

March 22, 2017

Publications (Tomoki FUKAI)

1. Takashi Handa, Takashi Takekawa, Rie Harukuni, Yoshikazu Isomura, and Tomoki Fukai. “Medial frontal circuit dynamics represents probabilistic choices for unfamiliar sensory experience” *Cerebral Cortex* 2017 Feb 10:1-14. doi: 10.1093/cercor/bhx031 (2017)
2. Daisuke Miyamoto, Daichi Hirai, Chi Chung Fung, Ayumu Inutsuka, Maya Odagawa, Takayuki Suzuki, Roman Boehringer, Chinnakkaruppan Adaikkan, Chie Matsubara, Norio Matsuki, Tomoki Fukai, Thomas J McHugh, Akihiro Yamanaka, Masanori Murayama (2016) Top-down cortical input during NREM sleep consolidates perceptual memory. *Science* 352 (6291), 1315-1318. doi: 10.1126/science.aaf0902
3. Naoki Hiratani, Tomoki Fukai (2016) Hebbian Wiring Plasticity Generates Efficient 1 Network Structures for Robust Inference with Synaptic Weight Plasticity. *Front. Neural Circuits* **10**:41, 1-19. doi: 10.3389/fncir.2016.00041
4. Yoshiyuki Omura, Milena M. Carvalho, Kaoru Inokuchi, Tomoki Fukai (2015) A lognormal recurrent network model for burst generation during hippocampal sharp waves. *The Journal of Neuroscience*, 35(43):14585-14601. doi: 10.1523/JNEUROSCI.4944-14.2015 [published October 28](#)
5. Naoki Hiratani, Tomoki Fukai (2015) Mixed Signal Learning by Spike Correlation Propagation in Feedback Inhibitory Circuits, *PLoS Computational Biology*, 11(4): e1004227, 1-36. doi:10.1371/journal.pcbi.1004227 [published April 24](#)
6. Ryunosuke Amo, Felipe Fredes, Masae Kinoshita, Ryo Aoki, Hidenori Aizawa, Masakazu Agetsuma, Tazu Aoki, Toshiyuki Shiraki, Hisaya Kakinuma, Masaru Matsuda, Masako Yamazaki, Mikako Takahoko, Takashi Tsuboi, Shin-ichi Higashijima, Nobuhiko Miyasaka, Tetsuya Koide, Yoichi Yabuki, Yoshihiro Yoshihara, Tomoki Fukai, Hitoshi Okamoto (2014) The Habenulo-Raphe Serotonergic Circuit Encodes an Aversive Expectation Value Essential for Adaptive Active Avoidance of Danger. *Neuron*, 84, 1034–1048. [published December 3](#) doi: 10.1016/j.neuron.2014.10.035
7. Susanne Kunkel, Maximilian Schmidt, Jochen M. Eppler, Hans E. Plesser, Gen Masumoto, Jun Igarashi, Shin Ishii, Tomoki Fukai, Abigail Morrison, Markus Diesmann, Moritz Helias (2014) Spiking network simulation code for petascale computers. *Front. Neuroinform.* 8(78) 1-23. doi: 10.3389/fninf.2014.00078 [published October 10, 2014](#)
8. Naoki Hiratani, Tomoki Fukai (2014) Interplay between Short- and Long-Term

