Curriculum Vitae

Prof. Paul C. Bressloff
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Department of Mathematics
University of Utah
155 South 1400 East
Sat Lake City, UT 84112

Education

1988	Ph.D, Department of Mathematics, King's College, London University Title of thesis: *Quantum field theory of superstrings in the light-cone gauge*
1982	MA, First Class Honors, Physics, Oxford University.

Professional Experience

2009-2011	Professor of Applied Mathematics, University of Oxford
2005-	Adjunct Professor of Ophthalmology, University of Utah.
2001-	Professor of Mathematics, Department of Mathematics, University of Utah.
1997-2000	Professor of Applied Mathematics, Department of Mathematical Sciences, Loughborough University.
1996-1997	Reader in Applied Mathematics, Department of Mathematical Sciences, Loughborough University.
1993-1995	Lecturer in Applied Mathematics, Department of Mathematical Sciences, Loughborough University, UK
1988-1993	Research Scientist, GEC-Marconi Ltd., Hirst Research Centre, London, UK

Additional Positions

2014-2017	International Visiting Chair, INRIA, Sophia-Antipolis
2011-	Visiting Professor, Mathematical Institute, University of Oxford
1999-2000	Visiting Professor, Department of Mathematics, University of Chicago

Awards

2017	Distinguished Scholarly and Creative Researcher Award, University of Utah
2016	Elected a Fellow of the Society for Industrial and Applied Mathematics
2012	Elected a Fellow of the Institute of Mathematics and its Applications
2009	Royal Society Wolfson Merit Award
2000	Elected a Fellow of the Institute of Physics.
1999	Royal Society Leverhulme Trust Research Professorship

Grants

2018-2022	NSF (CO-PI): *Functional properties and computational function of top-down feedback in early visual cortex* ($1.3 million)
2016-2020	NSF (PI): *Laminar Neural Field Models of Visual Cortex* ($400,000)
2014-2017	NSF (CO-PI): *Computation of visual context information in the primary visual cortex* ($600,000)
2012-2017	NSF-RTG grant (CO-PI): *Cross-disciplinary research training in mathematical biology* ($2,500,000).
2012-2015	NSF DMS (PI). *Stochastic Neural Field Theory*. ($350,000).
2010-2015	BBSRC LOLA (CO-PI). *Engineering Human Neural Networks* (£3,000,000).

2010-2011 John Fell Award (PI). *Mathematical Modelling of Protein Receptor Transport and its Role in Synaptic Plasticity*

2010-2012 OCCAM Research Grant (PI). *Mathematical modelling of mRNA transport and its role in learning and memory*

2008-2012 NSF DMS (PI). *Mathematical models of protein receptor trafficking in dendrites*. ($270,000).

2006 NSF DMS 0515725 (PI): *Gordon Research Conference on Theoretical Biology and Biomathematics* ($24,000)

2004-2009 NSF-RTG grant (CO-PI): *Cross-disciplinary research training in mathematical biology* ($2,500,000).

2005-2008 NSF DMS 0515725 (PI): *Neural oscillations and waves induced by local network inhomogeneities* ($232,122)

2002-2007 NSF-IGERT grant (CO-PI): *Cross-disciplinary research training in mathematical biology* ($2,942,000).

2002-2005 NSF DMS 0209824 (PI): *Spatio-temporal dynamics and multiple feature maps in primary visual cortex* ($109, 260).

1997-2001 EPSRC research grant in applied nonlinear mathematics (PI)*: Neuronal population dynamics: coordination of locomotion in a simple model vertebrate* (£118, 360).

1997 Royal Society travel grant

1997 EPSRC conference grant (£18,000).

1995-1998 EPSRC research grant in mathematical biology (PI): *Nonlinear dynamics of the pupil light reflex* (£30,000).

