Boris S Gutkin

List of Publications by Year
in descending order

132	4,473	136950	128289
papers	citations	32 h-index	60 g-index

149	149	149	4263
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Stock Price Formation: Precepts from a Multi-Agent Reinforcement Learning Model. Computational Economics, 2023, 61, 1523-1544.	2.6	1
2	Basal Ganglia: Dopaminergic Cell Models. , 2022, , 383-392.		0
3	Theta Neuron Model. , 2022, , 3412-3419.		1
4	Modelling Stock Markets by Multi-agent Reinforcement Learning. Computational Economics, 2021, 57, 113-147.	2.6	26
5	Cholinergic modulation of hierarchical inhibitory control over cortical resting state dynamics: Local circuit modeling of schizophrenia-related hypofrontality. Current Research in Neurobiology, 2021, 2, 100018.	2.3	1
6	Efficient and robust coding in heterogeneous recurrent networks. PLoS Computational Biology, 2021, 17, e1008673.	3.2	24
7	Activity Stabilization in a Population Model of Working Memory by Sinusoidal and Noisy Inputs. Frontiers in Neural Circuits, 2021, 15, 647944.	2.8	3
8	Phase response approaches to neural activity models with distributed delay. Biological Cybernetics, 2021, , 1.	1.3	2
9	Concomitance of inverse stochastic resonance and stochastic resonance in a minimal bistable spiking neural circuit. Communications in Nonlinear Science and Numerical Simulation, 2020, 82, 105024.	3.3	13
10	Modeling dopaminergic modulation of clustered gamma rhythms. Communications in Nonlinear Science and Numerical Simulation, 2020, 82, 105086.	3.3	4
11	Hippocampal Interneuronal Î±7 nAChRs Modulate Theta Oscillations in Freely Moving Mice. Cell Reports, 2020, 31, 107740.	6.4	23
12	Exact local correlations in kicked chains. Physical Review B, 2020, 102, .	3.2	17
13	Role of Pyramidal Cell M-current in Weak Pyramidal/Interneuronal Gamma Cluster Formation. , 2020, , .		0
14	Transition from quantum chaos to localization in spin chains. Physical Review E, 2020, 101, 052201.	2.1	23
15	Role of synaptic nonlinearity in persistent firing rate shifts caused by external periodic forcing. Physical Review E, 2020, 101, 052408.	2.1	2
16	Progressive alignment of inhibitory and excitatory delay may drive a rapid developmental switch in cortical network dynamics. Journal of Neurophysiology, 2020, 123, 1583-1599.	1.8	7
17	Basal Ganglia: Dopaminergic Cell Models. , 2020, , 1-10.		0
18	Distinct Temporal Structure of Nicotinic ACh Receptor Activation Determines Responses of VTA Neurons to Endogenous ACh and Nicotine. ENeuro, 2020, 7, ENEURO.0418-19.2020.	1.9	3

