Nicolas Brunel - Curriculum Vitae

Contact information

Duke University
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Education

2001	Habilitation, Université Pierre et Marie Curie, Paris, France
1989 - 1993	PhD, Physics, Université Pierre et Marie Curie, Paris, France
1986 - 1990	Physics studies, Ecole Normale Supérieure, Paris, France

Employment

2023 - 2024	Visiting Professor, Bocconi University
2022 -	Duke School of Medicine Distinguished Professor of Neuroscience
2017 -	Professor, Departments of Neurobiology and Physics, Duke University
2012 - 2017	Professor, Departments of Statistics and Neurobiology, University of Chicago
2012	DR2 CNRS (senior scientist), Laboratory of Cerebral Physiology, Université Paris Descartes.
2005 - 2011	DR2 CNRS (senior scientist), Laboratory of Neurophysics and Physiology, Université Paris Descartes.
2005 - 2008	Visiting scientist and Head of Computational Neuroscience Group, ISI, Torino
2001 - 2005	CR1 CNRS (junior scientist), Laboratory of Neurophysics and Physiology, Université Paris Descartes.
2000 - 2001	Visiting scientist, Laboratory of Neurophysics and Physiology , Université Paris Descartes.
1999 - 2001	CR1 CNRS (junior scientist), Laboratory of Statistical Physics, Ecole Normale Supérieure, Paris.
1998 - 1999	Visiting scientist, Biology Department and Center for Complex Systems, Brandeis University, Waltham (MA).
1995 - 1999	CR2 CNRS (junior scientist), Laboratory of Statistical Physics, Ecole Normale Supérieure, Paris.
1993 - 1995	Post-doctoral associate, Physics Department, "La Sapienza" University, Rome.

Awards and fellowships

2023	Valentin Braitenberg Award for Computational Neuroscience
2021	Swartz Prize in Theoretical and Computational Neuroscience, SFN
2011	Prime d'excellence scientifique, CNRS
1993-1995	Post-doctoral CNRS fellowship
1992-1993	Pre-doctoral EU fellowship
1990-1992	AMN fellowship from French Ministry of Education
1986-1990	Fellowship from French Ministry of Education as student of Ecole Normale Supérieure

Publications

Citation statistics are available at https://scholar.google.com/citations?user=9vumoioAAAAJ&hl=en&oi=ao

Submitted articles

92. Y Feng and N Brunel (2023), Attractor neural networks with double well synapses, submitted to **PLOS CB** (biorxiv 2023.07.17.549266v1)

Refereed research articles in journals

91. M Gillett and N Brunel (2023), Dynamic control of sequential retrieval speed in networks with heterogeneous learning rules, to be published in **eLife** (biorxiv 2023.03.22.533836)
90. A Sanzeni, A Palmigiano, TH Nguyen, J Luo, JJ Nassi, JH Reynolds, MH Histed, KD Miller and N Brunel (2023), Mechanisms underlying reshuffling of visual responses by optogenetic stimulation in mice and monkeys, **Neuron**, in press (biorxiv 2022.07.13.499597)
89. L Bachschmid Romano, N Hatsopoulos and N Brunel (2023) Interplay between external inputs and recurrent dynamics during movement preparation and execution in a network model of motor cortex, **eLife**, 12:e77690 (biorxiv 2022.02.19.481140)
88. S Goldt, F Krzakala, L Zdeborova and N Brunel (2023), Bayesian reconstruction of memories stored in neural networks from their connectivity, **PLOS Comp Biol**, 19:e1010813 (arxiv:2105.07416)
87. U Pereira, Y Aljadeff and N Brunel (2023) Forgetting leads to chaos in attractor networks, **PRX**, 13:011009 (arxiv:2112.00119)
86. M de Pittà and N Brunel (2022), Multiple forms of working memory emerge from synapse-astrocyte interactions, **PNAS**, 119:e2207912119 (biorxiv 2021.03.25.436819v1)
85. A Abed Zadeh, B Turner, N Calakos and N Brunel (2022) Non-monotonic effects of GABAergic synaptic inputs on neuronal firing, **PLOS Comp. Biol.**, 18:e1010226 (biorxiv 2021.12.07.471426v2)
84. Y Feng and N Brunel (2022) Storage capacity of networks with discrete synapses and sparsely encoded memories, **Phys. Rev. E**, 105:054408 (arxiv:2112.06711)
83. A Sanzeni, M Histed and N Brunel (2022), Emergence of irregular states in networks with conductance-based synapses, **Phys. Rev. X**, 12:011044 (biorxiv 2020.09.24.312579)
82. Y Inglebert, Y Aljadeff, N Brunel and D Debanne (2020), Altered spike timing-dependent plasticity rules in physiological calcium, **P. N. A. S.**, 117:33639-33648 (biorxiv 2020.03.16.993675)
81. M Gillett, U Pereira and N Brunel (2020), Characteristics of sequential activity in networks with temporally asymmetric Hebbian learning, **P. N. A. S.**, 117:29948-29958 (biorxiv 818773)
80. A Sanzeni, M Histed and N Brunel (2020), Response nonlinearities in networks of spiking neurons, **PLOS Comp. Biol.**, 16:e1008165 (biorxiv 856831)
79. A Sanzeni, B. Akitake, HC Goldbach, CE Leedy, N Brunel and M Histed (2020), Inhibition stabilization is a widespread property of cortical networks, **eLife**, 9:e54875 (biorxiv 656710)
78. TR Fore, N Taylor, N Brunel and C Hull (2020), Acetylcholine modulates cerebellar granule cell spiking by regulating the balance of synaptic excitation and inhibition, **J. Neurosci.**, 40:2882-2894 (biorxiv 760223)

77. U Pereira and N Brunel (2020), Unsupervised learning of persistent and sequential activity, **Frontiers in Comp. Neurosci.**, 13:97 (biorxiv 414813)

76. A Vaz, N Brunel and K Zaghloul (2019), Coupled ripple oscillations between the medial temporal lobe and neocortex retrieve human memory, **Science**, 363:975-978

75. G Bouvier, J Aljadeff, C Clopath, C Bimbard, JP Nadal, N Brunel, V Hakim and B Barbour (2018), Cerebellar learning using perturbations, **eLife**, 7:e31599 (biorxiv 053785)

74. D Marti, N Brunel and S Ostojic (2018), Correlations between synapses in pairs of neurons slow down dynamics in randomly connected neural networks, **Phys. Rev. E**, 97:062314 (arxiv:1707.08337)

73. U Pereira and N Brunel (2018), Attractor dynamics in networks with learning rules inferred from in vivo data, **Neuron**, 99:227-238 (biorxiv 199521)

72. E Tartaglia, N Brunel (2017), Bistability and up/down state alternations in inhibition-dominated randomly connected networks of LIF neurons, **Sci. Rep.**, 7:11916

71. V Zampini, JK Liu, MA Diana, P Maldonado, N Brunel and S Dieudonné (2016), Mechanisms and functional roles of glutamatergic synapse diversity in a cerebellar circuit, **eLife**, 5:e15872

70. M De Pittà, N Brunel (2016), Modulation of synaptic plasticity by glutamatergic gliotransmission: A modeling study, **Neural Plast.** 2016:7607924

69. N Brunel (2016), Is cortical connectivity optimized for storing information?, **Nature Neurosci.**, 19:749-755

68. G Bouvier, D Higgins, M Spolidoro, D Carrel, B Mathieu, C Léna, S Dieudonné, B Barbour, N Brunel and M Casado (2016), Burst-dependent bidirectional plasticity in the cerebellum is driven by presynaptic NMDA receptors, **Cell Reports**, 15:104-116

67. A Dubreuil, N Brunel (2016), Storing structured sparse memories in a multi-modular cortical network model, **J. Comp. Neurosci.**, 40:157-175

66. S Lim, J McKee, L Woloszyn, Y Amit, D Freedman, D Sheinberg and N Brunel (2015), Inferring learning rules from distribution of firing rates in cortical neurons, **Nature Neurosci.**, 18:1804-1810

65. A Alemi, C Baldassi, N Brunel and R Zecchina (2015), A Three-Threshold Learning Rule Approaches the Maximal Capacity of Recurrent Neural Networks, **PLOS Comp. Biol.**, 11:e1004439