Postdocs

James Macluarin (2017-2018) [Assistant Professor, NJIT]
Sean Lawley (2014-2017) [Assistant Professor, University of Utah]
Victor Burlakov (2010-2012) [Senior Research Associate, Oxford]
Jay Newby (2010-2012)
Berton Earnshaw (2007-2009)
Lars Schwabe (2005-2006) [Assistant Professor, University of Rostock]
Stephen Coombes. (1996-1998). [Full Professor, University of Nottingham]

Ph.D students

Ryan Schumm (2nd year**)**
Hyunjoong Kim. Ph. D 2020. [Simon's Postdoc, UPenn]
Patrick Murphy. Ph. D 2020 [Postdoc, Rice University]
Bridget Fan. Ph. D 2019 [Postdoc: University of Houston].
Ethan Levien. Ph. D 2018 [Assistant Professor, Dartmouth]
Sam Carroll. Ph. D 2018
Heather Brooks. Ph. D 2018 [Assistant Professor, Harvey Mudd]
Barghav Karamched. Ph. D 2017 [Assistant Professor, Florida State University]
Bin Lin. Ph. D 2017 [Assistant Professor, Clarkson University]
Matthew Webber. Ph. D 2014. [Works in the City of London]
Yi Ming Lai. Ph. D 2013 [Research Associate, University of Nottingham]
Jay Newby. Ph. D 2010 [Assistant Professor, University of Alberta]
Zackary Kilpatrick. Ph. D 2010 [Assistant Professor, University of Colorado Boulder]
William Nesse Ph. D. (2008). [Associate Professor (Lecturer), University of Utah]
Berton Earnshaw. Ph. D 2007 [Software engineer, CEO]

Andrew Oster. Ph.D 2006 [Associate Professor, West Washington University]
Stefanos Folias. Ph.D 2005 [Associate Professor, University of Alaska]
Matthew James. Ph. D 2002
Barry de Souza. Ph. D 2000.
Peter N. Roper. Ph. D: 1998 [Software engineer].

Departmental and University Activities

• RTP committee (2020-2021)
• Chair of Career-line faculty retention and promotion committee (2019-2020)
• Faculty mentor of access students - provides the opportunity for female UGs to pursue a research project in a STEM subject
• Member of university search committee for a cluster hire (TEP) in biophysics (2016-2019)
• Chair of Applied Math Research Committee (2015,2016)
• Chair of Instructorship Committee (2014)
• Faculty member of the Mathematical Biology and Neuroscience Graduate Programs
• Designed and taught new undergraduate and graduate courses: mathematical neuroscience (2002), biophysics (2004, 2008), systems physiology (2005), statistical mechanics (2006,2011), symmetric bifurcation theory (2006), stochastic processes in biology (2008,2013,2016,2018) nonlinear waves (2016)
• Member of Graduate Committee for redesigning core graduate courses (2013)
• Member/Chair Departmental Hiring Committee (2001-2004, 2007, 2017)
• Member of Graduate Committee (2006)
• Member of Postdoc Hiring Committee (2012)
• Academic Senate (2005-2008)
• College of Science "Frontiers of Sciences" Committee (2006, 2007)
• Member of thesis committees in bioengineering, biology and ophthalmology.
• Invited popular lecturer for the local business community (Science at Breakfast) and high-school students (College of Science Open Day).

Additional Professional Activities

Publications: 240 refereed journal articles, 4 books and 1 edited book.

Google Scholar: 10300 citations, h-index = 54

Professional memberships:
SIAM Dynamical Systems and Life Sciences Activity Groups, Institute for Applied Mathematics, American Physical Society

NSF Panel member: Mathematical Sciences, Integrative Biology and Neuroscience,

Editorial board member:
SIAM J. Appl. Math, Journal of Mathematical Biology, Journal of Mathematical Neuroscience Brain Multiphysics (new journal), Biological Cybernetics, IMA Journal of Mathematics in Medicine and Biology, Phys. Rev. E (2013-2018), European J. of Applied Mathematics (2011-2018)

Invited SIAM plenary speaker:
SIAM Life Sciences (2008),
SIAM Nonlinear Waves (2014)