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19	GSE spectra in uni-directional quantum systems. Journal of Physics A: Mathematical and Theoretical, 2019, 52, 235201.	2.1	0
20	Neurocomputational theories of homeostatic control. Physics of Life Reviews, 2019, 31, 214-232.	2.8	14
21	Changes in neuronal oscillations account for working memory dynamics: EEG-tACS study. Brain Stimulation, 2019, 12, e168.	1.6	2
22	Action in auctions: neural and computational mechanisms of bidding behaviour. European Journal of Neuroscience, 2019, 50, 3327-3348.	2.6	4
23	Macroscopic phase resetting-curves determine oscillatory coherence and signal transfer in inter-coupled neural circuits. PLoS Computational Biology, 2019, 15, e1007019.	3.2	51
24	Dynamical ventral tegmental area circuit mechanisms of alcoholâ€dependent dopamine release. European Journal of Neuroscience, 2019, 50, 2282-2296.	2.6	15
25	Dopaminergic Neurons in the Ventral Tegmental Area and Their Dysregulation in Nicotine Addiction. , 2018, , 47-84.		2
26	Semiclassical prediction of large spectral fluctuations in interacting kicked spin chains. Annals of Physics, 2018, 389, 250-282.	2.8	7
27	Generalized Cross-Frequency Decomposition: A Method for the Extraction of Neuronal Components Coupled at Different Frequencies. Frontiers in Neuroinformatics, 2018, 12, 72.	2.5	8
28	Adaptation and Inhibition Control Pathological Synchronization in a Model of Focal Epileptic Seizure. ENeuro, 2018, 5, ENEURO.0019-18.2018.	1.9	8
29	Minimal Circuit Model of Reward Prediction Error Computations and Effects of Nicotinic Modulations. Frontiers in Neural Circuits, 2018, 12, 116.	2.8	2
30	ÐÐ¾Ð»ÑŒ Ð±ÐµÑ‚Ð°- Ð¸ Ð³Ð°Ð¼Ð¼Ð°-Ñ€Ð¸Ñ‚Ð¼Ð¾Ð² Ð² Ñ€ÐµÐ°Ð»Ð¸Ð·Ð°Ñ†Ð¸Ð¸ Ñ„ÑƒÐ½ÐºÑ†Ð¸Ð¹ Ñ€Ð°Ð±Ð¾Ñ‡ÐµÐ¹ Ð¿Ð°Ð		
31	Nicotine reverses hypofrontality in animal models of addiction and schizophrenia. Nature Medicine, 2017, 23, 347-354.	30.7	142
32	Temporal integration and 1/f power scaling in a circuit model of cerebellar interneurons. Journal of Neurophysiology, 2017, 118, 471-485.	1.8	5
33	Macroscopic phase-resetting curves for spiking neural networks. Physical Review E, 2017, 96, 042311.	2.1	31
34	Misdeed of the need: towards computational accounts of transition to addiction. Current Opinion in Neurobiology, 2017, 46, 142-153.	4.2	12
35	Semiclassical Identification of Periodic Orbits in a Quantum Many-Body System. Physical Review Letters, 2017, 118, 164101.	7.8	32
36	26th Annual Computational Neuroscience Meeting (CNS*2017): Part 1. BMC Neuroscience, 2017, 18, .	1.9	0

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37	Estimating the Information Extracted by a Single Spiking Neuron from a Continuous Input Time Series. Frontiers in Computational Neuroscience, 2017, 11, 49.	2.1	14
38	26th Annual Computational Neuroscience Meeting (CNS*2017): Part 2. BMC Neuroscience, 2017, 18, .	1.9	7
39	Cocaine addiction as a homeostatic reinforcement learning disorder.. Psychological Review, 2017, 124, 130-153.	3.8	36
40	Sensory noise predicts divisive reshaping of receptive fields. PLoS Computational Biology, 2017, 13, e1005582.	3.2	14
41	A Control Theory Model of Smoking. , 2017, 2017, .		7
42	Synergy of AMPA and NMDA Receptor Currents in Dopaminergic Neurons: A Modeling Study. Frontiers in Computational Neuroscience, 2016, 10, 48.	2.1	13
43	Inverse Stochastic Resonance in Cerebellar Purkinje Cells. PLoS Computational Biology, 2016, 12, e1005000.	3.2	49
44	Dopamine Neurons Change the Type of Excitability in Response to Stimuli. PLoS Computational Biology, 2016, 12, e1005233.	3.2	20
45	Implications of cellular models of dopamine neurons for disease. Journal of Neurophysiology, 2016, 116, 2815-2830.	1.8	14
46	Robustness of persistent spiking to partial synchronization in a minimal model of synaptically driven self-sustained activity. Physical Review E, 2016, 94, 052313.	2.1	4
47	Reduced Efficacy of the KCC2 Cotransporter Promotes Epileptic Oscillations in a Subiculum Network Model. Journal of Neuroscience, 2016, 36, 11619-11633.	3.6	53
48	Contribution of synchronized GABAergic neurons to dopaminergic neuron firing and bursting. Journal of Neurophysiology, 2016, 116, 1900-1923.	1.8	14
49	Spreading in integrable and non-integrable many-body systems. Physica A: Statistical Mechanics and Its Applications, 2016, 461, 683-693.	2.6	3
50	Classical foundations of many-particle quantum chaos. Nonlinearity, 2016, 29, 325-356.	1.4	16
51	Controlling Working Memory Operations by Selective Gating: The Roles of Oscillations and Synchrony. Advances in Cognitive Psychology, 2016, 12, 209-232.	0.5	20
52	Neural oscillations as a signature of efficient coding in the presence of synaptic delays. ELife, 2016, 5, .	6.0	40
53	A role of local VTA GABAergic neurons in mediating dopamine neuron response to nicotine. BMC Neuroscience, 2015, 16, .	1.9	0
54	Effects of a reduced efficacy of the KCC2 co-transporter in temporal lobe epilepsy: single neuron and network study. BMC Neuroscience, 2015, 16, .	1.9	1

