N. Barlas, K. Josić, S. Lapin and I. Timofeyev. "Non-uniform decay of predictability and return of skill in stochastic oscillatory models." *Physica D* **232**(2), 116–127(2007).

51. S. Coombes, Y. Timofeeva, C.-M. Svensson, G.J. Lord, K. Josić, S.J. Cox and C.M. Colbert. "Branching Dendrites with Resonant Membrane: A "sum-over-trips" approach." *Biological Cybernetics* **93**, 91–108 (2007).

52. J. Rubin and K. Josić. "Neuronal firing in the presence of stochastic trains of strong synaptic inputs," *Neural Computation* **19**, 1251–1294 (2007).

53. (*) S. Coombes, B. Doiron, K. Josić, and E. Shea-Brown. "Toward blueprints for network architecture, biophysical dynamics, and signal transduction," *Proceedings of the Royal Society A* **364**, 3301–3318 (2006).

54. K. Josić and A. Török. "Network structure and spatiotemporally symmetric dynamics," *Physica D* **224**(1–2), 52–68 (2006).

55. K. Parwani and K. Josić, "The effect of architecture on the structure of rotation sets in coupled circle maps," *Chaos*. **16**(1), 015115 (2006).

56. D. Dingli, M.D. Cascino, K. Josić, S.J. Russell, and Ž. Bajzer, "Mathematical modeling of cancer radiovirotherapy," *Mathematical Biosciences* **199**(1), 55–78 (2006). (Epublished Dec 22, 2005).

57. (*) M. Golubitsky, K. Josić, and E. Shea-Brown, "Rotation, oscillation and spike numbers in phase oscillator networks," *Journal of Nonlinear Science* **16**(4) 201-231 (2006).

58. K. Josić and J. Rubin. "Deriving information about architecture from activity patterns in coupled cell systems" *SIAM Journal on Applied Dynamical Systems* **4**(1), 53-77 (2005).

59. K. Josić and S. Peleš. "Synchronization in Networks of General, Weakly non-linear oscillators" *Journal of Physics A: Mathematical and General* **37**(49), 11801-11818 (2004).

60. M.S. Baptista, S. Boccaletti, K. Josić, and I. Leyva. "Irrational Phase Synchronization" *Physical Review E* **69**, 056228 (2004).

61. K. Josić and E. Sander "The Structure of Synchronization Sets for Noninvertible Systems" *Chaos* **14**(2), 249-262 (2004).

62. (*) R. L. Devaney, K. Josić, M. Moreno Rocha, P. Seal, Y. Shapiro, and A. T. Frumosu. " Playing catchup with iterated exponentials", *American Mathematical Monthly* **111**(8), 704-709 (2004).

63. (*) R.L. Devaney, K. Josić, and Y. Shapiro "Singular perturbations of quadratic maps", *International Journal of Bifurcations and Chaos* **14:1**, 161-171 (2004).

64. (*) E. Barreto, K. Josić, C. Morales, E. Sander, and P. So "The geometry of chaos synchronization", *Chaos,* **13**, 151–164 (2003).

65. K. Josić and M. Beck. "A geometric theory of chaotic phase synchronization", *Chaos* **13** 247–258 (2003).

66. P. So, E. Barreto, K. Josić, E. Sander, and S. J. Schiff "Limits on the experimental detection of nonlinear synchronization", *Physical Review E,* **65** 046225 (2002).

67. K. Josić and D.J. Mar, "Phase synchronization of chaotic systems with small phase diffusion", *Physical Review E*, **64**, 056234-1–056234-10, (2001).

68. (*) R. Bhattacharjee, R. L. Devaney, R. E. L. Deville, K. Josić, and M. Moreno-Rocha "Accessible Points in the Julia Set of Stable Exponentials", *Discrete and Continuous Dynamical Systems B*, **1**(3), 299–318 (2001).

69. K. Josić and R.W. Hall, "The Mathematics of Musical Instruments", *American Mathematical Monthly*, **108**(4), 347–357 (2001).