MBI Scientific Advisory Board Member: (2011-2013)

Reviewer of Tenure and Full Professor Promotions:
University of California Davis, Iowa State University, University of Pittsburgh, Drexel University, Ohio State University, University of Minnesota, College of William and Mary, Georgia State, University of Chicago, Princeton, Courant, Tulane University, Harvard, UCLA…

Conference/workshop organization

Berkeley MSRI Workshop on Mathematical Neuroscience (2004)
Chair of Gordon Research Conference on Theoretical Biology and Biomathematics (2006).
Vision Workshop, Mathematical Biosciences Institute (2007)
OCCAM Conference: Mathematical Biology (2010)
OCCAM Workshop: Future Challenges in Mathematical Neuroscience (2010)
Mathematical Neuroscience , CIRM, Marseilles (2011)
Cellular and Subcellular Neuroscience workshop, MBI (2013)
BCMI Meeting in honor of Jack Cowan (2014)
SIAM Life Sciences (2014)
Axonal transport workshop, MBI (2014)
First International Conference in Mathematical Neuroscience, France (2015)

Selected invited colloquia and talks

• Mathematical Institute, Oxford University (1997).
• Centre for Nonlinear Dynamics and its Applications, University College London (1997).
• Department of Mathematics, University of Liverpool (1997).
• Conference on Applied Nonlinear Dynamics Near the Millennium, San Diego (1997).
• Conference on Neuronal Coding II, Versailles (1997).
• Department of Engineering Mathematics, Bristol University (1998).
• Department of Mathematics, St. Andrew's University (1998).
• Workshop on Bifurcation and Symmetry, University of Nottingham (Sept 1998).
• Centre for Nonlinear Dynamics and its Applications, University College London (Dec 1998).
• Department of Mathematics, University of Bristol (Feb 1999).
• Gatsby Neuroscience Institute, University College London (Feb 1999).
• Workshop on Symmetries and Spatiotemporal dynamics, University of Warwick (Feb 1999).
• Conference on Visual Cortex, Santa Fe Institute (April 1999).
• Stochastic dynamics and Chaos in the Lakes, Ambleside, U.K. (Aug 1999)
• University of Chicago: Lectures on spiking neurons (Dec 1999)
• Dynamics Days, Surrey (June 2000).
•Annual European Computational Neuroscience Summer School (2000-2002)
• Medical School of Universit'e Ren'e Descartes, Paris (July 2000)
• Summer School in Computational Neuroscience, Trieste (August 2000).
• American Association for the Advancement of Science. San Francisco (Feb 2001).
• University of California Davis (March 2001)
• SIAM Applied Nonlinear Dynamics minisymposium, Snowbird (May 2001).
• Colston Conference on Nonlinear Dynamics and Chaos: plenary speaker (June 2001).
• Summer School in Computational Neuroscience, Trieste (August 2001).
• University of Houston (Nov 2001).
• Workshop on Complex Neural Dynamics, University of Chicago (June 2002).
• Summer School in Computational Neuroscience, Obidos (August 2002).
• Mathematical Biosciences Institute, Ohio State University (Oct 2002)