- Plasticity in Cell-Assembly Formation. *PLoS One*, 9(7): e101535 1-16. doi:10.1371/journal.pone.0101535 [published July 9](#)
9. Takashi Takekawa, Keisuke Ota, Masanori Murayama, Tomoki Fukai (2014) Spike detection from noisy neural data in linear-probe recordings. *European Journal of Neuroscience*, 39, 1943–1950. doi:10.1111/ejn.12614 [published May 15](#)
 10. Florence I Kleberg, Tomoki Fukai, Matthieu Gilson (2014) Excitatory and inhibitory STDP jointly tune feedforward neural circuits to selectively propagate correlated spiking activity. *Frontiers in Comput. Neurosci.* 8 (53), 1-15. doi: 10.3389/fncom.2014.00053 [published May 7](#)
 11. Vladimir V Klinshov, Jun-nosuke Teramae, Vladimir I Nekorkin, Tomoki Fukai (2014) Dense neuron clustering explains connectivity statistics in cortical microcircuits. *PLoS One*, 9 (4), e94292 1-12. doi: 10.1371/journal.pone.0094292 [published Apr 14](#)
 12. Tomoki Fukai, Jun-nosuke Teramae (2014) Lessons from spontaneous neural noise genesis on neuromorphic engineering. *Proceedings of the IEEE*, 102 (4), 513 doi: 10.1109/JPROC.2014.2307019 [published April 2014 –REVIEW PAPER-](#)
 13. Jun-nosuke Teramae, Tomoki Fukai (2014) Computational Implications of Lognormally Distributed Synaptic Weights. *Proceedings of the IEEE*, 102 (4), 500-512. doi: 10.1109/JPROC.2014.2306254 [published April 2014](#)
 14. Nobuhiko Wagatsuma, Tobias C. Potjans, Markus Diesmann, Ko Sakai, Tomoki Fukai. (2013) Spatial and feature-based attention in a layered cortical microcircuit model. *PLoS One* 8(12), e80788 1-14. doi: 10.1371/journal.pone.0080788 [published Dec. 6](#)
 15. Jun Igarashi, Yoshikazu Isomura, Kensuke Arai, Rie Harukuni, Tomoki Fukai (2013) A θ - γ Oscillation Code for Neuronal Coordination during Motor Behavior. *J. Neurosci.* 33(47), 18515–18530 DOI:10.1523/JNEUROSCI.2126-13.2013 [published Nov. 20](#)
 16. Yoshikazu Isomura, Takashi Takekawa, Rie Harukuni, Takashi Handa, Hidenori Aizawa, Masahiko Takada, and Tomoki Fukai. (2013) Reward-modulated motor information in identified striatum neurons. *J. Neurosci.* 33(25), 10209 –10220 doi: 10.1523/JNEUROSCI.0381-13.2013 [published June 19](#)
 17. Hidenori Aizawa, Shin Yanagihara, Megumi Kobayashi, Kazue Niisato, Takashi Takekawa, Rie Harukuni, Thomas J. McHugh, Tomoki Fukai, Yoshikazu Isomura, Hitoshi Okamoto (2013) The synchronous activity of lateral habenular neurons is essential for regulating hippocampal theta oscillation. *J. Neurosci.* 33(20), 8909-8921. [published May 15](#) doi: 10.1523/JNEUROSCI.4369-12.2013.
 18. Yasuhiro Tsubo, Yoshikazu Isomura, Tomoki Fukai (2013) Neural dynamics and information representation in microcircuits of motor cortex. *Frontiers in Neural*

- Circuits*. 7(85), 1-10 doi: 10.3389/fncir.2013.00085 [published May 03](#)
19. Yasuhiro Tsubo, Yoshikazu Isomura, Tomoki Fukai (2013) Passage-time coding with a timing kernel inferred from irregular cortical spike sequences. *J. Statistical Mechanics: Theory and Experiment (JSTAT)* P03004, 1-21. doi:10.1088/1742-5468/2013/03/P03004 [published March 12](#)
 20. Naoki Hiratani, Jun-nosuke Teramae, Tomoki Fukai (2013) Associative memory model with long-tail-distributed Hebbian synaptic connections. *Frontiers in Computational Neuroscience* 6 (102), 1-15. doi:10.3389/fncom.2012.00102. [published February 7](#)
 21. Hidenori Aizawa, Megumi Kobayashi, Sayaka Tanaka, Tomoki Fukai, Hitoshi Okamoto (2012) Molecular characterization of the subnuclei in rat habenula. *J. Comparative Neurology* 520(18):4051-66. doi: 10.1002/cne.23167. [published Dec.15, 2012](#)
 22. Moritz Helias, Susanne Kunkel, Gen Masumoto, Jun Igarashi, Jochen Martin Eppler, Shin Ishii, Tomoki Fukai, Abigail Morrison, Markus Diesmann (2012) Supercomputers ready for use as discovery machines for neuroscience. *Frontiers in Neuroinf.* 6 (26), 1-12. doi: 10.3389/fninf.2012.00026 [published Nov, 2012](#).
 23. Matthieu Gilson, Tomoki Fukai, Anthony N Burkitt (2012) Spectral Analysis of Input Spike Trains by Spike-Timing-Dependent Plasticity. *PLoS Comput Biol* 8(7): e1002584-1-22. doi:10.1371/journal.pcbi.1002584. [published July 5](#)
 24. Jun-nosuke Teramae, Yasuhiro Tsubo, Tomoki Fukai (2012) Optimal spike-based communication in excitable networks with strong-sparse and weak-dense links. *Scientific Reports* 2 (485): 1-6. doi:10.1038/srep00485. [published July 2](#)
 25. Takashi Takekawa, Yoshikazu Isomura, Tomoki Fukai (2012) Spike sorting of heterogeneous neuron types by multimodality-weighted PCA and explicit robust variational Bayes. *Front. Neuroinform.* 6(5) 1-13. doi: 10.3389/fninf.2012.00005. [published online March 19](#)
 26. Yasuhiro Tsubo, Yoshikazu Isomura, Tomoki Fukai (2012) Power-Law Inter-Spike Interval Distributions Infer a Conditional Maximization of Entropy in Cortical Neurons. *PLoS Comput. Biol.* 8(4): e1002461 1-11. doi:10.1371/journal.pcbi.1002461. [published April 12](#)
 27. Jun Igarashi, Osamu Shouno, Tomoki Fukai, Hiroshi Tsujino (2011) Real-time simulation of a spiking neural network model of the basal ganglia circuitry using general purpose computing on graphics processing units. *Neural Networks* 24, 950-960. doi:10.1016/j.neunet.2011.06.008
 28. Tomohiro Fujita, Tomoki Fukai, Katsunori Kitano (2011) Influences of membrane