64. S Ostojic, G Szapiro, E Schwartz, B Barbour, N Brunel and V Hakim (2015), Neuronal morphology generates high-frequency firing resonance, **J. Neurosci.**, 35:7056-7068

63. E Tartaglia, N Brunel and G Mongillo (2015), Modulation of Network Excitability by Persistent Activity: How Working Memory Affects the Response to Incoming Stimuli, **PLOS Comp. Biol.**, 11:e1004059

62. F Barbieri, A Mazzoni, NK Logothetis, S Panzeri and N Brunel (2014), Stimulus dependence of local field potential spectra: experiment vs theory, **J Neurosci**, 34:14589-14605

61. D Higgins, M Graupner and N Brunel (2014), Memory maintenance in synapses with calcium-based plasticity in the presence of background activity, **PLOS Comp. Biol.**, 10:e1003834

60. L Hertaeg, D Durstewitz and N Brunel (2014), Analytical approximations of the firing rate of an adaptive exponential integrate-and-fire neuron in the presence of synaptic noise, **Frontiers Comp. Neurosci.**, 8:116

59. A Dubreuil, Y Amit and N Brunel (2014), Memory capacity of networks with stochastic binary synapses, **PLOS Comp. Biol.**, 10:e1003727

58. C Clopath, A Badura, CI De Zeeuw and N Brunel (2014), A cerebellar learning model of vestibulo-ocular reflex adaptation in wild-type and mutant mice, **J. Neurosci.**, 34:7203-7215

57. C Clopath and N Brunel (2013), Optimal properties of analog perceptrons with excitatory weights, **PLOS Comp. Biol.**, 9:e1002919

56. C Clopath, JP Nadal and N Brunel (2012), Storage of correlated patterns in standard and bistable Purkinje cell models, **PLOS Comp. Biol.**, 8:e1002448

55. M Graupner and N Brunel (2012), A calcium-based plasticity model explains sensitivity of synaptic changes to spike pattern, rate and dendritic location, **Proc Natl Acad Sci U S A.**, 109:3991-6

54. A Roxin, N Brunel, D Hansel, G Mongillo and C van Vreeswijk (2011) On the distribution of firing rates in networks of cortical neurons, **J. Neurosci.**, 31:16217-16226

53. E Ledoux and N Brunel (2011) Dynamics of networks of excitatory and inhibitory neurons in response to time-dependent inputs, **Frontiers Comp. Neurosci.**, 5:25

52. S Ostojic and N Brunel (2011) From spiking neuron models to linear-nonlinear models **PLOS Comp. Biol.**, 7:e1001056

51. K Hamaguchi, A Riehle and N Brunel (2011) Estimating Network Parameters from Combined Dynamics of Firing Rate and Irregularity of Single Neurons, **J. Neurophysiol.**, 105:487-500

50. A Mazzoni, K Whittingstall, N Brunel, NK Logothetis, S Panzeri (2010) Understanding the relationships between spike rate and delta/gamma frequency bands of LFPs and EEGs using a local cortical network model, **Neuroimage**, 52:956-972

49. N Brunel, F Lavigne (2009) Semantic priming in a cortical network model, **J. Cog. Neurosci.**, 21:2300-2319

48. S Ostojic, N Brunel and V Hakim (2009), How connectivity, background activity, and synaptic properties shape the cross-correlation between spike trains, **J. Neurosci.**, 29:10234-10253

47. S Ostojic, N Brunel and V Hakim (2009), Synchronization properties of networks of electrically coupled neurons in the presence of noise and heterogeneities, **J. Comp. Neurosci.**, 26:369-392

46. R Zillmer, N Brunel and D Hansel (2009) Very long transients, irregular firing and chaotic dynamics in networks of randomly connected inhibitory integrate-and-fire neurons, **Phys. Rev. E**, 79:031909

45. G Dugué, N Brunel, V Hakim, E Schwartz, M Chat, M Lévesque, R. Courtemanche and S Dieudonné (2009), Electrical coupling mediates tunable low-frequency oscillations and resonance in the cerebellar Golgi cell network, **Neuron**, 61:126-139

44. A Mazzoni, S Panzeri, N Logothetis, N Brunel (2008) Encoding of Naturalistic Stimuli by Local Field Potential Spectra in Networks of Excitatory and Inhibitory Neurons, **PLOS Comp. Biol.**, 4:e1000239

43. A Roxin, V Hakim and N Brunel (2008), The statistics of repeating patterns of cortical activity can be reproduced by a model network of stochastic binary neurons, **J. Neurosci.**, 28:10734-10745

42. C de Solages, G Szapiro, N Brunel, V Hakim, P Isope, P Buisseret, C Rousseau, B Barbour, C Léna (2008), High-frequency organization and synchrony of activity in the Purkinje cell layer of the cerebellum, **Neuron**, 58:775-788

41. D Battaglia, N Brunel and D Hansel (2007), Temporal decorrelation of collective oscillations in neural networks with local inhibition and long-range excitation, **Phys. Rev. Lett.**, 99:238106

40. F Barbieri and N Brunel (2007), Irregular persistent activity induced by synaptic excitatory feedback, **Frontiers in Computational Neuroscience**, 1:5

39. M Graupner and N Brunel (2007), STDP in a bistable synapse model based on CaMKII and associated signaling pathways, **PLOS Comp. Biol.**, 3:2299-2323

38. C Baldassi, A Braunstein, N Brunel and R Zecchina (2007), Efficient supervised learning in networks with binary synapses, **PNAS**, 104:11079-11084

37. N Brunel and D Hansel (2006), How noise affects the synchronization properties of recurrent networks of inhibitory neurons, **Neural Comp.**, 18:1066-1110

36. C Geisler, N Brunel and XJ Wang (2005), The contribution of intrinsic membrane dynamics to fast network oscillations with irregular neuronal discharges, **J. Neurophysiol.**, 94:4344-4361

35. A Roxin, N Brunel and D Hansel (2005), The role of delays in shaping the spatio-temporal dynamics of neuronal activity in large networks, **Phys. Rev. Lett.**, 94:238103

34. N Fourcaud-Trocmé and N Brunel (2005) Dynamics of the instantaneous firing rate in response to changes in input statistics, **J. Comp. Neurosci.**, 18:311-321, special issue 'Beyond the threshold', E Izhikevich, B Gutkin and GB Ermentrout Eds.

33. C Boucheny, N Brunel and A Arleo (2005), A continuous attractor network model without recurrent excitation: maintenance and integration in the head direction cell system, **J. Comp. Neurosci.**, 18:205-227

32. N Brunel, V Hakim, P Isope, JP Nadal and B Barbour (2004), Optimal information storage and the distribution of synaptic weights: Perceptron vs. Purkinje cell, **Neuron**, 43:745-757

31. N Fourcaud-Trocmé, D Hansel, C van Vreeswijk and N Brunel (2003), How spike generation mechanisms determine the neuronal response to fluctuating inputs, **J. Neurosci.**, 23:11628-11640

30. G Mongillo, DJ Amit and N Brunel (2003), Retrospective and prospective persistent activity induced by Hebbian learning in a recurrent cortical network, **Eur. J. Neurosci.**, 17:2011-2024

29. N Brunel and P Latham (2003), Firing rate of noisy quadratic integrate-and-fire neurons, **Neural Comp.**, 15:2281-2306

28. N Brunel, V Hakim and M Richardson (2003), Firing rate resonance in a generalized integrate-and-fire neuron with subthreshold resonance, **Phys. Rev. E**, 67:051916

27. N Brunel and X-J Wang (2003), What determines the frequency of fast network oscillations with irregular neural discharges?, **J. Neurophysiol.**, 90:415-430

26. M Richardson, N Brunel and V Hakim (2003), From subthreshold to firing-rate resonance, **J. Neurophysiol.**, 89:2538-2554

25. N Fourcaud and N Brunel (2002), Dynamics of the firing probability of noisy integrate-and-fire neurons, **Neural Comp.**, 14:2057-2110

24. N Brunel and XJ Wang (2001), Effects of neuromodulation in a cortical network model of object working memory dominated by recurrent inhibition, **J. Comp. Neurosci.**, 11:63-85