• Smith-Kettlewell, San Francisco (Dec 2002)
• University of Montana (April 2003)
• UCSD (April 2003)
• Salk Institute, San Diego (April 2003)
• SIAM Dynamics minisymposium, Snowbird (May 2003).
• Workshop: Symmetry and Bifurcation in Biology (June 2003)
• Les Houches Summer School in Neurophysics (Aug 2003).
• Workshop on Neural Pattern Formation, Institute for Physics, UCSB (Oct 2003)
• Courant, NYU (Dec 2003)
• Mount Sinai (Dec 2003)
• University of Chicago (Feb 2004)
• Berkeley MSRI Workshop (co-organizer): Mathematical Neuroscience (Mar 2004)
• GRC on Theoretical Biology and Biomathematics: co-chair (June 2004)
• Conference "From Neurophysiology to Phenomenology: Mathematical Models of Visual Perception" Accademia delle Scienze of Bologna, Italy (July 2004)
• Workshop on Coupled Cells. (Houston Feb 2005)
• SIAM Dynamics minisymposium, Snowbird (May 2005).
• Park City Math Institute summer school in mathematical biology (June 2005).
• Conference on fluids and waves. University of Memphis: plenary (May 2006)
• GRC on Theoretical Biology and Biomathematics: Chair (June 2006)
• Mathematical Neuroscience, Andorra (Sep 2006)
• School on Neuromathematics of Vision, Scuola Normale Superiore, Pisa (Sep 2006)
• Mathematical Biosciences Institute: vision workshop chair (April 2007)
• University of British Columbia: Distinguished colloquium (Mar 2007)
• Society for Math Biology, San Jose (July 2007)
• Mathematical Neuroscience Conference, Montreal (Sep 2007)
• Rice University, Houston (Jan 2008)
• Conference on Mathematical Neuroscience, University of Edinburgh (Mar 2008)
• NJIT (May 2008)
• GRC on Theoretical Biology and Biomathematics: session chair (June 2008)
• Mathematics Institute, University of Oxford (July 2008)
• Humboldt University, Berlin (July 2008)
• SIAM Conferences on Life Sciences, Montreal: plenary speaker (Aug 2008)
• Mathematics Institute, University of Oxford (Dec 2008)
• Symposium on Computational Neuroscience, University of Warwick (Dec 2008)
• OCCAM Launch Event, University of Oxford (July 2009)
• Summer School in Computational Neuroscience, Freiburg (August 2009).
• CaBDYN Network Days Workshop, University of Oxford (Oct 2009)
• CaBDYN Seminar, University of Oxford (Nov 2009)
• Mathematical Biology Seminar, University of Oxford (Nov 2009)
• Mathematical Biology Seminar, University of Nottingham (Nov 2009)
• Gatsby Computational Neuroscience Unit Seminar UCL (Dec 2009)
• INRIA, Sophia-Anapolis (Jan 2010)
• Stochastic Neuroscience Conference, CIRM Marseilles (Jan 2010)
• Plenary speaker, SIAM 2010 student conference, University of Oxford (Feb 2010)
• Mathematical Neuroscience Conference, University of Warwick (Mar 2010)
• Mathematical Neuroscience Workshop, University of Edinburgh (April 2010)
• Mathematical Neuroscience Workshop, University of Warwick (June 2010)
• Conference in Honour of Olivier Faugeras' 60th, INRIA, Sophia-Anapolis (June 2010)
• Plenary speaker, Alumni Garden Party, Mathematical Institute Oxford (July 2010)
• Plenary Speaker, SIAM Nonlinear Waves and Coherent Structures (Aug 2010)