- properties on phase response curve and synchronization stability in a model globus pallidus neuron. *J. Comput. Neurosci.* Jun;32(3):539-53 doi: 10.1007/s10827-011-0368-2. [published online Oct.13](#)
29. Matthieu Gilson, Tomoki Fukai (2011) Stability versus Neuronal Specialization for STDP: Long-Tail Weight Distributions Solve the Dilemma. *PLoS One* 6(10): e25339. doi:10.1371/journal.pone.0025339 1-18. [published Oct.7](#)
 30. Rie Kimura, Siu Kang, Naoya Takahashi, Atsushi Usami, Norio Matsuki, Tomoki Fukai, Yuji Ikegaya (2011) Hippocampal Polysynaptic Computation. *J. Neurosci.* 31(37), 13168 –13179. DOI:10.1523/JNEUROSCI.1920-11.2011 [Sept.14](#)
 31. Nobuhiko Wagatsuma, Tobias C. Potjans, Markus Diesmann, Tomoki Fukai (2011) Layer-dependent attentional processing by top-down signals in a visual cortical microcircuit model. *Front. Comput. Neurosci.* 5:31, doi: 10.3389/fncom.2011.00031. [July 8](#)
 32. Naosugi Yumoto, Xiaofeng Lu, Thomas R Henry, Shigehiro Miyachi, Atsushi Nambu, Tomoki Fukai, Masahiko Takada (2011) A neural correlate of the processing of multi-second time intervals in primate prefrontal cortex. *PLoS One* 6 (4), e19168 1-7. doi:10.1371/journal.pone.0019168
 33. Yoko Fujiwara-Tsukamoto, Yoshikazu Isomura, Michiko Imanishi, Taihei Ninomiya, Minoru Tsukada, Yuchio Yanagawa, Tomoki Fukai, Masahiko Takada (2010) Prototypic seizure activity driven by mature hippocampal fast-spiking interneurons. *J. Neurosci.* 30(41), 13679 -13689. DOI:10.1523/JNEUROSCI.1523-10.2010
 34. Leonid A. Safonov, Yoshikazu Isomura, Siu Kang, Zbigniew R. Struzik, Tomoki Fukai, Hideyuki Câteau (2010) Near scale-free dynamics in neural population activity of waking/sleeping rats revealed by multiscale analysis. *PLoS One* 5(9), e12869 1-11. doi:10.1371/journal.pone.0012869
 35. Tomoki Fukai, Yuji Ikegaya, Stefan Rotter (2010) Editorial:Analysis and modeling of massively parallel neural signals. *Neural Networks* 23(6), 667-668. [editorial](#)
 36. Ken Nakae, Yukito Iba, Yasuhiro Tsubo, Tomoki Fukai, Toshio Aoyagi (2010) Bayesian estimation of Phase Response Curves. *Neural Networks* 23(6), 752-763. doi:10.1016/j.neunet.2010.04.002
 37. Takashi Takekawa, Yoshikazu Isomura, Tomoki Fukai (2010) Accurate spike-sorting for multiunit recordings. *European Journal of Neuroscience* 31, 263-272. doi:10.1111/j.1460-9568.2009.07068.x
 38. Yoko Yazaki-Sugiyama, Siu Kang, Hideyuki Câteau, Tomoki Fukai, Takao K. Hensch (2009) Bidirectional plasticity in fast-spiking GABA circuits by visual experience. *Nature* 462, 218-221. doi:10.1038/nature08485