23. N Brunel, F Chance, N Fourcaud and L Abbott (2001), Effects of synaptic noise and filtering on the frequency response of spiking neurons, **Phys. Rev. Lett.**, 86:2186-2189

22. N Brunel (2000), Persistent activity and the single cell frequency-current curve in a cortical network model, **Network**, 11:261-280

21. A Compte, N Brunel, PS Goldman-Rakic and X-J Wang (2000), Synaptic mechanisms and network dynamics underlying spatial working memory in a cortical network model, **Cereb. Cortex**, 10:910-923

20. N Brunel (2000), Dynamics of sparsely connected networks of excitatory and inhibitory spiking neurons, **J. Comp. Neurosci** 8:183-208

19. N Brunel and V Hakim (1999), Fast global oscillations in networks of integrate-and-fire neurons with low firing rates, **Neural Comp.**, 11:1621-1671

18. N Brunel and O Trullier (1998) Plasticity of directional place fields in a model of rodent CA3, **Hippocampus**, 8:651-665

17. J-P Nadal, N Brunel and N Parga (1998), Nonlinear feedforward networks with stochastic outputs: infomax implies redundancy reduction, **Network**, 9:207-217

16. N Brunel, F Carusi and S Fusi (1998), Slow stochastic Hebbian learning of classes in recurrent neural networks, **Network**, 9:123-152

15. N Brunel and S Sergi (1998), Firing frequency of leaky integrate-and-fire neurons with synaptic currents dynamics, **J. Theo. Biol.**, 195:87-95

14. N Brunel and J-P Nadal (1998), Mutual information, Fisher information and population coding, **Neural Comp.**, 10:1731-1757

13. DJ Amit and N Brunel (1997), Dynamics of a recurrent network of spiking neurons before and following learning, **Network**, 8:373-404

12. N Brunel and J Ninio (1997), Time to detect a difference between two images presented side by side, **Cog. Brain Res.** 5:273-282

11. DJ Amit and N Brunel (1997), Model of global spontaneous activity and local structured activity during delay periods in the cerebral cortex, **Cereb. Cortex**, 7:237-252

10. N Brunel (1996), Hebbian learning of context in recurrent neural networks, **Neural Comp.**, 8:1677-1710

9. N Brunel and R Zecchina (1995), A simple geometrical bound for replica symmetry stability in neural networks models, **Modern Phys. Lett. A**, 9:1159-1164

8. DJ Amit and N Brunel (1995), Learning internal representations in an attractor neural network with analogue neurons, **Network**, 6:359-388

7. N Brunel (1994), Dynamics of an attractor neural network converting temporal into spatial correlations, **Network**, 5:449-470

6. DJ Amit, N Brunel and MV Tsodyks (1994), Correlations of cortical Hebbian reverberations: experiment versus theory, **J. Neurosci.**, 14:6435-6445.

5. N Brunel (1994), Storage capacity of neural networks: effect of the fluctuations of the number of active neurons per memory, **J. Phys. A: Math. Gen.**, 27:4783-4789

4. N Brunel and R Zecchina (1994), Response functions improving performance in attractor neural networks, **Phys. Rev. E**, 49:R1823-1826

3. N Brunel (1993), Effect of synapse dilution on the memory retrieval in structured attractor neural networks, **J.Physique I**, 3:1693-1715

2. DJ Amit and N Brunel (1993), Adequate input for learning in attractor neural networks, **Network**, 4:177-194

1. N Brunel, J-P Nadal and G Toulouse (1992), Information capacity of perceptrons, **J. Phys. A: Math. Gen.**, 25:5017-5037

Review and perspective articles in journals

R17. Y Aljadeff, M Gillett, U Pereira and N Brunel (2021), From synapse to network: models of information storage and retrieval in neural circuits **Current Opinion in Neurobiology**, 70:24-33

R16. H Titley, N Brunel and C Hansel (2017), Toward a Neurocentric View of Learning, **Neuron**, 95:19-32

R15. M De Pittà, N Brunel and A Volterra (2016), Astrocytes: Orchestrating synaptic plasticity? **Neuroscience**, 323:43-61

R14. E Tartaglia, G Mongillo and N Brunel (2015) On the relationship between persistent delay activity, repetition enhancement and priming, **Frontiers Psychol.**, 5:1590

R13. N Brunel, V Hakim and MJ Richardson (2014) Single neuron dynamics and computation, **Curr Opin Neurobiol.**, 25:149-155

R12. A Mazzoni, N Brunel, S Cavallari, NK Logothetis and S Panzeri (2011) Cortical dynamics during naturalistic sensory stimulations: Experiments and models, **J Physiol Paris**, 105:2-15

R11. M Graupner and N Brunel (2010) Mechanisms of induction and maintenance of spike-timing dependent plasticity in biophysical synapse models, **Front Comp Neuroci**, 4:136

R10. S Panzeri, N Brunel, NK Logothetis and C Kayser (2010) Sensory neural codes using multiplexed temporal scales, **Trends Neurosci.** 33:111-120

R9. F Barbieri and N Brunel (2008), Can attractor network models account for the statistics of firing during persistent activity in prefrontal cortex? **Front Neurosci.** 2:114-122

R8. N Brunel and V Hakim (2008) Sparsely synchronized neuronal oscillations, **Chaos** 18:015113, special issue on Mixed Mode Oscillations: Experiment, Computation, and Analysis, M Brons, H Rotstein and T Kaper Eds.

R7. N Brunel (2008), Daniel Amit (1938-2007). Network. 19:3-8.

R6. B Barbour, N Brunel, V Hakim and JP Nadal (2007), What can we learn from synaptic weight distributions?, **Trends Neurosci.**, 30:622-629

R5. N Brunel and MC van Rossum (2007), Lapicque's 1907 paper: from frogs to integrate-and-fire. Biol Cybern. 97:337-339

R4. N Brunel (2003) Dynamics and plasticity of stimulus-selective persistent activity in cortical network models, **Cereb. Cortex** 13:1151-1161, special issue on persistent activity

R3. N Brunel (2000), Dynamics of networks of randomly connected excitatory and inhibitory spiking neurons, **J. Physiol. (Paris)**, 94:445-463 special issue on aspects of neuronal dynamics

R2. N Brunel and J-P Nadal (1997), Modeling memory: what do we learn from attractor neural networks?, **C.R.Acad.Sci Paris, Life Sciences**, 321:249-252 (Proceedings of Symposium: Memory, from neuron to cognition, Paris, 1997)

R1. N Brunel, Y Frégnac, C Meunier and JP Nadal (2003), Neuroscience and computation. **J Physiol Paris**, 97:387-90.

Book chapters

BC11. N Brunel, R Monasson and H Sompolinsky (2023), Statistical Physics and Neuroscience, in **Spin Glass Theory and Far Beyond: Replica Symmetry Breaking After 40 Years**, P. Charbonneau, E. Marinari, M. Mézard, G. Parisi, F. Ricci-Tersenghi, G. Sicuro and F. Zamponi (Eds.), Singapore: World Scientific

BC10. M Graupner and N Brunel (2019), Modeling synaptic plasticity in hippocampus: a calcium-based approach, in **Hippocampal Microcircuits**, V. Cutsuridis, B. P. Graham, S. Cobb and R. Vida eds., Springer

BC9. N Brunel (2016), Basic neuron and network models, in **From Neuron to Cognition via Computational Neuroscience**, M. A. Arbib and J. J. Bonaiuto eds, MIT press

BC8. N Brunel and V Hakim (2015), Population density model, in **Encyclopedia of Computational Neuroscience**, 2447-2465

BC7. N Brunel and V Hakim (2015), Fokker-Planck Equation, in **Encyclopedia of Computational Neuroscience**, 1222-1226

BC6. N Brunel (2013), Dynamics of neural networks, **Principles of Neural Coding**, S. Panzeri and R. Quiroga eds., CRC Press

BC5. N Brunel (2010), Modeling point neurons: from Hodgkin-Huxley to Integrate-and-Fire, in **Computational modeling methods for neuroscientists**, E. De Schutter ed., MIT press.

BC4. N Brunel and V Hakim (2009), Neuronal network dynamics, in **Encyclopedia of Complexity and System Science**, R. A. Meyers ed., Springer.

