

- J. Zhang, A.V. Rangan, *A reduction for spiking integrate-and-fire network dynamics ranging from homogeneity to synchrony*. J. Comput. Neurosci. 38(2):355-404. doi: 10.1007/s10827-014-0543-3 (2015).
- J. Zhang, D. Zhou, D. Cai and A.V. Rangan, *A coarse-grained framework for spiking neuronal networks: between homogeneity and synchrony*. J. Comput. Neurosci. DOI 10.1007/s10827-013-0488-y (2013).
- A.V. Rangan, L.S. Young. *Emergent dynamics in a model of visual cortex.*, J. Comput. Neurosci. 35(2): 155-167 DOI: 10.1007/s10827-013-0445-9 (2013).
- D. Zhou, A.V. Rangan, D.W. McLaughlin and D. Cai, *Spatiotemporal dynamics of neuronal population response in the primary visual cortex*. Proc. Nat. Acad. Sci. (USA). 110(23): 9517-9522 (2013)
- J. Zhang, K.A. Newhall, D. Zhou and A.V. Rangan, *Distribution of correlated spiking events in a population-based approach for Integrate-and-Fire networks*. J. Comput. Neurosci. 10.1007/s10827-013-0472-6 (2013).
- A.V. Rangan, L.S. Young. *Dynamics of spiking neurons: between homogeneity and synchrony*. J. Comput. Neurosci. 34(3) 433-460 DOI: 10.1007/s10827-012-0429-1 (2013).
- M. Patel, A.V. Rangan, D. Cai. *Coding of odors by temporal binding within a model network of the locust antennal lobe*, Frontiers in Computational Neuroscience. 7(50) DOI: 10.3389/fncom.2013.00050. (2013).
- A.V. Rangan, *A simple filter for detecting low-rank submatrices*, J. Comput. Phys. 231(7): 2682-2690, (2012).
- A.V. Rangan, *Detecting low-rank clusters of vectors via random sampling*, J. Comput. Phys. 231(1): 215-222, (2012).
- D. Hu, D. Cai and A.V. Rangan, *Blood Vessel Adaptation with Fluctuations in Capillary Flow Distribution*. PLoS One. 7(9): e45444 (2012).
- A.V. Rangan, *Functional Roles for Synaptic-Depression within a Model of the Fly Antennal Lobe*, PLoS Comput. Bio. 8(8): e1002622. (2012).
- D. Cai, L. Tao, M.S. Shkarayev, A.V. Rangan, D.W. McLaughlin, G. Kovacic, *The role of fluctuations in coarse-grained descriptions of neuronal networks*. Comm. Math. Sci. 10(1): 307-354 (2012).
- Y. Sun, A.V. Rangan, D. Zhou and D. Cai, *Coarse-grained event tree analysis for quantifying Hodgkin-Huxley neuronal network dynamics*. J. Comput. Neurosci. 32(1): 55-72. (2012).
- A.V. Rangan, *Efficient methods for grouping vectors into low-rank clusters*, J. Comput. Phys. 230(14): 5684-5703, (2011).
- D. Zhou, Y. Sun, A.V. Rangan, D. Cai, *Spectrum of Lyapunov exponents of non-smooth dynamical systems of integrate-and-fire type.*, J. Comput. Neurosci. 28(2): 229-245, (2010).
- Y. Sun, D. Zhou, A.V. Rangan, and D. Cai, *Pseudo-Lyapunov exponents and predictability of Hodgkin-Huxley neuronal network dynamics*, J. Comput. Neurosci. 28(2): 2247-266, (2010).
- M.S. Shkarayev, G. Kovacic, A.V. Rangan, and D. Cai. *Architectural and functional connectivity in scale-free integrate-and-fire networks*, Europhys. Lett. 88, 50001, (2010).
- K.A. Newhall, G. Kovacic, P. Kramer, A.V. Rangan, and D. Cai, *Cascade-Induced Synchrony in Stochastically-Driven Neuronal Networks*, Phys. Rev. E., 82, 041903 (2010).