• Neural Fields Workshop, Reading University (Sept 2010)
• CRM, Barcelona (Oct 2010)
• Institut Henri Poincare (May 2011)
• SIAM Dynamics minisymposium, Snowbird (May 2011).
• University of Arizona (Feb 2012)
• Mathematical Neuroscience Workshop, COSYNE, Salt lake (Feb 2011)
• Lecture course on stochastic processes, University of Oxford (Mar 2012)
• MBI, Ohio State University (Apr 2012)
• Workshop on Stochastic Neuroscience, Ecole Normal, Paris (July 2012)
•Minisymposium, SIAM Life Sciences, San Diego (Aug 2012)
• Workshop I, Mathematical Neuroscience, MBI Ohio (Oct 2012)
• Colloquium Harvard University (Oct 2012)
• Chair of Workshop V on Mathematical Neuroscience, MBI (April 2013)
• University of Chicago (April 2013)
• Minisymposium. SIAM Dynamical Systems (May 2013)
• Workshop on Stochastic Processes in Biology. IMA Minnesota (May 2013)
• Conference on Random Search, Cargese (June 2013)
• Conference on Future Challenges in Applied Mathematics, Oxford (July 2013)
• Conference in honor of Bard Ermentrout, Pittsburgh (March 2014)
• Organizing Committee, Mathematical Neuroscience, BIRS, Banff (July 2014)
• Scientific Advisory Committee, SIAM Life Sciences (Aug 2014)
• Plenary speaker, SIAM Nonlinear Waves, Cambridge UK (Aug 2014)
• Organizer and speaker. Axonal Transport and Neuronal Mechanics, Mathematical Biosciences Institute, Ohio State, (November 2014)
• Co-founder and organizer. The First International Conference on Mathematical Neuroscience (ICMNS), Antibes, Juan-Les-Pins, France, (June 2015)
• Plenary speaker, Spatially Distributed Stochastic Dynamical Systems in Biology Isaac Newton Institute, Cambridge, UK, (June 2016)
• Plenary speaker, The Third International Conference on Mathematical Neuroscience (ICMNS). Boulder (May 2017)
• Colloquium, University of Pennsylvania (Nov 2017)
• Seminar, University of North Carolina (February 2018)
• Seminar, Duke (February 2018)
• Plenary Speaker, Complex Systems in Neuroscience: Bridging Theory and Experiment, University of Pittsburgh (March 2018)
• Seminar, UCLA (May 2018)
• Colloquium, UCLA (October 2018)
• Distinguished colloquium, Georgia State (Nov 2018)
• Distinguished Colloquium, Notre Dame (March 2019)
• Colloquium, Rice University (April 2019)
• Seminar, University of Houston (April 2019)
• Virtual seminar, Universities of Liverpool and Manchester (October 2020)
• Invited virtual talk; Michael Ward's 6oth (May 2021)
• Invited virtual talk, 34th Shmolouchowski Symposium (September 2021)
• Invited virtual talk, Bernstein Computational Neuroscience Workshop (September 2021)
• Invited virtual talk, Cell biophysics, BIRS (October 2021)
• Plenary Speaker, Conference on MathBio. NJIT (2022):

List of Publications*

Professor Paul C. Bressloff
BSc (Oxford) Ph. D (London)

Books

1. **P. C. Bressloff**. *Stochastic Processes in Cell Biology (2nd edition).* Volumes I and II. Interdisciplinary Applied Mathematics, 1400 pp. (Springer, 2021)

2. **P. C. Bressloff**. *Stochastic Processes in Cell Biology.* Interdisciplinary Applied Mathematics 685 pp. (Springer, 2014)

3. **P. C. Bressloff**. *Waves in Neural Media: From Single Cells to Neural Fields*, 450 pp. (Springer, 2014).

4. S. Coombes and **P. C. Bressloff** (editors). *Bursting: The Genesis of Rhythm in the Nervous System*. World Scientific Press. (2005).

5. J. G. Taylor, **P. C. Bressloff** and A. Restuccia. *Finite superstrings.* (World Scientific, 1992).

Papers

1. **P. C. Bressloff.** Accumulation time of diffusion-mediated surface reactions. *J. Phys. A.* In preparation (2022)

2. R. Schumm and **P. C. Bressloff**. Two-dimensional diffusion–trapping model of synaptic receptor dynamics. *J. Math. Biol.* In preparation (2022).

3. R. Schumm and **P. C. Bressloff**. Local accumulation times in a diffusion–trapping model of synaptic receptor dynamics. *Interface.* In preparation (2022).

4. **P. C. Bressloff.** Threshold surface reactions and local time resetting. *J. Stat. Mech.* Submitted (2022)

5. **P. C. Bressloff.** Diffusion-mediated surface reactions and stochastic resetting. *J. Phys. A.* Submitted (2022)

6. **P. C. Bressloff** Diffusion-mediated surface reactions, Brownian functionals and the Feynman-Kac formula. *J. Phys. A.* Submitted (2022)

7. **P. C. Bressloff** Accumulation time of diffusion in a 3D singularly perturbed domain. *SIAM Appl. Math* Submitted (2022).