70. K. Josić "Synchronization of Chaotic Systems and Invariant Manifolds", *Nonlinearity*, **13**(4), 1321–1336 (2000).

71. K. Josić and C.E. Wayne, "Dynamics of a Ring of Diffusively Coupled Lorenz Oscillators," *Journal of Statistical Physics*, **98**(1), 1 – 30 (2000).

72. (*) K. Josić and R.W. Hall, "Planetary Motion and the Duality of Force Laws" *SIAM Review*, **42**(1), 114 – 125 (2000).

73. K. Josić "Invariant manifolds and synchronization of coupled dynamical systems". *Physical Review Letters*, **80**(14) 3053 – 3056 (1998).

74. K. Josić "Local Bifurcations in the Symmetric Model of Selection with Fertility Differences", *Journal of Theoretical Biology*, **189**, 291–295 (1997).

Book chapters and other publications

Publications in which authors appear in alphabetical order are marked with a *. Refereed entries are marked with a #.

75. (*) Ž. Bajzer, D. Dingli, K. Josić, and T. Carr. "Optimization of tumor virotherapy with recombinant measles viruses." In *Optimization in Medicine and Biology* (2007). Editors are Gino J. Lim and Eva K Lee

76. (#) K. Josić, E. Shea-Brown, and J. Moehlis. "Isochrons." In *Scholarpedia: The Free, Peer-Reviewed Encyclopedia* (2006).

77. (#) J. Moehlis, K. Josić, and E. Shea-Brown. "Periodic Orbits." In *Scholarpedia: The Free, Peer-Reviewed Encyclopedia* (2006).

78. (*) M. Golubitsky, K. Josić, and L.J. Shiau, "Bursting in Coupled Systems" in *Bursting: The Genesis of Rhythm in the Nervous System*, edited by S. Coombes and P. Bressloff (2005).

79. (*) Golubitsky, K. Josić, and T.J. Kaper, "An Unfolding Theory Approach to Bursting in Fast-Slow Systems," in *Global Analysis of Dynamical Systems,* dedicated to Floris Takens (2001).

Other peer reviewed papers to which I have contributed

80. M. Scott-Pandorf, D. P. O'Connor, C.S. Layne, K. Josić, and M. J. Kurz. "Walking in Simulated Martian Gravity: Influence of the Portable Life Support System's Design on Dynamic Stability," *Journal of Biomechanical Engineering*, **131**(9), 091005 (2009).

81. M. Scott-Pandorf, D. P. O'Connor, C.S. Layne, K. Josić, and M. J. Kurz. "Walking in Simulated Martian Gravity: Influence of Added Weight on Sagittal Dynamic Stability," *Acta Astronomica* **66**(9-10):1341-1352 (2009).

Book Reviews

- Review of *Normal Forms and Unfoldings for Local Dynamical Systems* by James Murdock. *SIAM Review* **46**(4) 751-752 (2004).

- with E. Shea-Brown: Featured review of *Mathematics for Neuroscientists* by F. Gabbiani and S. Cox and *Mathematical Foundations of Neuroscience* by G. B. Ermentrout and D. Terman. *SIAM Review* **53**(3), 577-583 (2011).

Honors and Awards

Simons Foundation fellowship	2015-16
Editorial board of *SIAM Review*	2014 – present
Editorial board of *Physica D*	2011 – present
University of Houston Excellence in Research and Scholarship Award at the level of Associate Professor	2012
Bellman Prize for best article in the journal *Mathematical Biosciences* between 2006 and 2008.	2009

Undergraduate Research Award for work with Y. Shapiro (Boston University)	Summer 2001
Pritchard Dissertation Fellowship (Pennsylvania State University)	1999
ZZRQ Award for Outstanding Achievement by a Doctoral Candidate (Pennsylvania State University)	1999
Curry Fellow at Pennsylvania State University	1994–1996

Grants Awarded

If applicable, the percentage of credit for the grant is given.