BC3. N Brunel (2004) Network models of memory, in **Methods and models in neurophysics**, C. Chow, B. Gutkin, D. Hansel, C. Meunier and J. Dalibard Eds., Elsevier.

BC2. N Brunel and R. Muller (2004) Directional responses in place cells, in **Head direction cells and the neural mechanisms underlying directional orientation**, S. Wiener and J. Taube eds., MIT press

BC1. A Renart, N Brunel and XJ Wang (2003) Mean field theory of irregularly spiking neuronal populations and working memory in recurrent cortical networks. in **Computational Neuroscience: A Comprehensive Approach**, J. Feng Ed., CRC Press, Boca Raton.

Refereed conference proceedings

C8. A Roxin, N Brunel and D Hansel (2006), Rate models with delays and the dynamics of large networks of spiking neurons, **Progress of Theoretical Physics** SUPPLEMENT (161): 68-85 2006 (Proceedings of OCNN2004)

C7. N Brunel (2000), Phase diagrams of sparsely connected networks of excitatory and inhibitory spiking neurons, **Neurocomputing**, 32-33:307-312 (Proceedings of Computational Neuroscience 99 Conference, Pittsburgh, 1999)

C6. N Brunel (1997), Cross-correlations in sparsely connected recurrent networks of spiking neurons, **Proceedings of ICANN'97**, Lausanne (Springer), 31-36

C5. N Brunel and J-P Nadal (1997), Optimal tuning curves for neurons spiking as a Poisson process in response to a scalar stimulus, **Proceedings of ESANN'97**, Bruges

C4. N Brunel (1995), Quantitative modeling of local Hebbian reverberations in primate cortex, **Int. J. of Neural Systems**, Supplementary Issue 13-17 (Proceedings of III workshop: Neural Networks, from Biology to High Energy Physics, Isola d'Elba, 1994)

C3. N Brunel and DJ Amit (1995), A learning attractor neural network, **Int. J. of Neural Systems**, Supplementary Issue 19-23 (Proceedings of III workshop: Neural Networks, from Biology to High Energy Physics, Isola d'Elba, 1994)

C2. N Brunel and R Zecchina (1994), Influence of response functions in analogue neural networks, **Proceedings of ICANN'94**, Sorrento (Springer), 413-416

C1. DJ Amit and N Brunel (1993), Adequate input for learning in attractor neural networks, **Proceedings of ICANN'93**, Amsterdam (Springer), 37-40

Book

B1. Selected papers of Daniel Amit, N. Brunel, P. del Giudice, S. Fusi, G. Parisi and M. Tsodyks eds, World Scientific (2013)

Invited talks

International conferences and schools

140. Methods in Computational Neuroscience summerschool, Woodshole (August 2023)
139. Annual conference of the Societa Italiana di Fisica Statistica, special day for Riccardo Zecchina 60th birthday (Parma, 22 June 2023)
138. Carl van Vreeswijk memorial conference, Jerusalem (4-8 June 2023)
137. Workshop on attractor dynamics, Cosyne, Mont Tremblant (13-14 March 2023)
136. Workshop on the theory of artificial and biological neural networks, Les Houches (20-24 Feb 2023)
135. 12th computational neuroscience winter school, Institute of Natural Sciences, Shanghai Jiao Tong University (online, 9-13 Jan 2023)
134. 'Computational aspects and modeling of biological information' conference (Milan, 12-14 Dec 2022)
133. EITN Fall school (Paris, Sept 2022)
132. Workshop on neuroscience and statistical physics, Trieste (online, 6-8 June, 2022)
131. Workshop on attractors and stationarities in brains (online, 18-21 April 2022)
130. Gordon Research Conference on 'Stochastic physics in biology', Ventura (10-15 Oct. 2021)
129. Baltic Nordic Neuroscience school (online, 21-25 Sept 2021)
128. EITN Fall school (online, 15-24 Sept 2021)
127. 'Non-linear Dynamics of Oscillatory Systems' conference (online, 19-22 Sept 2021)
126. Beg Rohu Summerschool on 'Statistical Mechanics and Emergent Phenomena in Biology' (30 May - 12 June 2021)
125. Neuromatch Academy Summerschool (online, July 2020)
124. 'Learning to learn' workshop, Cosyne, Breckenridge (3 March 2020)

123. 'Physics of Neural Networks' workshop, Simons Center for Geometry and Physics, Stony Brook (27-31 January 2020)
122. 'The operating regime of neural circuits as a determinant for computations' workshop, Janelia Farms (3-6 Nov 2019)
121. Bernstein Conference, Berlin (18-20 Sept 2019)
120. Workshop on 'Cortical computations via metastable activity', Bernstein Conference, Berlin (17-18 Sept 2019)
119. Summerschool in Computational Neuroscience, Venice (9-14 Sept 2019)
118. 'David Marr 50 years on' symposium, Cambridge (11 Sept 2019)
117. 'New perspectives in cortical dynamics' workshop, CNS, Barcelona (16-17 July 2019)
116. Advanced Methods in Theoretical Neuroscience workshop, Goettingen (10-12 July 2019)
115. ICMNS, Copenhagen (24-26 June 2019) (keynote speaker)
114. 'Rough Landscapes, from Physics to Algorithms', KITP, Santa Barbara (7-11 Jan 2019)
113. 'Recording, analyzing, manipulating, interpreting, and modeling whole brain activity', KITP, Santa Barbara (17-24 Sept 2018)
112. 'Statistical Physics and Machine Learning back together' summerschool/workshop, Cargese (20-31 August 2018) (keynote speaker)
111. 'Remembering Daniel Amit, and Beyond' symposium, Trieste (30 June 2018)
110. 'From synaptic structure to neuronal circuit dysfunction', Geneva (19 April 2018)
109. 'Neuroplasticity: From synapses to circuits' conference, Marseille (15-16 April 2018)
108. Complex Systems in Neuroscience Conference, Pittsburgh (8-10 March 2018)
107. ONR meeting on 'Mathematical Data Science', Duke (9-11 Oct 2017)
106. A*Midex CompNeuro Days, Marseille (12-13 July 2017)
105. ICMNS, Boulder, Colorado (31 May-2 June 2017)
104. Symposium on Mathematics of Memory, CRM, Barcelona (6-10 March 2017)
103. School on Mathematics of Memory, CRM, Barcelona (16-20 January 2017)
102. Workshop on 'Dynamical Systems and Data Analysis in Neuroscience: Bridging the Gap', MBI, Columbus (17-21 Oct 2016)
101. CNS 2016, Jeju, South Korea (2-7 July 2016) (keynote speaker)
100. Workshop 'Connecting Network Architecture and Network Computation', Banff (6-11 Dec 2015)
99. Conference on 'Statistical Physics Approaches to Networks Across Disciplines', London (20-23 Oct 2015)
98. MBL/University of Chicago Neuroscience Workshop, MBL, Woods Hole (14-16 Sept 2015)
97. Workshop on Stochastic Neural Dynamics, CNS 2015, Prague (22-23 July 2015)
96. Oscillations workshop, CNS 2015, Prague (22 July 2015)
95. SIAM Conference on Dynamical Systems, Minisymposium on 'Stochastic and Nonlinear Dynamics of Neuronal Networks' Snowbird (19 May 2015)
94. INCF Summerschool on 'Information Processing in Neural Systems: From Single Neurons to Large-Scale Models of Cognition', Osnabrück, Germany (2-10 May 2015)
93. Austin Conference on Learning and Memory, Austin (24-25 Apr 2015)