8. **P. C. Bressloff** The narrow capture problem: an encounter-based approach to partially reactive targets. *Phys. Rev. E.* In press (2022).

9. **P. C. Bressloff** Local accumulation time for diffusion in cells with gap junction coupling. *Phys. Rev. E.* In press (2022).

*Most papers can be downloaded from my homepage http://www.math.utah.edu/ bresslof/papers.html

10. **P. C. Bressloff** Accumulation time of diffusion in a 2D singularly perturbed domain. *Proc. Roy. Soc. A.* **478** 20210847 (2022).

11. **P. C. Bressloff** and R. Schumm. The narrow capture problem with partially absorbing targets and stochastic resetting *Multiscale Model. Simul.* Submitted (2022)

12. **P. C. Bressloff**. Queuing model of axonal transport. *Brain Multiphysics* **2** 100042 (2021)

13. R. Schumm and **P. C. Bressloff** Search processes with partially absorbing traps and stochastic resetting. *J. Phys. A* **54** 404004 (2021).

14. **P. C. Bressloff** Accumulation time of diffusion processes with stochastic resetting. *J. Phys. A* **54** 354001 (2021).

15. **P. C. Bressloff.** Drift-diffusion on a Cayley tree with stochastic resetting: the localization delocalization transition. *J.Stat. Mech.* **063206** (2021).

16. **P. C. Bressloff**. Construction of stochastic hybrid path integrals using operator methods. *J. Phys. A* **54** 185001 (2021).

17. **P. C. Bressloff**. Coherent spin states and stochastic hybrid path integrals. *J. Stat. Mech.* **043207** (2021)

18. **P. C. Bressloff**. Directed search-and-capture model of cytoneme-based morphogenesis. *SIAM J. App. Math.* In press (2021)

19. **P. C. Bressloff**. Asymptotic analysis of target fluxes in the three-dimensional narrow capture problem *Multiscale Model. Simul.* **19** 612-632 (2021).

20. **P. C. Bressloff**. Multi-spike solutions of a hybrid reaction-transport model. *Proc. Roy. Soc. A* **477** 20200829 (2021).

21. **P. C. Bressloff**. Asymptotic analysis of extended two-dimensional narrow capture problems. *Proc. Roy. Soc. A* **477** 20200771 (2021).

22. **P. C. Bressloff**. First-passage processes and the target-based accumulation of resources. *Phys. Rev. E* **103** 012101 (2021).

23. H. Kim and **P. C. Bressloff**. Stochastic Turing pattern formation in a model with active and passive transport. *Bull. Math. Biol.* **82** 144 (2020)

24. **P. C. Bressloff**. Occupation time of a run-and-tumble particle with resetting. *Phys. Rev. E* **102** 042135 (2020).

25. **P. C. Bressloff**. Target competition for resources under multiple search-and-capture events with stochastic resetting. *Proc. Roy. Soc. A* **476** 20200475 (2020).

26. **P. C. Bressloff**. Diffusive search for a stochastically-gated target with resetting. *J. Phys. A.* **53** 425001 (2020).

27. **P. C. Bressloff**. Queueing theory of search processes with stochastic resetting. *Phys. Rev. E* **102** 032109 (2020)

28. **P. C. Bressloff**. Stochastic resetting and the mean-field dynamics of focal adhesions. *Phys. Rev. E* **102** 022134 (2020)

29. **P. C. Bressloff**. Search processes with stochastic resetting and multiple targets. *Phys. Rev. E* **102** 022115 (2020)

30. **P. C. Bressloff**. Two-dimensional droplet ripening in a concentration gradient. *J. Phys. A.* **53** 365002 (2020).