NSF: The Ever-Changing Network: How Changes in Architecture Shape Neural Computations (2015-18)	$329,445
Simons Foundation: Fellowship (2015-16) *Funding for sabbatical*	$79,840
NIH: Experimental and mathematical analysis of delay in transcriptional signaling (2012-17) *with PI: M. Bennett (Rice), and co-PI: Will Ott (UH)*	$ 1,150,000
Postdoc Supplement to above grant (2014-16) *Mentors: K. Josic and M. Bennett (Rice).*	$ 185,695
NSF: Relating architecture, dynamics and temporal correlations in networks of spiking neurons (2011-14), *with B. Doiron (Pitt) and E. Shea–Brown (U.W., Seattle)*	$134,000
John S. Dunn Foundation: Single cell dynamics of the white/opaque epigenetic switch in Candida albicans (2010–12), *with M Bennet and M Gustin*	$30,000
ARP/ATP: Coherent behavior and coding in neuronal networks (2010–12) *with V. Dragoi (UT, Houston)*	$88,600
NSF: Correlations in neural dynamics and coding (2008-11) *with B. Doiron (Pitt) and E. Shea–Brown (U.W., Seattle)*	$151,134
ARP/ATP: Dynamics and Function of Feed Forward Networks (2008-10) *PI: Josic (50%), Co-PI: M. Golubitsky (50%)*	$148,000
NSF: Applications of Coupled Cell Systems (2006-09) *PI: Golubitsky (50%), Co-PI: Josic (50%)*	$420,000
REU Supplement to above NSF grant (2008–09) *M. Golubitsky, K. Josic and M. Tomforde*	$44,000
ARP/ATP: Theory and Applications of Coupled Systems (2006-08) *PI: Golubitsky (50%), Co-PI: Josic (50%)*	$79,000
UK-Texas Biosciences Initiative (2005-06) *Award made to S. Coombes research group in England for visits to Houston.*	£9,000
NSF: CMG Collaborative Research: Predictability and Dynamics of Models of Quasigeostrophic Turbulence and Their Low-Dimensional Truncations (2004-07) *PI: Glowinski (34%), with Co-PIs: Josic (33%) and Timofeyev (33%).*	$422,964
NSF: REU Program in Mathematical Biology (2003-05) *PI: S. Canic.*	$100,000
NSF: Focused Research Group: Synchrony and Structure in Coupled Cell Systems (2003-06). *2005–2006 PI: Josic (25%), Co-PIs: Golubitsky (25%), Field (25%), and Torok (25%). 2003–2005 PI: Golubitsky (25%), Co-PIs: Field (25%), Josic (25%) and Torok (25%).*	$960,758

Internal grants and workshop support

UH GEAR Grant: How do living organisms see the future? (2013-14)	$29,500

UH Quality Enhancement Program: Mathematical Biology (2009) $19,954
NSF: International Workshop on Coherent behavior in neuronal networks (2007) $14,410
UH GEAR Grant: The Structure and Dynamics of Networks (2005-06) $20,562

Center grants
The following are larger grants awarded to the GCC for Theoretical and Computational Neuroscience during my tenure on the steering committee. I appear as co-PI or senior personnel, and am also part of the training personnel.

NIH–NIBIB: Training in Theoretical and Computational Neuroscience (2007-12) $727,000
NSF: REU Site for Theoretical and Computational Neuroscience (2008–11) $214,019

Invited Lectures and Presentations at Conferences (selected)