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55	Spectral statistics of nearly unidirectional quantum graphs. Journal of Physics A: Mathematical and Theoretical, 2015, 48, 345101.	2.1	3
56	Contribution of sublinear and supralinear dendritic integration to neuronal computations. Frontiers in Cellular Neuroscience, 2015, 9, 67.	3.7	93
57	Mechanisms for multiple activity modes of VTA dopamine neurons. Frontiers in Computational Neuroscience, 2015, 9, 95.	2.1	27
58	Speech encoding by coupled cortical theta and gamma oscillations. ELife, 2015, 4, e06213.	6.0	140
59	A review of methods for identifying stochastic resonance in simulations of single neuron models. Network: Computation in Neural Systems, 2015, 26, 35-71.	3.6	18
60	Neural Cross-Frequency Coupling: Connecting Architectures, Mechanisms, and Functions. Trends in Neurosciences, 2015, 38, 725-740.	8.6	321
61	Homeostatic reinforcement learning for integrating reward collection and physiological stability. ELife, 2014, 3, .	6.0	119
62	Dendrites Enhance Both Single Neuron and Network Computation. Springer Series in Computational Neuroscience, 2014, , 365-380.	0.3	3
63	Understanding the Role Î±7 Nicotinic Receptors Play in Dopamine Efflux in Nucleus Accumbens. ACS Chemical Neuroscience, 2014, 5, 1032-1040.	3.5	15
64	Adaptation and shunting inhibition leads to pyramidal/interneuron gamma with sparse firing of pyramidal cells. Journal of Computational Neuroscience, 2014, 37, 357-376.	1.0	18
65	Theta-Neuron Model. , 2014, , 1-9.		2
66	A Trade-Off Between Dendritic Democracy and Independence in Neurons with Intrinsic Subthreshold Membrane Potential Oscillations. Springer Series in Computational Neuroscience, 2014, , 347-364.	0.3	2
67	Spike frequency adaptation. Scholarpedia Journal, 2014, 9, 30643.	0.3	21
68	Functional interpretation of biophysical properties of spiking neurons. BMC Neuroscience, 2013, 14, .	1.9	1
69	Modulation of dopamine release by Î±7-type nicotinic acetylcholine receptors. BMC Neuroscience, 2013, 14, .	1.9	0
70	Cortical control of VTA function and influence on nicotine reward. Biochemical Pharmacology, 2013, 86, 1173-1180.	4.4	33
71	Analytical Insights on Theta-Gamma Coupled Neural Oscillators. Journal of Mathematical Neuroscience, 2013, 3, 16.	2.4	11
72	Clustering of Periodic Orbits and Ensembles of Truncated Unitary Matrices. Journal of Statistical Physics, 2013, 153, 1049-1064.	1.2	4