31. **P. C. Bressloff**. Modeling active cellular transport as a directed search process with stochastic resetting and delays. *J. Phys. A.* **53** 355001 (2020)

32. **P. C. Bressloff**. Switching diffusions and stochastic resetting. *J. Phys. A.* **53** 275003 (2020)

33. **P. C. Bressloff**. Directed intermittent search with stochastic resetting. *J. Phys. A.* **53** 105001 (2020).

34. **P. C. Bressloff**. Stochastically-gated diffusion model of selective nuclear transport. *Phys. Rev. E.* **101** 042404 (2020).

35. **P. C. Bressloff**. Active suppression of Ostwald ripening: beyond mean field theory. *Phys. Rev. E* **101** 042804 (2020).

36. P. Murphy, **P. C. Bressloff** and S. D. Lawley. Interaction between switching diffusivities and cellular microstructure. *Multiscale Model. Simul.* **18** 572-588 (2020).

37. **P. C. Bressloff** and J. N. MacLaurin. Wandering bumps in a stochastic neural field: a variational approach. *Physica D.* **406** 132403 (2020).

38. **P. C. Bressloff**, S. D. Lawley and P. Murphy. Effective permeability of gap junctions with age-structured switching. *SIAM J. Appl. Math.* **80** 312-337 (2020).

39. **P. C. Bressloff** and J. N. Maclaurin. Phase reduction of stochastic biochemical oscillators. *SIAM J. Appl. Dyn. Syst.* **19** 151-180 (2020).

40. S. Carroll, H. Brooks and **P. C. Bressloff**. Pattern formation in a two-dimensional hybrid reaction-transport model. *Physica D* **402**132274 (2020).

41. G. Fan, G. Russo and **P. C. Bressloff**. Network synchronization with relative state dependent noise through a shared medium. *SIAM J. Appl. Dyn. Syst.* **18** 1934-1953 (2019).

42. H. Kim and **P. C. Bressloff**. Impulsive signaling model of cytoneme-based morphogen gradient formation. *Phys. Biol.* **16** 056005 (2019).

43. **P. C. Bressloff** and S. Carroll. Stochastic neural fields as gradient dynamical systems. *Phys. Rev. E.* **100** 012402 (2019).

44. **P. C. Bressloff**. Stochastic neural field theory of wandering bumps on a sphere. *Physica D.* **399** 138-152 (2019).

45. **P. C. Bressloff** and H. Kim. A search-and-capture model of cytoneme-mediated morphogen gradient formation. *Phys. Rev. E.* **99** 052401 (2019)

46. **P. C. Bressloff**, S. D. Lawley and P. Murphy. Protein concentration gradients and switching diffusions. *Phys. Rev. E.* **99** 032409 (2019).

47. **P. C. Bressloff**. Stochastic neural field model of stimulus-dependent neural variability. *PLoS Comp. Biol.* **15**(3): e1006755 (2019).

48. G. Fan and **P. C. Bressloff**. Modeling the role of feedback in the adaptive response of bacterial quorum sensing. *Bull. Math. Biol.* **81** 1479-1505 (2019).

49. E. Levien and **P. C. Bressloff**. Effects of a common noisy environment on correlations in downstream gene transcription. *Bull Math Biol.* **81** 800–829 (2019).

50. **P. C. Bressloff** and J. N. Maclaurin. On the synchronization of stochastic hybrid oscillators driven by a common switching environment. *Chaos* **I28** 123123 (2018).

51. **P. C. Bressloff** and J. Maclaurin. A variational method for analyzing limit cycle oscillations in stochastic hybrid systems *Chaos* **28** 063105 (2018).

52. **P. C. Bressloff** and J. Maclaurin. A variational method for analyzing stochastic limit cycle oscillators *SIAM J. Appl. Dyn. Syst.* **17** 2205-2233 (2018).

53. **P. C. Bressloff** and J. Maclaurin. Stochastic hybrid systems in cellular neuroscience. *J. Math. Neurosci.* **8** 12 (2018)

54. **P. C. Bressloff**, S. D. Lawley and P. Murphy. Diffusion in an age-structured randomly switching environment. *J. Phys. A* **51** 315001 (2018).