Mathematical Models in Medicine, Rijeka, Croatia	2015
SIAM Life Sciences, Charlotte, NC	2014
Conference in honor of Jack Cowan, Banff, CA	2014
MBI Workshop for Young Researchers in Math Bio, Columbus, OH	2013
Plenary Speaker	
MBI Workshop on Sensory Systems and Coding, Columbus, OH	2013
Computational and Theoretical Biology Symposium, Houston, TX	2013
Dynamical systems on random graphs, Castro Urdiales, Spain	2012
Plenary Speaker	
Mathematical Physics of Complex Networks, Max Planck Insitute, Dresden, Germany	2012
Meanfield methods in Theoretical Neuroscience, CIRM, Marseille	2011
2011 National IRACDA Conference, Houston, TX	2011
Keck Seminar, Houston, TX	2011
AMS Annual Meeting, New Orleans, LA	2011
SIAM Life Sciences, Pittsburgh, PA	2010
SIAM Annual Meeting, Denver, CO	2009
FACM – 2009, NJIT, Newark, NJ	2009
SIAM Dynamical Systems, Snowbird, CO	2009
SIAM Life Sciences, Montreal, Canada	2008
SIAM Annual Meeting, San Diego, CA	2008
AMS regional meeting, Baton Rouge, LA	2008
SIAM Dynamical Systems, Snowbird, CO	2007
Dynamics Days, Boston, MA	2007
Theoretical Neuroscience Network, Bristol, UK	2006
Neuromath, San Julia de Lorria, Andorra.	2006
SIAM Life Sciences, Raleigh, NC.	2006
International Workshop on the Dynamics on Complex Networks, Dresden, Germany	2006
Theory and Application of Coupled Cell Networks, Cambridge, UK	2005
SIAM Conference on Applications of Dynamical Systems, Snowbird, CO	2005

Workshop on Mathematical Neuroscience, Edinburgh, Scotland	2005
Houston Society for Engineering in Biology and Medicine Annual Meeting, Houston, TX	2005
Coupled 60 Workshop, Houston, TX	2005
5th International Conference on Dynamical Systems and Diff. Equations, Pomona, CA	2004
6th Joint Meeting of the AMS and SMM, Houston, TX	2004
2nd Texas Dynamical Systems Workshop, Houston, TX	2004
5th International Congress on Industrial and Applied Mathematics, Sydney, Australia	2003
SIAM Conference on Applications of Dynamical Systems, Snowbird, CO	2003
AMS Sectional Meeting 982, Orlando, FL	2002
SIAM Conference on Life Sciences (minisymposium organizer and speaker) Boston, MA.	2002
Dynamics Days 2002, Baltimore, MD (poster presentation)	2002
4th International Conference on Dynamical Systems and Diff. Equations, Willmington, NC	2002
Workshop on the Control and Synchronization of Dynamical Systems Max Planck Institute, Dresden, Germany.	2001
SIAM Conference on Applications of Dynamical Systems, Snowbird, CO	2001
Gordon Conference on Nonlinear Science (discussion leader) Mount Holyoke College, South Hadley, MA	2001
Semi-annual Workshop on Dynamical Systems and Related Topics University of Maryland, College Park, MD	2001
Pacific Rim Dynamical Systems Conference (minisymposium organizer and speaker) Maui, Hawaii	2000
Symposium on the Synchronization of Chaotic Systems, The Abdus Salam ICTP, Trieste, Italy	2000
Nonlinear Science 2000 $\rightarrow$, Courant Institute, New York, NY (poster presentation)	2000
Complex Synchrony in Neuroscience Krasnow Institute for Advanced Study, GMU, Fairfax, VA	2000
953rd AMS meeting, Session on Applications of Invariant manifolds University of Notre Dame, Notre Dame, IN	2000
SIAM Conference on Applications of Dynamical Systems, Snowbird, CO	1999
Midwest Dynamical Systems Conference Northwestern University, Evanston, IL	1998
Semi-annual Workshop on Dynamical Systems and Related Topics Pennsylvania State University, State College, PA	1997
Annual Meeting of the Society for Mathematical Biology University of North Carolina, Chapel Hill, NC	1997

Invited Lectures at Universities and Colleges (selected)

University of Texas at San Antonio, Neuroscience Seminar	2015
University of California, Santa Barabara, CCDC Seminar	2014
Georgia Sate University, Mathematics Colloquium	2014
IUPUI, Indianapolis, Colloquium	2013
University of Illinois, Urbana-Champaign, Applied Math Seminar	2013
Columbia University, Center for Theoretical Neuroscience	2013
Case Western Reserve, Mathematical Biology Seminar	2013
University of Arizona, Applied Mathematics Colloquium	2012
University of Pittsburgh, Mathematical Biology Seminar	2012