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73	A difficult classification for neurons without dendrites. , 2013, , .		0
74	S.08.04 Mathematical models of nicotine-induced neuroadaptations. European Neuropsychopharmacology, 2013, 23, S124.	0.7	0
75	Co-activation of VTA DA and GABA neurons mediates nicotine reinforcement. Molecular Psychiatry, 2013, 18, 382-393.	7.9	129
76	Endogenous Cholinergic Inputs and Local Circuit Mechanisms Govern the Phasic Mesolimbic Dopamine Response to Nicotine. PLoS Computational Biology, 2013, 9, e1003183.	3.2	25
77	Passive Dendrites Enable Single Neurons to Compute Linearly Non-separable Functions. PLoS Computational Biology, 2013, 9, e1002867.	3.2	68
78	Clustering of periodic orbits in chaotic systems. Nonlinearity, 2013, 26, 177-200.	1.4	10
79	Flexible frequency control of cortical oscillations enables computations required for working memory. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 12828-12833.	7.1	75
80	Correlations in background activity control persistent state stability and allow execution of working memory tasks. Frontiers in Computational Neuroscience, 2013, 7, 139.	2.1	16
81	Imbalanced Decision Hierarchy in Addicts Emerging from Drug-Hijacked Dopamine Spiraling Circuit. PLoS ONE, 2013, 8, e61489.	2.5	37
82	Impact of Prefrontal Cortex in Nicotine-Induced Excitation of Ventral Tegmental Area Dopamine Neurons in Anesthetized Rats. Journal of Neuroscience, 2012, 32, 12366-12375.	3.6	26
83	A Theoretical Framework for the Dynamics of Multiple Intrinsic Oscillators in Single Neurons. , 2012, , 53-72.		9
84	Splay States in Finite Pulse-Coupled Networks of Excitable Neurons. SIAM Journal on Applied Dynamical Systems, 2012, 11, 864-894.	1.6	13
85	Cholinergic Neuromodulation Controls PRC Type in Cortical Pyramidal Neurons. , 2012, , 279-305.		4
86	Drug-dominated dopamine circuits spiral addicts down to a cognitive/behavioral conflict: a neurocomputational theory. BMC Neuroscience, 2012, 13, .	1.9	1
87	Modelling Local Circuit Mechanisms for Nicotine Control of Dopamine Activity. , 2012, , 111-144.		1
88	Activityâ€dependent intracellular chloride accumulation and diffusion controls GABA_A receptorâ€mediated synaptic transmission. Hippocampus, 2011, 21, 885-898.	1.9	58
89	Spike-Timing Dependent Plasticity and Feed-Forward Input Oscillations Produce Precise and Invariant Spike Phase-Locking. Frontiers in Computational Neuroscience, 2011, 5, 45.	2.1	20
90	A reduced model of DA neuronal dynamics that displays quiescence, tonic firing and bursting. Journal of Physiology (Paris), 2011, 105, 53-58.	2.1	16

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91	Spectral statistics of â€˜cellularâ€™ billiards. Nonlinearity, 2011, 24, 1743-1757.	1.4	3
92	Entropic Bounds on Semiclassical Measures for Quantized One-Dimensional Maps. Communications in Mathematical Physics, 2010, 294, 303-342.	2.2	10
93	Quantum corrections to fidelity decay in chaotic systems. Physical Review E, 2010, 81, 036222.	2.1	17
94	Collective versus single-particle motion in quantum many-body systems from the perspective of an integrable model. Journal of Physics A: Mathematical and Theoretical, 2010, 43, 265101.	2.1	6
95	Democracy-Independence Trade-Off in Oscillating Dendrites and Its Implications for Grid Cells. Neuron, 2010, 66, 429-437.	8.1	53
96	Note on converse quantum ergodicity. Proceedings of the American Mathematical Society, 2009, 137, 2795-2795.	0.8	12
97	Inhibition and modulation of rhythmic neuronal spiking by noise. Physical Review E, 2009, 80, 031907.	2.1	56
98	The Role of Ongoing Dendritic Oscillations in Single-Neuron Dynamics. PLoS Computational Biology, 2009, 5, e1000493.	3.2	54
99	Computational disease modeling â€“ fact or fiction?. BMC Systems Biology, 2009, 3, 56.	3.0	41
100	The effects of cholinergic neuromodulation on neuronal phase-response curves of modeled cortical neurons. Journal of Computational Neuroscience, 2009, 26, 289-301.	1.0	91
101	Inhibition of rhythmic neural spiking by noise: the occurrence of a minimum in activity with increasing noise. Die Naturwissenschaften, 2009, 96, 1091-1097.	1.6	69
102	Modeling nicotinic neuromodulation from global functional and network levels to nAChR based mechanisms. Acta Pharmacologica Sinica, 2009, 30, 681-693.	6.1	23
103	Random perturbations of spiking activity in a pair of coupled neurons. Theory in Biosciences, 2008, 127, 135-139.	1.4	14
104	Editorial. Network: Computation in Neural Systems, 2008, 19, 1-2.	3.6	0
105	Transient terminationâ€‰of spiking by noise in coupled neurons. Europhysics Letters, 2008, 81, 20005.	2.0	28
106	Cholinergic Neuromodulation Changes Phase Response Curve Shape and Type in Cortical Pyramidal Neurons. PLoS ONE, 2008, 3, e3947.	2.5	116
107	Synchrony of Neuronal Oscillations Controlled by GABAergic Reversal Potentials. Neural Computation, 2007, 19, 706-729.	2.2	44
108	Comprehensive Mathematical Modeling in Drug Addiction Sciences. Drug and Alcohol Dependence, 2007, 89, 102-106.	3.2	12