39. Yoshikazu Isomura, Rie Harukuni, Takashi Takekawa, Hidenori Aizawa, Tomoki Fukai (2009) Microcircuitry coordination of cortical motor information in self-initiation of voluntary movements. *Nature Neuroscience* 12, 1586-1593. doi:10.1038/nn.2431
40. Takashi Takekawa, Tomoki Fukai (2009) A novel view of the variational Bayesian clustering. *Neurocomputing* 72, 3366-3369. doi:10.1016/j.neucom.2009.04.003
41. Hiroshi Okamoto, Tomoki Fukai (2009) Recurrent network models for perfect temporal integration of fluctuating correlated inputs. *PLoS Comput. Biol.* 5(6) e1000404, 1-10. . doi:10.1371/journal.pcbi.1000404
42. Jun-nosuke Teramae, Tomoki Fukai (2008) Temporal precision of spike response to fluctuating input in pulse-coupled networks of oscillating neurons. *Phys Rev Lett* 101, 248105, 1-4. DOI: 10.1103/PhysRevLett.101.248105
43. Yutaka Sakai, Tomoki Fukai (2008) When does reward maximization lead to matching law? *PLoS ONE* 3(11), e3795, 1-7. doi:10.1371/journal.pone.0003795
44. Jun-nosuke Teramae, Tomoki Fukai (2008) Complex evolution of spike patterns during burst propagation through feed-forward networks. *Biological Cybernetics* 99 (2), 105-114. DOI 10.1007/s00422-008-0246-9
45. Hideyuki Câteau, Katsunori Kitano, Tomoki Fukai (2008) Interplay between a phase response curve and spike-timeing-dependent plasticity leads to wireless clustering. *Physical Review E* 77, 051909, 1-6. DOI: 10.1103/PhysRevE.77.051909
46. Yutaka Sakai, Tomoki Fukai (2008) The actor-critic learning is behind the matching law: Matching versus optimal behaviors. *Neural Comput.* 20, 227-251.
47. Siu Kang, Katsunori Kitano, Tomoki Fukai (2008) Structure of spontaneous UP and DOWN transitions self-organizing in a cortical network model. *PLoS Comput. Biol.* 4(3), e1000022, 1-12. doi:10.1371/journal.pcbi.1000022
48. Jun-nosuke Teramae, Tomoki Fukai (2007) Sequential associative memory with non-uniformity of the layer sizes. *Physical Review E* 75, 011910, 1-7. DOI: 10.1103/PhysRevE.75.011910
49. Yoko Fujiwara-Tsukamoto, Yoshikazu Isomura, Michiko Imanishi, Tomoki Fukai, Masahiko Takada (2007) Distinct types of ionic modulation of GABA actions in pyramidal cells and interneurons during electrical induction of hippocampal seizure-like network activity. *Eur J. Neurosci.* 25, 2713-2725.
50. Jun-nosuke Teramae, Tomoki Fukai (2007) Local cortical circuit model inferred from power-law distributed neuronal avalanches. *J. Comput. Neurosci.* 22, 301-312. DOI 10.1007/s10827-006-0014-6
51. Yasuhiro Tsubo, Masahiko Takada, Alex D. Reyes, Tomoki Fukai (2007) Layer and

- frequency dependences of phase response properties of pyramidal neurons in rat motor cortex. *Eur J. Neurosci.* 25, 3429-3441. doi:10.1111/j.1460-9568.2007.05579.x
52. Hiroshi Okamoto, Yoshikazu Isomura, Masahiko Takada, Tomoki Fukai (2007) Temporal integration by stochastic recurrent network dynamics with bimodal neurons. *J. Neurophysiol.* 97, 3859-3867. doi:10.1152/jn.01100.2006
 53. Takashi Takekawa, Toshio Aoyagi, Tomoki Fukai (2007) Synchronous and asynchronous bursting states: Role of intrinsic neural dynamics. *J. Comput. Neurosci.* 23, 189-200. DOI 10.1007/s10827-007-0027-9
 54. Katsunori Kitano, Tomoki Fukai (2007) Variability v.s. synchrony of neuronal activity in local cortical network models with different topologies. *J. Comput. Neurosci.* 23, 237-250. DOI 10.1007/s10827-007-0030-1
 55. Yasuhiro Tsubo, Jun-nosuke Teramae, Tomoki Fukai (2007) Synchronization of excitatory neurons with strongly heterogeneous phase responses. *Physical Review Lett.* 99, 228101, 1-4. DOI: <http://dx.doi.org/10.1103/PhysRevLett.99.228101>
 56. Keiji Miura, Yasuhiro Tsubo, Masato Okada, Tomoki Fukai (2007) Balanced excitatory and inhibitory inputs to cortical neurons decouple firing irregularity from rate modulations. *J. Neurosci.* 27, 13802-13812. DOI:10.1523/JNEUROSCI.2452-07.2007
 57. Takashi Takekawa, Toshio Aoyagi, Tomoki Fukai (2006) Synchronization property of slow cortical oscillations. *Progress of Theoretical Physics Supplement* 161, 356-359. doi: 10.1143/PTPS.161.356
 58. Yutaka Sakai, Hiroshi Okamoto, Tomoki Fukai (2006) Computational algorithms and neuronal network models underlying decision processes. *Neural Networks* 19, 1091-1105.
 59. Hiroshi Okamoto, Yoshikazu Isomura, Masahiko Takada, Tomoki Fukai (2005) Combined modeling and extracellular recording studies of UP and DOWN transitions in awake or behaving monkeys. *Basal Ganglia VIII Advances in Behavioral Biology* 56, 555-561.
 60. Jun-nosuke Teramae, Tomoki Fukai (2005) A cellular mechanism for graded persistent activity in a model neuron and its implications in working memory. *Journal of Computational Neuroscience* 18, 105-121.
 61. Katsunori Kitano, Tomoki Fukai (2004) Temporal characteristics of the predictive synchronous firing modeled by spike-timing-dependent plasticity. *Learning & Memory* 11, 267-276.
 62. Masaki Nomura, Toshio Aoyagi, Tomoki Fukai (2004) Gamma frequency synchronization in a local cortical network model. *Neurocomputing* 58-60, 173-178.

