

CURRICULUM VITAE: CIRIYAM JAYAPRAKASH

Education

Loyola College, Madras University 1968- 71 B.Sc.(Physics)
Indian Institute of Technology, Kanpur 1971-73 M.Sc.(Physics)
California Institute of Technology 1973-75 M.S.(Physics)
University of Illinois at Urbana-Champaign 1975-78 Ph.D.(Physics)

Professional Experience

Postdoctoral Associate, Cornell University, Ithaca - September 1978 - August 1980.
Visiting Scientist, I.B.M. T.J. Watson Research Center, Yorktown Heights, NY – 1980 - 1981.
Assistant Professor, Department of Physics, The Ohio State University, 1982 - 1985.
Associate Professor, Department of Physics, The Ohio State University, 1985 - 1989.
Professor, Department of Physics, The Ohio State University, 1989 - Present

Distinctions

University of Illinois Fellowship, 1976–78.
I.B.M. Postdoctoral Fellowship at Cornell University, 1979–80.
A.P. Sloan Foundation Fellowship, 1982 – 1986.
NSF Presidential Young Investigator Award, July 1985.
Fellow of the American Physical Society

Current Research Interests

Modeling of the viral antagonists and immune system response
Stochastic effects in subcellular processes
Application of nonlinear dynamics to ecological systems and urban economics
Fully-developed turbulence

Selected List of Publications

1. “Two-impurity Kondo problem,” (C.J., H.R. Krishna-murthy and J.W. Wilkins) Phys. Rev. Lett. **47**, 737 (1981) .
2. “Phase transitions in frustrated 2-d xy models” (S. Teitel and C. J.) Phys. Rev. B **27**, 598 (1983).
3. “Roughening and facet formation in crystals,” (C. J., W.F. Saam and S. Teitel) Phys. Rev. Lett. **50**, 2017 (1983).
4. “Josephson junction arrays in transverse magnetic fields,” (C.J. and S. Teitel) Phys. Rev. Lett. **51**, 1999 (1983).
5. “On the Statistical Mechanics of Probabilistic Cellular Automata,” (G. Grinstein, C. J. and Y. He) Phys. Rev. Lett. **55**, 2527 (1985).
6. “Coherence, Chaos, and Broken Symmetry in Classical Many-body dynamical systems,” (T. Bohr, G. Grinstein, Y. He, and C. J.) Phys. Rev. Lett. **58**, 2155 (1987).
7. “Mean-field theory for the $t - J$ Model,” (with H.R. Krishnamurthy and S. Sarker) Phys. Rev. B **40**, 2610 (1989) (*RC*)
8. “Stability of Temporally-Periodic States of Classical Many-Body Systems,” (with C.H. Bennett, G. Grinstein, Y. He and D. Mukamel) Phys. Rev. A **41**, 1932 (1990).

9. "Dynamic scaling and crossover analysis for the Kuramoto- Sivashinsky equation" (with K. Sneppen, J. Krug, M. H. Jensen, and T. Bohr) *Phys. Rev A*, **46**, R7351 (1992).
10. "Earthquake model of a seismic zone with a preexisting fault" (with R. Bhagavatula and K. Chen) *Geophysics Research Letters*, **22**, 1301 (1995).
11. "Synchrony and desynchrony in Integrate and Fire Oscillators" (with S. Campbell and D. Wang) *Neural Computation*, **11** 1595 (1999).
12. "Aspects of the stochastic Burgers equation and their connection with turbulence" (with F. Hayot) *Int. Jour. Mod. Phys. B* **14**, 1781 (2000).
13. "Fluctuations and slow variables in genetic networks" (with R. Bundschuh and F. Hayot) *Biophys. J.* **84**, 1606, (2003).
14. "Synchronization rates in classes of relaxation oscillators" (with S. Campbell and D. Wang) (accepted for publication in *IEEE Transactions on Neural Networks* **15**, 1027 (2004).
15. "A feedforward loop motif in transcriptional regulation: induction and repression" (with F. Hayot) *J. Theor. Biol.* **234** 133, (2005).
16. "NF-kappa B oscillations and cell-to-cell variability (with F. Hayot) *Journal of Theoretical Biology* **240** 583 (2006)
17. "Impact of noise on bistable ecological systems," (with V. Guttal) *Ecological Modelling*, **201**, 420 (2007).
18. "Self-organization and productivity in semi-arid ecosystem: Implications of seasonality in rainfall," (with V. Guttal) *Journal of Theoretical Biology*, **248** 490-500 (2007).
19. "Noisy induction of IFNB1 transcription in individual virus-infected human primary dendritic cells (with J. Hu *et al.*) *Nucleic Acids Research*, **35**, 5232-5241 (2007).
20. "Changing skewness: An early warning signal of regime shifts in ecosystems ", (with V. Guttal) *Ecology Letters* **11**, 450-460 (2008).
21. "Shared kinase fluctuations between two enzymatic reactions", (with G. Viswanathan, S. Sealfon, and F. Hayot) *Physical Biology* **5**, 046002 (2008).
22. "Space vs. Race: Two Roads to City-Suburb Segregation in an Agent-Based Model of Residential Location" (with K. Chen, E. Irwin and K. Warren) *Environment and Planning B* **36**, 989-1007 (2009).
23. "Stochasticity of gene products from transcriptional pulsing" (S. I. Biswas, F. Hayot, and C. Jayaprakash), *Phys. Rev. E* **79**, 031911 (2009).
24. "Spatial variance and spatial skewness: leading indicators of regime shifts in spatial ecological systems" (V. Guttal and C. Jayaprakash) *Theoretical Ecology*, **2**, 3-12 (2009)
25. "Towards a comprehensive framework for modeling urban spatial dynamics" (E. G. Irwin, C. Jayaprakash, and D. E. Munroe), *Source: Landscape Ecology* **24**, 1223-1236(2009)
26. "Power-Laws in Interferon- β mRNA distribution in virus-infected dendritic cells", (J. Hu, S.I. Biswas, S. Sealfon, J. Wetmur, C. Jayaprakash, and F. Hayot), *Biophysical Journal* **97**, 1984-1989 (2009)
27. "Dynamic Modeling of Environmental Amenity-Driven Migration with Ecological Feedbacks", (Y. Chen, E. Irwin, and C. Jayaprakash) *Ecological Economics* **68**, 2498-2510 (2009).

Recent Ph. D Students:

Dr. Vishwasha Guttal (2008, Postdoc at Princeton University)
 Dr. Srividya Iyer-Biswas (2009, Postdoc at Princeton University)