92. Havana's winter school on Statistical Physics Approaches to Systems Biology, Havana, Cuba (23 Feb-7 Mar 2015)
91. Workshop on 'The Brain: Criticality, Dynamics, Network and Function', Malibu (10-12 September 2014)
90. Bernstein Center for Computational Neuroscience retreat, Berlin (27-29 August 2014)
89. International Conference on Control of Self-Organizing Nonlinear Systems, Rostock (25-28 August 2014)
88. Tenth Conference on Dynamical Systems, Differential Equations and Applications, Madrid (7-11 July 2014)
87. Workshop on cerebellar modelling, CNS conference, Paris (17-18 July 2013)
86. Workshop on 'Advances in neural mass modelling', CNS conference, Paris (17 July 2013)
85. Workshop on 'Network neurosciences: linking brain structure and dynamics', CNS conference, Paris (17-18 July 2013)
84. Conference on 'Frontiers in Applied and Computational Mathematics' (FACM 2013), NJIT, Newark (31 May - 2 June 2013)
83. 'Cellular and subcellular' workshop, MBI, Columbus (8-12 Apr 2013)
82. Workshop on Rhythms and Oscillations, MBI, Columbus (18-22 Mar 2013)
81. FENS winter school on Brain Dynamics and Dynamics of Brain Diseases, Obergürgl (9-16 Dec 2012)
80. Cosyne, Salt Lake City (23-26 Feb 2012)
79. Journées de Physique Statistique, Paris (26-27 Jan 2012)
78. Bernstein Center for Computational Neuroscience Heidelberg-Mannheim meeting, Bronnbach Abbey (21-22 Nov 2011)
77. Conference on 'Dynamics of complex systems', Cergy, France (5-9 Sept 2011)
76. Workshop on "Neuronal response variability and cortical computation", Banbury Center, CSHL, USA (3-6 Apr 2011)
75. Symposium on Working Memory and Decision Making, Paris (8-9 March 2011)
74. Workshop on 'Statistical physics of complexity, optimization, and systems biology', Bardonecchia (14-18 Feb 2011)
73. CNRS-Max Planck conference on 'Dynamics and Information Processing in Neural Structures', Paris (9-10 Dec 2010)
72. Bernstein-Center Heidelberg-Mannheim Inauguration Meeting, Heidelberg (12-13 Oct 2010)
71. Neuronal Ensemble Recordings in Integrative Neuroscience, Paris (11-12 Oct 2010)
70. Future Challenges in Mathematical and Computational Neuroscience, Oxford (13-15 Sept 2010)
69. Sloan-Swartz 2010 Summer Meeting, Yale (28 June-1 July 2010)
68. Workshop on 'Dendrites, Neurones and Networks', Warwick (7-10 June 2010)
67. Frontiers in neuromorphic computing, Paris (3-4 June 2010)
66. Workshop on 'Statistical Physics of Complexity, Disordered systems and Biological information', Les Houches (7-12 March 2010)
65. Workshop on 'Stochastic Models in Neuroscience', Marseille (18-22 January 2010)
64. Complex Systems summerschool, Paris (3-8 August 2009)

63. Workshop on Structure and Dynamics of Networks, Blaubeuren, Germany (9-12 July 2009)
62. 'Complexity' workshop, Torino (22-25 June, 2009)
61. Mathematical Biology: Modelling and Differential Equations, CRM, Barcelona (22 May - 6 June 2009)
60. Localisation et spatialisation en biologie, Ile de Berder (29 March - 4 April 2009)
59. PENS-Hertie Winter School, "Structure and Function of Neural Circuits", Obergürgl (11-18 January 2009)
58. Integrated post-genomics, Lyon (20-21 November 2008)
57. Bernstein Symposium, Munich (8-10 October 2008)
56. Working Memory in Jerusalem (18-19 September 2008)
55. Workshop "From Perception to Action and Back", Jerusalem (17-21 February 2008)
54. Tauc conference, 'Complexity in Neural Network Dynamics', Gif (13-14 December 2007)
53. NeuroComp 2007, Paris (14-16 November 2007)
52. Workshop "Noise in Life: Stochastic Dynamics in the Neurosciences", Dresden (7-9 November 2007)
51. Workshop on Coherent Behavior in Neuronal Networks, Mallorca (17-20 October 2007)
50. International Conference on Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB), Vienna (21-25 July 2007)
49. Statistical Mechanics and Biological Information (Satellite Conference of STATPHYS 2007), Torino (16-18 July 2007)
48. Quantitative Neuron Modeling: Predicting every spike? workshop, EPFL, Lausanne (25-26 June 2007)
47. Brain Connectivity Workshop, Barcelona (28-29 May 2007)
46. Advanced Course on Complex Biological Networks, Evry (7-11 May 2007)
45. Second Latin-American School on Statistical Physics and Interdisciplinary Applications, Bento Goncalves, Brazil (4-14 Feb 2007)
44. Workshop on 'statistical physics and biological information', ISI, Torino (18-19 Dec 2006)
43. Workshop 'From Memory to Future', ISI, Torino (17-18 Nov 2006)
42. SFN minisymposium, Using Theory to Advance our Understanding in Neuroscience, Atlanta (14-18 Oct 2006)
41. Workshop on Multi-level Brain Modeling, Rancho Santa Fe (29 Sept- 1 Oct 2006)
40. Mathematical Neuroscience conference (NeuroMath06), Andorra (1-4 September 2006)
39. Meeting on Information Theory, Neurobiology and Cognition, MIS MPI, Leipzig, Germany (6-8 July 2006)
38. Dutch Endo-Neuro-Psycho Meeting. Doorwerth, Netherlands (6-9 June 2006)
37. Prefrontal cortex workshop, Cosyne, Salt Lake City (9-10 March 2006)
36. International symposium on computational neuroscience, RIKEN, Tokyo (1-4 February 2006)
35. Workshop on modeling the cerebellum, Anvers (5-6 December 2005)
34. Symposium on Theoretical Neuroscience, NYU (17-18 September 2005)
33. School 'Noise and robustness in regulatory networks', Coquelles (3-7 September 2005)
32. Arcachon Course on Computational Neuroscience (1-26 August 2005)

31. Dynamics Days, Berlin (25-28 July 2005)
30. Jacques-Monod conference 'Synaptic communication in neuronal networks: from molecules to neural code' Roscoff (13-17 July 2005)
29. Math and brain summerschool, Paris (13-24 June 2005)
28. Workshop on Computational Neuroscience, Barcelona (1-3 June 2005)
27. Computational Systems Biology course, Trieste (6-10 Dec 2004)
26. French-Israeli binational meeting, High Brain Functions: Multidisciplinary approach for distributed Neural Systems', Kibbutz Maa'le Hahamisha (15-18 Nov 2004)
25. Lectures in Complex Systems, Firenze (6-8 Oct 2004)
23. Course on computational neuroscience, Goettingen (22-26 Sept 2004)
22. Nordic Neuroinformatics Workshop, Oslo (17-19 Sept 2004)
21. Fundamental Aspects of Complexity, Trieste (6-10 Sept 2004)
20. Obidos Course on Computational Neuroscience. (22-29 August 2004)
19. Computational Neuroscience (CNS) conference, workshop on reduced models, Baltimore (18-22 July 2004)
18. Oscillations and Waves in Cells and Cell Networks, Cargèse (10-15 May 2004)
17. Workshop on Modeling Prefrontal Functions, Trieste (15-18 Oct 2003)
16. Methods and models in neurophysics, Les Houches summerschool (3 lectures) (28 July - 29 August 2003)
15. Computational Neuroscience (CNS) conference, mini-workshop 'Computational Models of Active Maintenance in Prefrontal Cortex', Alicante (4-9 July 2003)
14. SIAM conference, minisymposium on 'Computations and dynamics of neuronal networks, Snowbird (27-31 May 2003)
13. Latsis Symposium on Neural Coding and Modeling, Lausanne (17-19 Feb 2003)
12. Workshop on Oscillations and higher brain functions, Lyon (31 Jan 2003)
11. Workshop 'Systems level modeling', MBI, Ohio State University, Columbus (18-22 Nov 2002)
10. Workshop 'Neuronal dynamics', MBI, Ohio State University, Columbus (7-18 Oct 2002)
9. 'From cell morphogenesis to neural networks', Marseille (23-27 Sept 2002)
8. Conference on 'Brain Basis of Spatial Orientation', Fondation des Treilles (12-17 Sept 2002)
7. Workshop on Neural networks: from biophysics to behavior (ITP) (2 talks), UCSB (Sept-Oct 2001)
6. Computational Neuroscience (CNS) conference, mini-workshop 'Large scale models in Computational Neuroscience: methods and dynamical phenomena', Bruges (16-20 July 2000)
5. Workshop 'Selectivity in sensory and motor cortices', Paris (9-17 July 2000)
4. Workshop 'Aspects of neuronal dynamics', Delmenhorst (5-9 Apr 2000)
3. International Conference on Artificial Neural Networks (ICANN), Lausanne (8-10 Oct 1997).
2. III workshop on Neural Networks: From Biology to High Energy Physics, Elba, Italy (26-30 Sept 1994).
1. Workshop on brain dynamics — Fractals, chaos and neural networks in brain activity, Lisbonne (18-20 July 1994).