63. Hiroshi Okamoto, Tomoki Fukai (2004) Propagation of quasi-stable activation in a chain of recurrent neural networks. *Neurocomputing* 58-60, 235-238.
64. Siu Kang, Katsunori Kitano, Tomoki Fukai (2004) Spontaneous two-state membrane potential fluctuations in a self-organized network of realistic cortical neuron models. *The Journal of Japan Neural Network Society* 11(2), 56-63. (in Japanese).
65. Siu Kang, Katsunori Kitano, Tomoki Fukai (2004) Self-organized two-state membrane potential transitions in a network of realistically modeled cortical neurons. *Neural Networks* 17, 307-312.
66. Takashi Takekawa, Toshio Aoyagi, Tomoki Fukai (2004) Influences of synaptic location on the synchronization of rhythmic bursting neurons. *Network: Comput. Neural Syst.* 15, 1-12.
67. Katsunori Kitano, Tomoki Fukai (2004) Predictive synchrony organized by spike-based Hebbian learning with time-representing synfire activities. In: *Neural Information Processing: Research and Development*, pp. 77-93, Rajapakse, Jagath C., Wang, Lipo (Eds), Springer-Verlag.
68. Hiroshi Okamoto, Tomoki Fukai (2003) Neural bases of accumulator models. *Neurocomputing* 52-54, 285-288.
69. Masaki Nomura, Tomoki Fukai, Toshio Aoyagi (9.2003) Synchrony of fast-spiking interneurons interconnected by GABAergic and electrical synapses. *Neural Computation* 15, 2179-2198.
70. Hiroshi Okamoto, Tomoki Fukai (2003) Physiologically realistic modelling of a mechanism for neural representation of intervals of time. *BioSystems* 68, 229-233.
71. Katsunori Kitano, Hiroshi Okamoto, Tomoki Fukai (2003) Time representing cortical activities: two models inspired by prefrontal persistent activity. *Biological Cybernetics* 88, 387-394.
72. Toshio Aoyagi, Takashi Takekawa, Tomoki Fukai (2003) Gamma rhythmic bursts: coherence control in networks of cortical pyramidal neurons. *Neural Computation* 15, 1035-1061.
73. Hideyuki Cateau, Tomoki Fukai (2003) A stochastic method to predict the consequence of arbitrary forms of spike-timing-dependent plasticity. *Neural Computation* 15(3), 597-620.
74. Cateau H, Kitano K, Fukai T (2002) An accurate and widely applicable method to determine the distribution of synaptic strength formed by the spike-timing-dependent plasticity. *Neurocomputing* 44-46, 343-351.
75. Fukai T, Kitano K, Aoyagi T, Kang Y (2002) Modeling the layer V cortical pyramidal neurons showing theta-rhythmic firing in the presence of muscarine. *Neurocomputing*

- 44-46, 103-108.
76. Kitano K, Cateau H, Fukai T (2002) Sustained activity with low firing rate in a recurrent network regulated by spike-timing-dependent plasticity. *Neurocomputing* 44-46, 473-478.
 77. Kitano K, Cateau H & Fukai T (2002) Self-Organization of Memory Activity through Spike-Timing- Dependent Plasticity. *NeuroReport* 13, 795-798.
 78. Aoyagi T, Kang Y, Terada N, Kaneko T, Fukai T (2002) The role of Ca(2+)-dependent cationic current in generating gamma frequency rhythmic bursts: modeling study. *Neuroscience* 115(4), 1127-1138.
 79. Kitano K, Cateau H, Kaneda K, Nambu A, Takada M, Fukai T (2002) Two-State Membrane Potential Transitions of Striatal Spiny Neurons as Evidenced by Numerical Simulations and Electrophysiological Recordings in Awake Monkeys. *The Journal of Neuroscience* 22 RC230, 1-6.
 80. Okamoto H, Fukai T (2001) On experimental predictions from a model for a neural mechanism of internal timer. *Neurocomputing* 38-40, 1489-1493.
 81. Kitano K, Aoyagi T, Fukai T (2001) Synchronous and asynchronous activities in a network of striatal spiny projection neurons. *Neurocomputing* 38-40, 721-726.
 82. Terada N, Aoyagi T, Kang Y, Kaneko T, Fukai T (2001) A bursting mechanism of chattering neurons based on calcium-dependent cationic currents. *Neurocomputing* 38-40, 93-98.
 83. Fukai T (2001) Neuronal analog-digital information transformations at the gamma frequency. *Neurocomputing* 38-40, 615-619.
 84. Cateau H, Fukai T (2001) Fokker-Planck approach to the pulse packet propagation in synfire chain. *Neural Networks* 14, 675-685. (Special Issue: Spiking Neurons in Neuroscience and Technology).
 85. Fukai T, Kanemura S (2001) Noise-tolerant stimulus discrimination by synchronization with depressing synapses. *Biological Cybernetics* 85, 107-116.
 86. Kitano K, Aoyagi T, Fukai T (2001) A possible functional organization of the corticostriatal input within the weakly-correlated striatal activity : A modeling study. *Neuroscience Research* 40, 87-96.
 87. Okamoto H, Fukai T (2001) A neural mechanism for cognitive timer. *Physical Review Letters* 86, 3919-3922.
 88. Fukai T (2000) Neuronal communication within synchronous gamma oscillations. *NeuroReport* 11, 3457-3460.
 89. Fukai T, Kanemura S (2000) Precisely-timed synchronization by depressing synapses. *Neurocomputing* 32-33, 133-140.