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109	The Simulation of Addiction: Pharmacological and Neurocomputational Models of Drug Self-Administration. Drug and Alcohol Dependence, 2007, 90, 304-311.	3.2	14
110	Dynamical â€˜breakingâ€™ of time reversal symmetry. Journal of Physics A: Mathematical and Theoretical, 2007, 40, F761-F769.	2.1	26
111	Cortical pyramidal cells as non-linear oscillators: Experiment and spike-generation theory. Brain Research, 2007, 1171, 122-137.	2.2	29
112	Spikes too kinky in the cortex?. Nature, 2006, 440, 999-1000.	27.8	12
113	Dopamine modulation in the basal ganglia locks the gate to working memory. Journal of Computational Neuroscience, 2006, 20, 153-166.	1.0	169
114	A neurocomputational hypothesis for nicotine addiction. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 1106-1111.	7.1	104
115	Study on the role of GABAergic synapses in synchronization. Neurocomputing, 2005, 65-66, 859-868.	5.9	5
116	Phase Dependent Sign Changes of GABAergic Synaptic Input Explored In-Silicio and In-Vitro. Journal of Computational Neuroscience, 2005, 19, 71-85.	1.0	15
117	Phase-Response Curves Give the Responses of Neurons to Transient Inputs. Journal of Neurophysiology, 2005, 94, 1623-1635.	1.8	187
118	Noise delays onset of sustained firing in a minimal model of persistent activity. Neurocomputing, 2004, 58-60, 753-760.	5.9	10
119	Spike generating dynamics and the conditions for spike-time precision in cortical neurons. Journal of Computational Neuroscience, 2003, 15, 91-103.	1.0	57
120	Mathematical neuroscience: from neurons to circuits to systems. Journal of Physiology (Paris), 2003, 97, 209-219.	2.1	53
121	Can billiard eigenstates be approximated by superpositions of plane waves?. Journal of Physics A, 2003, 36, 8603-8622.	1.6	9
122	Multiple Bumps in a Neuronal Model of Working Memory. SIAM Journal on Applied Mathematics, 2002, 63, 62-97.	1.8	216
123	The Effects of Spike Frequency Adaptation and Negative Feedback on the Synchronization of Neural Oscillators. Neural Computation, 2001, 13, 1285-1310.	2.2	208
124	Can one hear the shape of a graph?. Journal of Physics A, 2001, 34, 6061-6068.	1.6	140
125	Hyperbolic Magnetic Billiards on SurfacesÂ¶of Constant Curvature. Communications in Mathematical Physics, 2001, 217, 33-53.	2.2	15
126	Turning on and off with excitation: the role of spike-timing asynchrony and synchrony in sustained neural activity. Journal of Computational Neuroscience, 2001, 11, 121-134.	1.0	153

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127	Layer 3 patchy recurrent excitatory connections may determine the spatial organization of sustained activity in the primate prefrontal cortex. Neurocomputing, 2000, 32-33, 391-400.	5.9	16
128	Conditions for noise reduction and stable encoding of spatial structure by cortical neural networks. Biological Cybernetics, 2000, 82, 469-475.	1.3	5
129	Hyperbolic Billiards on Surfaces of Constant Curvature. Communications in Mathematical Physics, 1999, 208, 65-90.	2.2	23
130	Effects of dopaminergic modulation of persistent sodium currents on the excitability of prefrontal cortical neurons: A computational study. Neurocomputing, 1999, 26-27, 107-115.	5.9	6
131	A minimal model for metabotropic modulation of fast synaptic transmission and firing properties in bullfrog sympathetic B neurons. Neurocomputing, 1999, 26-27, 255-262.	5.9	3
132	Dynamics of Membrane Excitability Determine Interspike Interval Variability: A Link Between Spike Generation Mechanisms and Cortical Spike Train Statistics. Neural Computation, 1998, 10, 1047-1065.	2.2	191