Other invited talks

Istituto della Sanità, Rome (11 May 2023)
Plenary Colloquium, Società Italiana di Fisica Statistica, Università di Roma La Sapienza (6 May 2023)
NIH (9 Nov 2022)
Bocconi University, Milan (11 Oct 2022)
Padova Neuroscience Center (16 June 2022)
BCNN, Munich (online, 25 April 2022)
University of Chicago (online, 1 Feb 2022)
WWTNS seminar (online, 19 Jan 2022)
Brandeis University (online, 3 Nov 2021)
Physics Department, Università La Sapienza, Rome (16 June 2021)
SISSA, Trieste (online, 17 May 2021)
Center for Theoretical Neuroscience, Columbia University (online, 11 Dec 2020)
Widely Applied Mathematics Seminar, Harvard University (online, 19 Nov 2020)
Center for Theoretical Neuroscience, Columbia University (24 May 2019)
Neuroscience seminar series, UT Austin (25 Feb 2019)
Laboratoire Jacques Louis Lions, Sorbonne Université, Paris (25 June 2018)
GNT, DEC, Ecole Normale Supérieure Paris, (21 June 2018)
Duke, Applied Math and Analysis seminar (28 March 2018)
Duke, Center for Nonlinear and Complex Systems (7 Nov 2017)
GNT, DEC, Ecole Normale Supérieure Paris (11 July 2017)
Harvard Center for Brain Science (10 May 2017)
Stanford Neurosciences Institute (17 Apr 2017)
Princeton Neuroscience Institute (15 Dec 2016)
Janelia Farms (13 June 2016)
NYU Swartz seminar, Center for Neural Science (20 May 2016)
Stony Brook, Neurobiology Department (19 May 2016)
Rockefeller University, Center for Studies in Physics and Biology (17 May 2016)
Physics Department, Duke University (12 Apr 2016)
Neurobiology Department, Duke University (11 Apr 2016)
Washington University at St Louis (7 Apr 2016)
Physics Department, Northwestern University (22 Jan 2016)
Physiology Department, Northwestern University (17 Nov 2015)
Department of Applied Math, Notre Dame University (10 Dec 2014)
Biology Department, ENS Paris (15 July 2014)
Janelia Farms (16 June 2014)
Center for Theoretical Neuroscience, Columbia University (2 May 2014)
University of Connecticut Storrs (10 Apr 2014)
University of Illinois at Chicago (23 Jan 2014)
CNBC, University of Pittsburgh (5 Dec 2013)
Gastby Unit, UCL, London (26 June 2013)
Department of Mathematics, University of Houston (26 Jan 2013)
Department of Neurobiology and Anatomy, University of Texas Medical School at Houston (25 Jan 2013)
Applied Math colloquium, Northwestern University, Chicago (19 Nov 2012)
Anatomy and Neurobiology Department Colloquium, Washington University, Saint Louis (6 Nov 2012)
Institut du Fer à Moulin, Paris (31 May 2012)

Colloquium of the Institute of Cognitive Science, Osnabrueck (2 May 2012)
Bernstein Lecture, Werner-Reichardt Centre for Integrative Neuroscience, Tubingen (18 Apr 2012)
Brain Institute, University of Utah, Salt Lake City (22 Feb 2012)
Colloque ANR STIC, Lyon (5 Jan 2012)
Laboratoire de Physique Statistique, Paris (7 Dec 2011)
Institut du Cerveau et de la Moelle, Paris (28 Nov 2011)
Department of Neurobiology, University of Chicago (25 Oct 2011)
Department of Statistics, University of Chicago (24 Oct 2011)
EPFL, Lausanne (13 Oct 2011)
Institut für Theoretische Physik, Universität Bremen (20 June 2011)
ETH, Zurich (25 March 2011)
EPFL, Lausanne (18 March 2011)
Netherlands Institute for Neuroscience, Amsterdam (11 Feb 2011)
Daniel Amit memorial lecture, ICNC, Hebrew University, Jerusalem (13 Jan 2011)
Journées de Neurosciences Paris5-Paris7, Paris (29-30 Nov 2010)
Groupe de Travail "Mathematiques et Neurosciences", IHP, Paris (4 Oct 2010)
Center for Theoretical Neuroscience, Columbia University (16 April 2010)
Département de mathématiques, Orsay (11 June 2009)
MPI, Tubingen (30 April 2009)
Gatsby Unit, UCL, London (4 Feb 2009)
MPI, Dresden (15 Dec 2008)
Institut des Systèmes Complexes, Paris (5 Dec 2008)
Département de physique, Orsay (15 May 2008)
Journée en l'hommage de Daniel Amit, IHP, Paris (6 février 2008)
SFP seminar, Toulouse (28 September 2007)
Colloque ACI neurosciences computationnelles et intégratives, Paris (11 June 2007)
Brain and Mind Institute, EPFL, Lausanne (1 Dec 2006)
Math Department, NJIT, Newark (3 Oct 2006)
LENA, Paris (22 May 2006)
Spring Research Seminar, University of Plymouth (13 April 2006)
Journée modélisation IHP, Paris (20 Jan 2006)
Gastby Unit, UCL, Londres (23 Nov 2005)
Math Department, NJIT, Newark (20 Sep 2005)
Center for Theoretical Neuroscience, Columbia, New York (19 Sep 2005)
Equipe Odyssee, ENS, Paris (28 June 2005)
Institut Pasteur, Paris (14 June 2005)
Atelier de Lerins (7 June 2005)
Universitat Pompeu Fabra, Barcelone (11 Nov 2004)
Colloquio Lagrange, Torino (25 Oct 2004)
INSA, Lyon (21 Oct 2004)
Journée Maths et Cerveau, Paris (18 June 2004)
Institute for Adaptive and Neural Computation, Edinburgh (15 June 2004)
LPTMS, Orsay (1 Apr 2004)
Collège de France, Paris (15 Mar 2004)
MANTRA - EPFL, Lausanne (30 Jan 2004)
Département de Neurosciences, Marseille (27 June 2003)
Gatsby Unit, UCL, Londres (14 May 2003)
King's College, Londres (13 May 2003)

Salpétrière, Paris (28 Feb 2003)
INI, ETH, Zurich (13 June 2002)
MAPLY, Lyon (12 juin 2001)
UNIC, Gif sur Yvette (30 Apr 2001)
MANTRA - EPFL, Lausanne (18 Jan 2001)
UNIC, Gif sur Yvette (24 Apr 2000)
Colloquio Dipartimento di Fisica, Università di Roma I (22 Mar 2000)
Physiology Department, Bern University (28 Feb 2000)
NPSM, Université Paris V (7 Feb 2000)
Collège de France, Paris (1 Feb 2000)
Neural Systems, Memory and Aging, Arizona University (Aug 1999)
Statistics Department, University of Chicago (Feb 1999)
Neurobiology Department, University of Chicago (Feb 1999)
EPFL, Lausanne (1998)
LPT, Orsay (1998)
Physiology Department, Lausanne (1997)
Dipartimento di Fisica, Università di Roma I (1997)
LPPA, Collège de France (1996)
Experimental Psychology, Oxford (1995)

Students and post-docs

PhD students

2000 - 2003	Nicolas Fourcaud. Current position: CNRS CR1 (tenured, Lyon)
2004 - 2008	Michael Graupner. Current position: CNRS CR1 (tenured, Université Paris Descartes)
2005 - 2008	Carlo Baldassi (PhD in Torino, cosupervised with Riccardo Zecchina). Current position: Assistant Professor (Università Bocconi, Milano)
2005 - 2008	Francesca Barbieri (PhD in Torino).
2008 - 2012	Erwan Ledoux. Current position: Industry (scientific software development)
2010 - 2014	David Higgins. Current position: Industry
2011 - 2014	Alexis Dubreuil. Current position: CNRS CR2 (Bordeaux)
2013 - 2018	Ulises Pereira. Current position: Scientist (Allen Institute)
2014 - 2020	Max Gillett. Current position: Industry (software development)
2017 - 2021	Alex Vaz. Current position: Neurosurgery resident (UPenn)
2017 - 2021	Achint Kumar (supervised by John Pearson at the end of his PhD)
2018 - 2023	Yu Feng. Current position: Industry (Quant developer, Two Sigma)
2021 -	Ziyi Gong