55. E. Levien and **P. C. Bressloff**. Robustness of stochastic chemical reaction networks to extrinsic noise: the role of deficiency. *Multiscale Model. Simul.* **16** 1519-1541 (2018).

56. H. Kim and **P. C. Bressloff**. Mathematical models of cytoneme-based morphogen gradient formation. *SIAM J. Appl. Math* **78** 2323-2347 (2018).

57. **P. C. Bressloff** and H. Kim. Bidirectional transport model of morphogen gradient formation via cytonemes. *Phys. Biol.* **15** 026010 (2018).

58. **P. C. Bressloff** and B. Karamched. Doubly stochastic Poisson model of flagellar length control. *SIAM J. Appl. Math.* **78** 719-741 (2018).

59. S. R. Carroll and **P. C. Bressloff**. Symmetric Bifurcations in a Neural Field Model for encoding the direction of spatial contrast gradients. *SIAM J. Appl. Dyn. Syst.* **17** 1-51 (2018).

60. E. Levien and **P. C. Bressloff**. On balance relations for irreversible chemical reaction networks. *J. Phys. A.* **50** 475004 (2017).

61. G. Fan and **P. C. Bressloff**. Population model of quorum sensing with multiple pathways. *Bull. Math. Biol.* **79** 2599-2626 (2017).

62. **P. C. Bressloff** and S. D. Lawley. Dynamically active compartments coupled by a stochastically-gated gap junction. *J. Nonlinear Sci.* **27** 1487-1512 (2017)

63. **P. C. Bressloff**, B. M. Karamched, S. D. Lawley and E. Levien. Diffusive transport in the presence of stochastically gated absorption. *Phys. Rev. E* **96** 022102 (2017).

64. H. A. Brooks and **P. C. Bressloff**. Turing mechanism for homeostatic control of synaptic density in *C elegans*. *Phys Rev. E* **96** 012413 (2017).

65. **P. C. Bressloff** and S. D. Lawley. Hybrid colored noise process with space-dependent switching rates. *Phys. Rev. E* **96** 012129 (2017)

66. E. Levien and **P. C. Bressloff**. Coupling sample paths to the partial thermodynamic limit in stochastic chemical reaction networks. *J. Comput. Phys.* **346** 1-13 (2017)

67. **P. C. Bressloff** and S. D. Lawley. Temporal disorder as a mechanism for spatially heterogeneous diffusion. *Phys. Rev. E* **95** 060101(R) (2017).

68. **P. C. Bressloff** and S. D. Lawley. Mean first passage times for piecewise deterministic Markov processes and the effects of critical points. *J. Stat. Mech.* 063202 (2017).

69. A. Angelucci, M. Bijanzadeh, L. Nurminen, F. Federer, S. Merlin and **P. C. Bressloff**. Circuits and mechanisms for surround modulation in visual cortex. *Ann. Rev. Neurosci.* **40** 425-451 (2017).

70. **P. C. Bressloff** and S. D. Lawley. Residence times for a Brownian particle with temporal heterogeneity. *J. Phys. A* **50** 195001 (2017).

71. **P. C. Bressloff** and O. Faugeras. On the Hamiltonian structure of large deviations in stochastic hybrid systems. *J. Stat. Mech.* 033206 (2017).

72. **P. C. Bressloff**. Feynman-Kac formula for stochastic hybrid systems. *Phys. Rev. E* **95** 012138 (2017).

73. **P. C. Bressloff**. Stochastically-gated local and occupation times of a Brownian particle. *Phys. Rev. E* **95** 012130 (2017).

74. **P. C. Bressloff**. Stochastic Liouville equation for particles driven by dichotomous environmental noise. *Phys. Rev. E* **95** 012124 (2017).

75. **P. C. Bressloff**. Stochastic switching in biology: from genotype to phenotype (Invited topical review) *J. Phys. A* **50** 055601 (2017)

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