90. Okamoto H, Fukai T (2000) A model for neural representation of intervals of time. *Neurocomputing* 32-33, 935-939.
91. Okamoto H, Fukai T (2000) A model for neural representation of temporal duration. *BioSystems* 55, 59-64.
92. Fukai T, Kimoto T, Okada M (1999) Coexistence of uncorrelated and correlated attractors in a nonmonotonic neural network. *Journal of Physics A: Math. Gen.* 32, 5551-5562.
93. Fukai T (1999) Modeling the interplay of short-term memory and the basal ganglia in sequence processing. *Neurocomputing* 26-27, 687-692.
94. Fukai T (1999) Sequence generation in arbitrary temporal patterns from theta-nested gamma oscillations: A model of the basal ganglia-thalamo-cortical loops. *Neural Networks* 12, 975-987. (Special Issue: Organisation of Computation in Brain-like Systems).
95. Asai T, Fukai T, Tanaka S (1999) A subthreshold MOS circuit for the Lotka-Volterra neural network possessing the winner-take-all and winners-share-all solutions. *Neural Networks* 12, 211-216.
96. Okada M, Fukai T, Shiino M (1998) Random and systematic dilutions of synaptic connections in a neural network with a nonmonotonic response function. *Physical Review E* 57, 2095-2103.
97. Fukai T, Tanaka S (1997) A simple neural network exhibiting selective activation of neuronal ensembles: From winner-take-all to winners-share-all. *Neural Computation* 9, 77-97.
98. Fukai T (1996) Competition in the temporal domain among neural activities phase locked to subthreshold oscillations. *Biological Cybernetics* 75, 453-461.
99. Fukai T (1996) Bulbocortical interplay in olfactory information processing via synchronous oscillations. *Biological Cybernetics* 74, 309-317.
100. Asai T, Yokotsuka H, Fukai T (1996) A MOS circuit for a nonmonotonic neural network with excellent retrieval abilities. *IEEE Trans. Neural Networks* 7, 182-189.
101. Fukai T (1995) Oscillations for rapid selection of neural activities based on spike timing. *NeuroReport* 7, 273-277.
102. Matsushita T, Moriyama S, Fukai T (1995) Switching dynamics and the transient memory storage in a model enzyme network involving Ca^{2+} /calmodulin protein kinase II in synapses. *Biological Cybernetics* 72, 497-509.
103. Fukai T, Kim J, Shiino M (1995) Retrieval properties of analog neural networks and the nonmonotonicity of transfer functions. *Neural Networks* 8, 391-404.
104. Fukai T (1995) A model cortical circuit for the storage of temporal sequences in cortex.

Biological Cybernetics 72, 321-328.