- K.A. Newhall, G. Kovacic, P.R. Kramer, D. Zhou, A.V. Rangan, and D. Cai, *Dynamics of current-based Poisson driven, integrate-and-fire neuronal networks*, Commun. Math. Sci. 8(2): 541-600, (2010).
- A.V. Rangan, *Diagrammatic expansion of pulse-coupled network dynamics in terms of subnetworks*, Phys. Rev. E. 80(3): 036101, (2009).
- A.V. Rangan, *Diagrammatic expansion of pulse-coupled network dynamics*, Phys. Rev. Lett. 102, 158101, (2009).
- G. Kovacic, A.V. Rangan, L. Tao, and D. Cai, *Fokker-Planck description of conductance-based integrate-and-fire neuronal networks*, Phys. Rev. E, 80:021904, (2009).

- M. Patel, A.V. Rangan, and D. Cai, *A Large-scale Model of Locust Antennal Lobe*, J. Comput. Neurosci. 27(3): 553-567, (2009).
- Y. Sun, D. Zhou, A.V. Rangan, and D. Cai, *Library-based Numerical Reduction of the Hodgkin-Huxley Neuron for Network Simulation*, J. Comput. Neurosci. DOI 10.1007/s10827-009-0151-9, (2009).
- A.V. Rangan, L. Tao, G. Kovacic, and D. Cai, *Large-Scale Computational Modeling of the Primary Visual Cortex*, In K. Josic, M.A. Matias, R. Romo, and J. Rubin, editors, *Coherent Behavior in Neuronal Networks*, volume 3 of *Springer Series in Computational Neuroscience*, Springer-Verlag, 263-296, (2009).
- A.V. Rangan, L. Tao, G. Kovacic, and D. Cai, *Multi-scale Modeling of the Primary Visual Cortex*, IEEE Engineering in Medicine and Biology Magazine, 28(3):19-24, (2009).
- D. Zhou, Y. Sun, A.V. Rangan, and D. Cai, *Network-induced Chaos in integrate-and-fire neuronal ensembles*, Phys. Rev. E. 80(3): 031918 (2008).
- A.V. Rangan, D. Cai and D. McLaughlin, *Quantifying neuronal network dynamics through coarse-grained event trees*, Proc. Nat. Acad. Sci. (USA), 105, 10990 (2008).
- A.V. Rangan, D. Cai and G. Kovacic, *Kinetic theory for neuronal networks with fast and slow excitatory conductances driven by the same spike train*, Phys. Rev. E **77** 041915 (2008)
- A.V. Rangan and D. Cai, *Fast numerical methods for simulating large-scale integrate-and-fire neuronal networks*, J. Comput. Neurosci. 22, 81-100 (2007).
- A.V. Rangan, *Automatic coordinate transformation for two-point boundary value problems*, Commun. Math Sci. 5 (2007).
- A.V. Rangan, D. Cai and L. Tao, *Numerical methods for solving moment equations in kinetic theory of neuronal network dynamics*, J. Comput. Phys. 221, 781-798 (2007).
- A.V. Rangan and D. Cai, *Maximum-entropy closures for kinetic theories of neuronal network dynamics*, Phys. Rev. Lett. 96, 178101 (2006).
- D. Cai, L. Tao, A.V. Rangan and D. McLaughlin, *Kinetic theory for neuronal network dynamics*, Comm. Math. Sci. 4, 97 (2006).
- A.V. Rangan, D. Cai and D. McLaughlin, *Modeling the spatiotemporal cortical activity associated with the line-motion illusion in primary visual cortex*, Proc. Natl. Acad. Sci. (USA), 102, 18793 (2005).
- D. Cai, A.V. Rangan and D. McLaughlin, *Architectural and synaptic mechanisms underlying coherent spontaneous activity in VI*, Proc. Natl. Acad. Sci. (USA), 102, 5868 (2005).
- A.V. Rangan, *Adaptive solvers for partial differential and differential-algebraic equations*, Ph.D. Thesis (2003).