Rice University, CAAM Colloquium	2012
University of Texas Medical School at Houston	2010
University of Texas, Austin, Center for Perceptual Systems	2010
Columbia University, Center for Theoretical Neuroscience	2009
Trinity University, Majors' Seminar	2009
Brown University, Dynamical Systems Seminar	2009
University of Oklahoma, Colloquium and Undergraduate Seminar	2008
Baylor College of Medicine, Neuroscience Seminar	2006
University of Texas, School of Public Health, Biostats Colloquium	2005
Southern Methodist University, Department of Mathematics Colloquium	2005
Trinity University, Department of Mathematics Colloquium	2005
New York University, Computational Neuroscience Seminar	2004
University of Texas at Arlington, Applied Mathematics Seminar	2004
Georgia Institute of Technology, Center for Nonlinear Science Colloquium	2004
University of Texas at San Antonio, Mathematics Colloquium	2003
Rice University, Mathematics Colloquium	2003
College of the Holy Cross, Colloquium	2003
Worcester Polytechnic Institute, Colloquium	2003
Georgia Institute of Technology, Nonlinear Dynamics Seminar	2003
University of Texas at Austin, Dynamical Systems Seminar	2002
Boston University, Dynamical Systems Seminar	2002
Georgetown University, Department of Mathematics	2002
University of Houston, Department of Mathematics	2002
University of Texas at Austin, Mathematical Physics Seminar	2002
Tufts University, Department of Mathematics Colloquium	2001
Boston University Academy, Masterclass (talented high school students)	2001
Rensselaer Polytechnic Institute, Department of Mathematics Colloquium	2001
SUNY, Stony Brook, Dynamical Systems Seminar	2000
Universitat Autonoma de Barcelona, Department of Mathematics Colloquium	2000
University of Houston, Nonlinear Dynamics Seminar	2000
New Jersey Institute of Technology, Department of Applied Mathematics Colloquium	2000
Institute for Physical Sciences Seminar, University of Maryland	2000
George Mason University, Department of Physics Colloquium	2000
Dartmouth College, Department of Mathematics Colloquium	1999
Trinity College, Department of Mathematics Colloquium	1999
George Mason University, Department of Mathematics Colloquium	1999
Boston University, Center for BioDynamics Seminar	1998
Boston University, Dynamical Systems Seminar	1998, 2000
Pennsylvania State University, Dynamical Systems Seminar	1996

Postdocs Supervised

Sergey Lapin (currently associate professor at Washington State University)	2004–2006
Kamlesh Parwani (currently associate professor at Eastern Illinois University)	2005–2006
Jainfu Ma (Principal Engineer at Haliburton)	2009–2011
Fabien Marpeau (Seismic Imaging Project Leader at CGG)	2009–2011
Chinmaya Gupta	2012–present

Alan Veliz-Cuba   2013–present
Jae-Kyoung Kim   2013–present

Students Supervised

Simon Stolarzcyk, Ph.D. candidate   current
Adrian Radillo, Ph.D. candidate   current
Changan Liu, Ph.D. candidate   current
Manuel Lopez, Ph.D.   2014
    Impact of stochastic transcriptional delay on gene networks
Manisha Bhardwaj, Ph.D.   2013
    Visual decision making in the presence of stimulus and measurement correlations
James Trousdale, Ph.D.   2013
    The interplay of architecture and correlated variability in neuronal networks
Robert Rosenbaum, Ph.D.   2011
    The propagation and transfer of correlated neural activity
Ajit Kumar, Ph.D.   2011
    Reduced models of networks of coupled enzymatic reactions
Keith Kelleher, Ph.D. (Biology, with P. Saggau)   2010
    Spatio-temporal information processing in single neurons
Shuang Chen, M. Sc.   graduated summer 2009.
    Optimal discrimination in a same–different task
Aditya Barua, M.Sc.   graduated summer 2009.
    Simulating neuronal networks using the Fokker-Planck equation
Huy Loi, M.Sc.   graduated spring 2005.
    Stochastic processes in biology
Aerie Brown, M.Sc.   graduated spring 2005.
    Information theoretic methods in DNA sequence analysis.
Christy Jew, M.Sc.   graduated spring 2005.
    Plasticity in neuronal networks
Matthew Stone, M.Sc.   graduated spring 2004.
    Reliable response of a model subthalamopalidal neuron.
Melanie Palma, M.A.   Fall 2001
    Phase response curves for nonperiodic oscillators