105. Fukai T, Shiino M (1995) Memory recall by quasi-fixed-point attractors in neural networks of oscillators. *Neural Computation* 7, 529-548.
106. Fukai T (1994) Synchronization of neural activity is a promising mechanism of memory information processing in networks of columns. *Biological Cybernetics* 71, 215-226.
107. Fukai T, Shiino M (1994) Memory encoding by oscillator death. *Europhysics Letters* 26, 647-652.
108. Fukai T (1994) A model of cortical memory-processing based on columnar organization. *Biological Cybernetics* 70, 427-434.
109. Shiino M, Fukai T (1993) Self-consistent signal-to-noise analysis of the statistical behavior of analog neural networks & enhancement of the storage capacity. *Physical Review* E48, 867-897.
110. Shiino M, Fukai T (1993) Onset of super retrieval phase & enhancement of the storage capacity in neural networks of nonmonotonic neurons. *Journal of Physics A : Math. Gen.* 26, L831-L841.
111. Fukai T, Shiino M (1992) Study of self-inhibited analog neural networks using the self-consistent signal-to-noise analysis. *Journal of Physics A : Math. Gen.* 25, 4799-4811.
112. Fukai T, Shiino M (1992) Comparative study of spurious state distribution of analog neural networks & the Boltzmann machine. *Journal of Physics A : Math. Gen.* 25, 2873-2887.
113. Shiino M & Fukai T (1992) Self-consistent signal-to-noise analysis & its application to analog neural networks with asymmetric connections. *Journal of Physics A: Math. Gen.* 25, L375 -L381.
114. Fukai T, Shiino M (1990) Large suppression of spurious states in neural networks of nonlinear analog neurons. *Physical Review* A42 (12), 7459-7466.
115. Shiino M, Fukai T (1990) Replica-symmetric theory of the nonlinear analogue neural networks. *Journal of Physics A : Math. Gen.* 23, L1009-L1017.
116. Shiino M, Fukai T (1990) Chaotic image retrieval in markovian asymmetric neural networks with sign-constrained synaptic couplings. *Journal of Physical Society of Japan* 59(5), 1529-1532.
117. Fukai T, Shiino M (1990) Asymmetric neural networks incorporating the Dale hypothesis & noise-driven chaos. *Physical Review Letters* 64, 1465-1468.
118. Fukai T (1990) Metastable states of neural networks incorporating the physiological Dale hypothesis. *Journal of Physics A : Math. Gen.* 23(2), 249-258.

119. Shudo A, Mizutani M, Fukai T (1988) Canonical correlations of non-integrable quantum system. *Physics Letters* 130A, 338-343.
120. Fukai T (1988) BRST quantization of local supersymmetric chiral boson-fermion system. *Physical Review D* 37, 3582-3587.
121. Fukai T (1988) Anomaly cancellations in the local supersymmetric Siegel lagrangian. *Nuclear Physics* B299, 346-354.
122. Fukai T, Atre MV (1987) Topology of the grassmanian sigma model on a lattice. *Modern Physics Letters A* 2, 601-608.
123. Fukai T, Kizukuri Y, Oshimo N, Otake Y, Sugiyama N (1987) Study of wino pair production in e+e- annihilation. *Progress of Theoretical Physics* 78, 395-412.
124. Fukai T, Sugiyama N (1986) Gravitino as the dark matter on all scales. *Physics Letters* 173B, 120-125.
125. Fukai T, Okano K (1985) Stochastic quantization of linearized Euclidean gravity & no-ghost Feynman rules. *Progress of Theoretical Physics* 73, 790-802.
126. Fukai T, Kizukuri Y (1984) A backward hierarchy model coupled to N=1 supergravity & the double missing partner mechanism. *Physics Letters* 143B, 396-402.
127. Fukai T, Oshimo N, Kizukuri Y (1984) A supersymmetric SU(5)xU(1) model with natural gauge hierarchy. *Zeitschrift fur Physik* C25, 75-80.
128. Fukai T (1984) The pseudoscalar masses in the technicolor model with the massive techniquarks. *Nuovo Cimento* 79A, 410-418.
129. Fukai T, Nakazato H, Ohba I, Okano K, Yamanaka Y (1983) Stochastic quantization method of fermion fields. *Progress of Theoretical Physics* 69, 1600-1616.

その他の総説・著作・書籍等

1. Tomoki Fukai, Vladimir Klinshov, Jun-nosuke Teramae (2014) “Cortical Networks with Lognormal Synaptic Connectivity and Their Implications in Neuronal Avalanches”, *Criticality in Neural Systems* edited by Dietmar Plenz and Ernst Niebur, p. 403-416, WILEY-VCH Verlag GmbH & Co, KGaA, Boschstr. 12, 69469 Weinheim, Germany ISBN: 978-3-527-41104-7
2. Jun-nosuke Teramae, Yasuhiro Tsubo, Tomoki Fukai (2013) “Long-tailed statistics of corticocortical EPSPs: Origin and computational role of noise in cortical circuits”, *Advances in Cognitive Neurodynamics (III) Proceedings of the Third International Conference on Cognitive Neurodynamics-2011* edited by Yoko Yamaguchi, p. 161-167, Springer Dordrecht Heidelberg New York London, ISBN: 978-94-007-4791-3