Visiting PhD students (1 month or more): Chiara Ghilardi (Firenze), Yoshimi Yoshino (Tokyo), Jorge Mejias (Granada), Loreen Hertaeg (Mannheim), Marina Vegué (Barcelona), Gianni Valerio Vinci (Rome), Yingming Pei (
Rotation PhD students (Chicago): Alex Lee, Chris Chen, Graham Smith, Krithika Mohan, Jeff Johnston, Hanyu Li, Minsu Yoo

Rotation PhD students (Duke): Pranjal Gupta, Trevor Alston, Andreas Seas, Michael Woldemichael, David St Amand
MS students (Paris): Elie Desmond, Romain Franconville, Gaia Tavoni; (Chicago): Ye Tian
Undergrads (Chicago): Arnaud Fanthomme (visiting student from ENS Paris); (Duke): Mingchen Yao, Angikar Ghosal, Chenyu Wang, Alex Romine, Stanley Park, Jack Farley

Post-docs

2003 - 2005	Alex Roxin. Current position: Group leader (tenured, CRM, UAB, Barcelona).
2006 - 2007	Ruediger Zillmer. Current position: Industry (Data scientist, Unilever R& D)
2006 - 2008	Kosuke Hamaguchi. Current position: Senior Lecturer (Kyoto University)
2006 - 2008	Srdjan Ostojic (cosupervised with Vincent Hakim). Current position: Professor (Ecole Normale Superieure, Paris).
2007 - 2009	Alberto Mazzoni (Torino). Current position: Assistant Professor (Scuola Sant'Anna, Florence)
2009 - 2011	Jian Liu. Current position: Lecturer (University of Leeds)
2009 - 2011	Claudia Clopath. Current position: Professor (Imperial College, London)
2010 - 2013	Francesca Barbieri.
2011 - 2015	Elisa Tartaglia. Current position: Industry (Essilor)
2011 - 2014	Martin Wiechert (Pasteur Institute, cosupervised with Pierre-Marie Lledo)
2012 - 2015	Sukbin Lim. Current position: Assistant Professor (NYU Shanghai)
2014 - 2016	Maurizio de Pittà. Current position: PI (Krembil Institute, Toronto, Canada)
2015 - 2018	Yonatan Aljadeff. Current position: Assistant Professor (UCSD)
2016 - 2021	Alessandro Sanzeni (at NIH, cosupervised with Mark Histed, until 2019). Current position: Assistant Professor (Bocconi University, Milan)
2018 - 2021	Stanislav Srednyak. Current position: Post-doc (Department of Physics, Duke University)
2018 - 2023	Ludovica Bachschmidt-Romano
2019 -	Aghil Abed Zadeh
2021 - 2022	Lukasz Kusmierz. Current position: Scientist (Allen Institute)

I was also involved in the supervision of Magnus Richardson (post-doc with Vincent Hakim, now researcher at Warwick University), Demian Battaglia (post-doc with David Hansel, now CNRS CR1 in Marseille) and Alireza Alemi (post-doc with Riccardo Zecchina, now project scientist at UC Davis).

PhD committee

Alfonso Renart, Madrid University (2000), reviewer.
Claire Wyart, Strasbourg University (2003)
Ruben Moreno, Madrid University (2005), reviewer.
Yasser Roudi, SISSA, Trieste (2005), reviewer.
Rudy Guyonneau, CERCO, Toulouse (2006), reviewer
Brice Bathellier, EPFL, Lausanne (2007), reviewer

Julien Lefevre, Paris Orsay University (2007)
Laurent Badel, EPFL, Lausanne (2008), reviewer
Cesare Magri, Universita di Milano (2009), reviewer
Jonatan Platkiewicz, Paris (2010)
Sami el Boustani, CNRS Gif (2010)
Richard Naud, EPFL, Lausanne (2011), reviewer
Eleonora Russo, SISSA, Trieste (2012), reviewer
Amit Miller, Hebrew University, Jerusalem (2012), reviewer
Cyrille Rossant, ENS, Paris (2012)
Mario di Poppa, ENS, Paris (2012)
Maurizio de Pitta, Tel Aviv University (2013), reviewer
Ashok Litwin-Kumar, Pittsburgh University (2013)
Jillian McKee, University of Chicago (2014)
Arup Sarma, University of Chicago (2015)
Moritz Augustin, Technical University Berlin (2017)
Jared Salisbury, University of Chicago (2018)
Joe Lombardo, University of Chicago (2018)
Jeff Walker, University of Chicago (2018)
Chris Chen, University of Chicago (2018)
Krithika Mohan, University of Chicago (2019)
Vaughn Spurrier, University of Chicago (2019)
Susana Contreras, Humboldt University, Berlin (2021)
Chiara Gastaldi, EPFL (2021)
Hanyu Li, University of Chicago (2021)
Gaetan Vignoud, Paris (2022)
Mohammad Asem Wardak, University of Sydney (2022)
Graham Smith, University of Chicago (2022)
Michael Young, Duke University (2022)
Achint Kumar, Duke University (2022)
Valentin Schmutz, EPFL, Lausanne (2022)
NaYoung Jun, Duke University (2022)
Clémentine Hatton, ENS, Paris (2022)
Alan Montarras, ENS, Paris (2022)
Simone Malerba, ENS, Paris (2022)
Natalie Schieferstein, Humboldt University, Berlin (2023)
Stuart Behling, Duke University (2023)
Jennifer Li, Duke University (2023)

Current PhD committee membership: Victoria Hall (Calakos lab), Wenxi Xiao (Wang lab)

Habilitation committee

Simona Cocco, LPSENS, Paris (2004)
Sophie Denève, DEC, ENS, Paris (2009), reviewer
Boris Gutkin, DEC, ENS, Paris (2009), reviewer
Romain Brette, DEC, ENS, Paris (2009), reviewer
Bruno Delord, ISIR, Paris (2010)
Benjamin Lindner, MPI Dresden (2010), reviewer

Christian Machens, DEC, ENS, Paris (2011), reviewer
Rava da Silveira, LPS, ENS, Paris (2017), reviewer

Teaching

2019-2023	Duke University, PHY 567 Theoretical Neuroscience
2018-2023	Duke University, NBI 735 Quantitative Approaches in Neurobiology
2018	Duke University, PHY 174 Frontiers of Biophysics
2013-2017	University of Chicago, two graduate courses on Theoretical Neuroscience/year
2009-2012	Ecole Polytechnique, one Computational Neuroscience lecture/year
2008-2012	BIP Master (Integrative Biology and Physiology), Université Pierre et Marie Curie, two lectures on the Computational Neuroscience of memory/year
2005-2012	Cogmaster (Cognitive Science Master), Ecole Normale Supérieure, one full Theoretical Neuroscience course/year
2004-2012	Biology Master, Ecole Normale Supérieure, one Computational Neuroscience lecture/year
2004-2005	Biology Master, Université Pierre et Marie Curie, one Computational Neuroscience lecture/year
1990-1992	Teaching Assistant in Physics, Department of Physics, Ecole Normale Supérieure.

Service

Organization of schools/workshops

- Intensive Research Program on the Mathematics of Memory, CRM, Bellaterra (16 Jan- 10 Mar 2017), with S. Romani and A. Roxin. Includes a school (Jan 16-20) and a symposium (March 6-10)
- Workshop on 'Connections and communication in the brain', Banbury Center (6-9 Apr 2014), with B. Pesaran
- Involved in the initial phase (before my move to Chicago) of the organization of the CNS 2013 conference in Paris, with A. Destexhe and B. Gutkin
- Workshop on Mathematical challenges in Neural Network Dynamics (MBI, OSU, Columbus, 1-5 Oct 2012), with J. Rinzel, E. Shea-Brown, S. Solla
- Semester on 'Theoretical, Mathematical and Computational Neuroscience' (CIRM, Marseille, Oct-Dec 2011) with P. Bressloff, P. Chaussat, O. Faugeras, W. Gerstner and V. Jirsa. During this semester, I co-organized two workshops:
  - Mean-field methods and multiscale analysis of neuronal populations (3-7 Oct 2011) with O. Faugeras.
  - Learning and plasticity (7-11 Nov 2011) with W. Gerstner, J. Sjöström and H. Markram.
- Symposium on 'Modeling plasticity mechanisms: from single neuron to population dynamics', Colloque de la Société des Neurosciences (Marseille, 24 May 2011). With A. Destexhe.