Service on Thesis and Supervisory Committees (selected)

Wenfu Li (current, Biology, UH), Lin Chen (current, M.D. Anderson)
Bingjun Zhang (current, Biology, UH), Amy Nyberg (current, Physics, UH),
Rhys Adams (Ph.D. '12, M.D. Anderson), Vasudha Sehgal (Ph.D. '11,Math, UH),
Eran Elhaik (Ph.D. '10, Biology, UH), Melissa Scott-Pandorff (Ph.D. '08, Health and
Human Performance, UH)

Undergraduate Students Supervised

About 20. Among them Ed Phu (SURF Fellow), R. Rosenbaum, M. Lopez (current Ph.D. students),
    Paloma Valenzuela, Sarah Kazzazz (UH REU students), Ari Klages–Mundt,

Jim Wang, Brandon Weislak (Neuroscience REU students)

Outreach Activities

Contributor to "Engines of Our Ingenuity"   2009–
 http://www.uh.edu/engines/
Seminar leader, Houston Teachers Institute (HTI)   Spring 2008
 http://hti.math.uh.edu/

Course and program development

Lead the development of the program leading to a degree in Mathematical Biology offered jointly by the Departments of Mathematics and Biology and Biochemistry.

Participated in the development of three new undergraduate courses: Biostatistics, Mathematics of Evolution, and Mathematical Biology that are offered as part of the degree.

Developed graduate courses in Mathematical Neuroscience, Information Theory and Stochastic Processes.

Courses Taught

*Graduate courses are marked with a **

Calculus II (262 students)	Fall '13
Undergraduate Mathematical Biology (16 students)	Spring '12
Mathematics of Neuronal Networks (*) (10 students)	Fall '11
Calculus II (142 students)	Fall '11
Undergraduate Mathematical Biology (11 students)	Spring '11
Stochastic Processes in Biology (*) (12 students)	Fall 09 and '10
Mathematics of Evolutionary Theory (10 students)	Spring '09
Probability and Statistics (*) (26 students)	Fall '08 – Spring '09
Engineering Mathematics (online course)	Spring '08, Fall '10
Introduction to Information Theory (*) (8 students)	Fall 2007
Complex Analysis (12 students)	Fall 2007
Nonlinear Dynamics (18 students)	Spring 2007
Introduction to Mathematical Neuroscience (*) (8 students)	Spring 2007
Ordinary Differential Equations (58 students)	Fall 2006
Stochastic Processes (15 students)	Fall 2006
Dynamical Systems II (*) (7 students)	Spring 2006
Concepts in Algebra (82 students)	Fall 2006
Dynamical Systems I (*) (7 students)	Fall 2006
Stochastic Processes (14 students)	Spring 2005
Calculus III (115 students)	Fall 2004
Mathematical and Computational Neuroscience (*) (17/11 students)	Fall 2003/Spring 2004
a graduate, two semester course	
Nonlinear Dynamics 2 (4 students)	Spring 2003
Introduction to Statistics and Probability (80 students)	Fall 2002
Graduate Seminar on Invariant Manifolds (*) (8 students)	Spring 2002
Calculus for Life Sciences I (60 students)	Spring 2002
Differential Equations (*) (6 students)	Fall 2001
Methods of Applied Mathematics (undergraduate/graduate, 20 students)	Fall 2001
Differential Equations (126 students)	Spring 2001