3. 深井朋樹 (2009) シリーズ脳科学1 脳の計算論 「第1章：総論、第2章：ニューロンとシナプスの数学的モデル、第7章：スパイクニューロンの回路モデルと認知機能」東京大学出版会 2009.6.22, 1-43, 253-267.
4. 深井朋樹、姜時友、北野勝則、寺前順之介 (2008) 「大脳皮質神経細胞集団の形成：シナプス可塑性とその先」Brain and Nerve:神経研究の進歩 60(7), 763-770.
5. 坪泰宏、深井朋樹 (2008) 「ダイナミッククランプ：導入とネットワーク研究への展開」日本神経回路学会誌 15(2), 110-116.
6. 深井朋樹 (2007) 「第6章 脳はどのように情報を伝えるのか」脳研究の最前線：脳の認知と進化 281-331.
7. 深井朋樹、岡本洋、酒井裕 (2005) 「行動決定の計算論」 神経研究の進歩 49(4), 573-581.
8. 岡本洋、坪下幸寛、深井朋樹 (2005) 「漸次的持続活動の神経生理学および計算論的知見が開く連想記憶の新しい地平」日本神経回路学会誌 12(4), 235-248.
9. 深井朋樹 (2002) 「計算論的神経科学」ネットサイエンス・インタビュー・メールにて配信 (編集 森山和道、発行人 科学技術用ソフトウェアデータベースサイト・ネットサイエンス)
10. 深井朋樹、加藤英之、北野勝則 (2002) 「脳の情報表現」.Computer Today 2002年7月号、pp. 9-15(サイエンス社)
11. 深井朋樹 (2002) 「脳内クロックの計算モデル」脳を知る・創る・守る第4巻、pp. 94-117. 2002年7月(脳の世紀推進会議編、クバプロ)
12. 岡本洋、深井朋樹 (2002) 「脳内時計の神経機構」別冊・数理科学 2002年10月、pp. 51-59(サイエンス社)
13. 加藤英之、深井朋樹 (2002) 「Fokker-Planck 方程式を用いた発火タイミング依存シナプス可塑性の解析—ラットの海馬、電気魚の小脳様器官への応用—」電子情報通信学会信学技報 NLP2001-88, 23-28.
14. 姜英男、青柳富誌生、深井朋樹 (2002) 「大脳皮質の錐体細胞とガンマ周波数帯のバースト発火」脳の情報表現、pp120-130. 2002年3月 (銅谷賢治、伊藤浩之他編. 朝倉書店)
15. 深井朋樹、高木博 (2002) 「ニューロンと局所回路のダイナミクス」 脳の情報表現、pp107-119. 2002年3月 (銅谷賢治、伊藤浩之他編. 朝倉書店).
16. 加藤英之、深井朋樹 (2001) 「Fokker-Planck 方程式を用いた神経集団活動の解析」日本神経回路学会誌 8, 94-102. 解説
17. 伊藤正夫、榊佳之、田中繁、深井朋樹、三品昌美、藤田道也. 脳とこころ —21世紀の課題— (座談会) II. こころと脳の要素との関係. 生態の科学、53 巻第1号、27-44. (金原一郎記念医学医療振興財団/医学書院)
18. 加藤英之、深井朋樹 (2001) 「発火タイミング依存性 Hebb 学習によるシナプス荷重

分布の変化を記述する厳密な Fokker-Planck 方程式を用いた学習結果の予測」電子情報通信学会 信学技報 NC2000-165, 67-73.

19. 深井朋樹、加藤英之、北野勝則 (2001)「前頭皮質における記憶機能の計算論的モデルと線条体神経活動解析への応用」脳の科学 23 巻 12 号 (特集/大脳皮質—大脳基底核ループと運動制御) 1069-1075 (2001 年 12 月、星和書店)
20. 深井朋樹 (2000)「Self-consistent な信号雑音解析法による連想記憶モデルの記憶特性の解析」システム/制御/情報 44, 512-517 (システム制御情報学会)
21. 岡本洋、深井朋樹 (2000)「脳内時計の神経機構」数理科学 2000 年 6 月号 37-44 (サイエンス社)
22. 深井朋樹 (2000)「動物の記憶作業と神経活動」(第 8 章 7 節)、脳科学大事典 (甘利俊一、外山敬介編. 朝倉書店. 2000 年 4 月初版) 809-812
23. 深井朋樹 (2000)「スパースコーディング・スパース結合」(第 8 章 3 節)、脳科学大事典 (甘利俊一、外山敬介編. 朝倉書店. 2000 年 4 月初版) 791-796
24. 深井朋樹 (1997)「ブレインウェア：連想記憶と神経競合」Computer Today 1997 年 9 月 (サイエンス社)
25. 椎野正寿、深井朋樹 (1993)「ニューラルネットの統計力学とカオス」. ニューラルネットワークシステムとカオス, pp 189-244. (合原一幸編. 東京電機大学出版会, 1993)
26. Shiino M, Fukai T. (1990) “Chaotic dynamics of stochastic neural networks”, Proceedings of International Conference on Fuzzy Logic & Neural Networks, IIZUKA-90, 595-599