- Computational Neuroscience Day 7 on Synaptic plasticity: From receptors to networks, Paris (14 Dec 2009). With D. Hansel and D. Holcman.
- Minischool and Workshop on Multiple Time Scales in the Dynamics of the Nervous System (Trieste, 16-20 June 2008). With P. del Giudice, S. Franz, S. Fusi and R. Zecchina.
- Workshop Network synchronization: from dynamical systems to neuroscience (Leiden, 19-30 May 2008). With Francesco Battaglia, Massimo Cencini and Alessandro Torcini.
- NCCD workshop (Hossegor, 15-18 Sept 2007). With Peter Latham and Maneesh Sahani (UCL)
- EU-India-China triangular summerschool in Computational Neuroscience, (Torino, 24-30 June 2007). With Michele Leone (ISI).
- Computational Neuroscience Day 2 on Working memory, Paris (2 May 2007)
- Advanced Course in Computational Neuroscience, organized 4 consecutive years: in Arcachon (four weeks in August, 2006-2007) then Freiburg (four weeks in August, 2008-2009). With Ad Aertsen (Freiburg, -2006), Peter Dayan (UCL, -2007), Peter Latham (UCL, 2008-) Eli Nelken (Jerusalem, -2008), John Rinzel (NYU, 2007-), Yifat Prut (Jerusalem, 2009-).
- Workshop 'Stochastic dynamics of neurons and networks', (Computational Neuroscience Conference, Edinburgh 19 July 2006). With Paolo del Giudice (ISS, Rome).
- 'Neurosciences et Computation' program (IHP, Paris, 7 Jan - 12 Apr 2002). With Yves Frégnac (UNIC, Paris), Claude Meunier(Paris Descartes) and Jean-Pierre Nadal (LPS). Three workshops were organized
  - From synaptic to brain imaging (14-16 January 2002)
  - Homeostasis, plasticity and learning: from experiments to algorithms (4-6 March 2002)
  - Functional representations and dynamics of cell assemblies (8-10 April 2002)
- Workshop 'Theoretical issues in working memory' (Computational Neuroscience Conference, Bruges, 19 July 2000). With Boris Gutkin (UNIC, Gif).

Refereeing

- Funding organizations: (USA) NSF; (France) ANR, French Ministry of Research; (Germany) DFG; (Israel) ISF; (Switzerland) SNSF; (UK) Wellcome Trust; (International) EU, United States-Israel Binational Science Foundation, HFSP
- Vice-president of Neuroscience ANR (French National Research Agency) committee (2011)
- NSF panelist (2006, 2015, 2018)
- NIH panelist (2019, 2021, 2022, 2023)
- Member of AERES (French Research Evaluation Agency) committee (2008)
- Journals:
  - (multidisciplinary) eLife, Nature, Nature Communications, OpenBiology, PLOS One, PNAS, Science, Science Advances, Sci Reports;

  - (neuroscience) Cerebral Cortex, Current Opinion in Neurobiolgy, Eur. J. Neurosci, Hippocampus, J. Neurophysiol., J. Neurosci., J. Neurosci. Methods, J. Physiol. Paris, Learning and Memory, Nature Neurosci., Neuron, Neuroscience, Physiological Reviews, Trends in Neurosciences;
  - (computational/theoretical neuroscience) Biological Cybernetics, Frontiers in Computational Neuroscience, Int. J. of Neural Systems, J. Comp. Neurosci., Math. Neurosci. and Applications, Network, Neural Comp., Neural Networks, Neurocomputing;
  - (physics) Biophys. J., Chaos, Eur. Phys. Journal B, Europhys. Letters, J. Phys. A, J. Physique, Nature Physics, New Journal of Physics, Nonlinearity, Phys. Rev. E, Phys. Rev. Lett., Phys. Rev. Research, Phys. Rev. X;
  - (computational/theoretical biology) Biosystems, J. Math. Biol., J. Theor. Biol., PLOS Comp. Biol.;
  - (psychology) Psychological Review;
  - (applied mathematics) SIAM J. Applied Math., SIAM J. Applied Dynamical Systems;
  - (medicine) Anesthesiology;

- Conferences: Cosyne, CNS, NIPS, ICANN, IJCNN, Neurocomp.
- Handbook of Brain Theory and Neural Networks, Scholarpedia

Conference Program committees

2003 - 2006	Computational Neuroscience (CNS) Conference
2009 - 2010	Cosyne conference
2017 - 2018	International Conference of Mathematical Neuroscience
2018	Bernstein conference

Editorial boards

2010 -	JSTAT
2007 -	Frontiers in Computational Neuroscience
2006 -	Biological Cybernetics
2005 -	Journal of Computational Neuroscience
2005 - 2011	Network
2004 - 2006	Neurocomputing

Guest editor for PLOS Comp. Biol. since 2011.

Scientific advisory boards

2019 -	Centre de Recerca Matemàtica, Universitat Autònoma de Barcelona
2012 - 2013	European Advanced Course in Computational Neuroscience
2011 - 2015	EU Brainscales project
2011 - 2012	Bernstein Center Freiburg (BCF)
2010 - 2013	Bernstein Center for Computational Neuroscience (BCCN) Heidelberg-Mannheim

University of Chicago committees

2014 - 2016	Board of Computing Activities and Services
2013 - 2017	Computational Neuroscience Graduate Program Executive Committee
2014 - 2015	Neuroscience Institute Steering committee
2012 - 2015	Computational and Applied Mathematics Initiative search committee

Duke University committees

2021 - 2022	Duke Science and Technology Physics Committee
2018 -	Physics Computing Committee

Funding

France

- ACI Neurosciences intégratives et computationnelles (2001-2004) with Sid Wiener (College de France)
- ACI Neurosciences intégratives et computationnelles (2004-2007) with Boris Barbour and Vincent Hakim (ENS Paris)
- ACI Neurosciences intégratives et computationnelles (2004-2007) with Thérèse Jay (Université Paris Descartes) and Satoru Otani (UPMC)
- ANR Neurosciences (2005-2008) with Boris Barbour (ENS Paris)
- ANR Neurosciences (2005-2008) with Alexa Riehle (CNRS Marseille)
- ANR-BBSRC SysBio (2007-2010) with Stéphane Dieudonné (ENS Paris), David DiGregorio (Institut Pasteur), Angus Silver (UCL) and Troy Margrie (UCL)
- ANR Syscomm (2008-2011) with Boris Barbour, Vincent Hakim (ENS)
- Compagnia San Paolo (2010-2013) with Stefano Panzeri (Genova) and Nikos Logothetis (Tübingen)
- EU FET (2012-2015) with Stefano Panzeri (PI, Genova), Nikos Logothetis (Tübingen), Giacomo Indiveri (Zurich) and Vincent Torre (Trieste)

USA

- NSF-ANR CRCNS (2014-2017) with Boris Barbour (ENS Paris) and Dominique Debanne (CNRS Marseille)
- ONR (2016-2019) with Harel Shouval (Houston)
- NIH R01 Brain Initiative (2016-2019) with Harel Shouval (Houston)
- NIH R01 CRCNS (2017-2022) with Yali Amit and David Freedman (Chicago)
- NIH R01 Brain Initiative (2018-2023) with Nicho Hatsopoulos and Jason MacLean (Chicago)

- NIH R01 Brain Initiative (2018-2023) with Nicole Calakos, Mike Tadross and Henry Yin (Duke)
- NIH U01 Brain Initiative (2018-2021) with John Reynolds (Salk), Mark Histed (NIH), Ken Miller (Columbia)
- NIH R01 Brain Initiative (2019-2024) with Steve Lisberger, Court Hull (Duke), Javier Medina (Baylor)