Calculus II (60 students)	Spring 2001
Differential Equations (*) (3 students)	Fall 2000
Calculus for Life Sciences I (60 students)	Fall 2000
Calculus for Life Sciences II (40 students)	Spring 2000
Discrete Mathematics (14 students)	Spring 2000
Calculus for Life Sciences (190 students)	Fall 1999
Calculus I (42 students)	Spring 1998
Calculus III (39 students)	Fall 1997
Differential Equations and Boundary Value Problems (graduate, 8 students)	Summer 1997
Linear Algebra (60 students)	Spring 1997
Differential Equations (40 students)	Fall 1996
Calculus I (30 students)	Summer 1995

Reviewer for

Automatica, Chaos, Discrete and Continuous Dynamical Systems, IEEE Journals,
J. of Computational Neuroscience, J. of Neuroscience, J. of Physics A, NSF
Nonlinearity, Physica D, Physics Letters A, Physical Review E, Physical Review Letters
Proceedings of the Royal Society A, Journal of Mathematical Analysis and Applications
SIAM Journal on Dynamical Systems, SIAM Journal on Mathematical Analysis,
SIAM Journal on Control and Optimization, J. of Neurophysiology,
Frontiers in Computational Neuroscience

Related Experience and Service

SIAM Crawford Prize award committee	2014
Co-director of the Gulf Coast Consortium for Theoretical and Computational Neuroscience	2014–present
Co-organizer of workshop on "Network Dynamics and Coding"	October 2010
BIRS, Banff, Canada.	
NSF Panel	2008
Organizer of the UH Networks Seminar	Fall '07 – present
http://wwworm.bio.uh.edu/networks	
Organizer of conference "Coherent Behavior in Neuronal Networks."	October 2007
Organizer of minisymposia on synchrony in neuroscience	May 2003, 2005
SIAM Conference on Applications of Dynamical Systems, Snowbird, CO	
Local Organizer of the Coupled 60 Workshop	February 2005
Local Organizer of the Joint AMS/SMM Meeting	May 2004.
Houston Mathematics Department Colloquium Organizer	Fall 2003/Spring 2004
Organizer of the Nonlinear Dynamics / Neurodynamics Seminar	Fall 2002 - 2003
http://www.math.uh.edu/~josic/seminars/	
Organizer of the 1st Texas Dynamics Workshop, UT Austin	Spring 2003
http://www.ma.utexas.edu/~martense/dynamics/	
Organizer of symposium entitled "Invariant Manifolds and Applications" at	Spring 2002
the 4th International Conference on DE in Wilmington, NC.	
Organizer of Minisymposium on bursting at SIAM Life Sciences Conference	Spring 2002
Organizer of the Boston University Dynamical Systems Seminar	Fall 1999 – Spring 2002
http://math.bu.edu/dynamics/seminar.html	
Organizer of minisymposium on phase locking in chaotic systems	Summer 2000
SIAM Pacific Rim Conference, Hawaii	

Co-organizer of seminar on phase locking analysis and applications   Summer 2001 – Spring 2002
Organizer of seminar on noise in dynamical models of neurons   Spring 2001
Organizer of a seminar on invariant manifolds and applications   Spring 1999
Member of Center for BioDynamics   Spring 1998 – Spring 2002

Experience in Working with Undergraduates, and High School Students
Supervised research of I. Korotaeva 2012 - 2013, S. Carroll 2011 - 2013 , T. Huynh 2009 - 2010,
    P. Valenzuela 2009 - 2010, Manuel Lopez 2008 - 2010, Melody Lin, Sarah Kazzaz 2007 - 2008,
    N. Laurie and R. Rosenbaum, summer 2006
Supervising 2 REU students in MBI supported REU program   2012 and 2013
Supervised 3 REU student in GCC-TCN program   2008 - 2011
Co-supervised research of 5 undergraduates with C. Colbert (Biology)   2003 - 2005
Supervised research of two undergraduate students   Summer 2001 - Summer 2002
Guest lecturer in PROMYS program (talented high school students)   Summer 2000
Guest lecturer and co-organizer of BU Academy Seminars (high school)   Spring 2000, 2002
Putnam team trainer at Boston University   Fall 1999 - Spring 2001
Collaborator in the Honors Calculus Project   Fall 1996 – Fall 1997