**PHILIP JOHN HOLMES: Short Curriculum Vitae and Recent Publications** (updated 04/2017)

### Education

Oxford University; B.A. (Hons). Engineering Science: 1967.
Southampton University; Ph.D. Engineering: 1974.

### Academic Posts since 1984

Professor of Theoretical and Applied Mechanics and Mathematics, Cornell University: 1984-1994.
Sherman Fairchild Distinguished Scholar, California Institute of Technology: 1988-1989.
Professeur Associé, Université de Nice: July 1989.
Charles N. Mellowes Professor of Engineering and Professor of Mathematics, Cornell University: 1992-94
Professeur Associé, Université de Paris-Sud: June-July 1993.
Professor of Mechanics and Applied Mathematics, Princeton University: 1994–;
Associated Faculty in Department of Mathematics, 2002–.
Director, Program in Applied and Computational Mathematics, Princeton University: 1994–97, 2010-11.
Visiting Member, Institute for Advanced Study, Princeton: Spring 2003.
Interim Chair, Department of Mechanical and Aerospace Engineering, Princeton University, 2006–07.
Eugene Higgins Professor of Mechanical and Aerospace Engineering, Princeton University: 2008–15.
Associated Faculty Member, Princeton Neuroscience Institute: 2012–.
Eugene Higgins Professor of Mechanical and Aerospace Engineering Emeritus, and Senior Scholar, Princeton University: 2015– .

### Major Honors and Recent Invited Lectures

John Simon Guggenheim Memorial Fellow, 1993-4.
Elected Fellow of the American Academy of Arts and Sciences, 1994.
Erdős Visiting Professor, Paul Erdős Mathematical Center, Budapest, Hungary, January 2000.
Elected Honorary Member of the Hungarian Academy of Sciences, 2001.
Plenary Speaker, SIAM 50th Anniversary Meeting, Philadelphia PA, July 2002.
Plenary Speaker, International Symposium on Nonlinear Theory and its Applications (NOLTA2004), Fukuoka, Japan, December 2004.
Opening Plenary Speaker, Fifth EUROMECH Nonlinear Dynamics Conference (ENOC-2005), Eindhoven University of Technology, the Netherlands, August 2005.
Appointed to SIAM Visiting Lecturer Program, 2006.
Elected Fellow of the American Physical Society, 2006.
Lyapunov Award, American Society of Mechanical Engineers' Technical Committee on Multibody Systems and Nonlinear Dynamics, 2009.
Safra Distinguished Visiting Professor, Faculty of Mechanical Engineering, Technion, Israel, February-March 2009.
Plenary Speaker, 16th International Congress on Mathematical Physics, Prague, Czech Republic, August 3-8, 2009.
Opening Plenary Speaker, SIAM Conference on Life Sciences, Pittsburgh, PA, July 12-15, 2010.
Elected Fellow of the Society for Industrial and Applied Mathematics, 2011.
Invited speaker, International Congress on Industrial and Applied Mathematics, Vancouver, BC, July 18-22, 2011.
T.K. Caughey Award, American Society of Mechanical Engineers' Applied Mechanics Division, 2011.
Karl Menger Lecturer, Applied Mathematics Dept., Illinois Institute of Technology, Chicago, IL, April 23-24, 2012.
Elected Fellow of the American Mathematical Society (AMS), inaugural class of 2012.

AMS Leroy P. Steele Prize for Mathematical Exposition, awarded for *Nonlinear Oscillations, Dynamical Systems, and Bifurcations of Vector Fields*, joint with John Guckenheimer, 2013.
Commemorative Joseph Ford Lecture, Physics Dept., Georgia Tech, Atlanta, GA, March 11, 2013.
Hugh C. Morris Distinguished Lecture, Pacific Institute for the Mathematical Sciences, Vancouver, BC, Nov 1, 2013.
Awarded *Doctor Honoris Causa* by Budapest University of Technology and Economics, May 30, 2015.

**Theses Directed** (Ph.D., unless stated otherwise; *denotes co-advised with N.E. Leonard).

B.D. Greenspan (1981); J. Belair (1983); S.W. Shaw (1983); S.R. Wiggins (1985); N. MacGiolla Mhuiris (1986); K.G. Hockett (1986); J.J.P. Veerman (1986); A. Szeri (1988); E. Stone (1989); T. Kiemel (1990); V. Brunsden (MSc., 1990); O. O'Reilly (1990); C. Moore (1991); S.A. Campbell (1991); G. Berkooz (1991); P.J. Swart (1991); B. Zombro (1993); J. Duan (1993); W. Kalies (1994); H. Dankowicz (1995); B.D. Coller (1995); R.W. Ghrist (1995); D.A. Taylor (MSc., 1996); R.W. Wittenberg (1998); J.J. Jenkins (MSc., 1999); J.M. Schmitt (2001); J. Cisternas (2003); T.R. Smith (2003); E.T. Brown (2004); R.M. Ghigliazza (2004); J. Seipel (2006); J. Gao (2007); Y. Liu (2007); P. Eckhoff (2009); R. Kukillaya (2010); J. Proctor (2011); A. Nedic (2011); S. Feng (2012); S. Goldfarb* (2013); P. Reverdy* (2014).

**Current Graduate Student**

R. Pagliara Vasquez*.

**Postdoctoral Scholars**; *denotes co-mentored with N.E. Leonard.

D.C. Whitley (1982-83); I.M. Moroz (1983-84); D. Armbruster (1986-88); A. Mielke (1986-87); J. Elezgaray (1989-91); G. Domokos (1991-92); A. Doelman (1992-93); D. Begie (1993-95); J.N. Kutz (1995-97); R. Goodman (1999-2001); H. Hanßmann (2000-01); J. Moehlis (2000-03); R. Bogacz (2001-04); T. McMillen (2003-06); P. Simen (2004-11); A.J. Yu (2005-08); M. Srinivasan (2006-09); P. Varkonyi (2006-07); KF. Wong-Lin (2006-10); E. Fuchs (2008-15); F. Balci (2008-10); D. Tomlin (2008-12); M. Schwemmer (2010-12); S. Feng (2012-14); Z. Aminzare (2015–); V. Srivastava* (2015-16).

**Editorial Board Memberships**

Addison-Wesley, monographs on Global Analysis and Its Applications: 1981-1985. SIAM Journal on Applied Mathematics: 1984-1990. Archive for Rational Mechanics and Analysis: 1986–2003. Complex Systems: 1986-1988. Journal of Nonlinear Science: 1990–16; Managing Editor 2001–2005. Nonlinear Science Today: 1990–96. Proceedings of the Edinburgh Mathematical Society: 1991–96. Regular & Chaotic Dynamics: 1996–. Springer Verlag, Applied Mathematics Series and Texts in Applied Mathematics, 1997–; Co-Editor in Chief of 4 book series (AMS, TAM, IAM and STAMS), 2010–. Annual Reviews of Fluid Mechanics, guest editor, 1998. SIAM Journal on Applied Dynamical Systems, 2001–15. Applied Mathematics Research eXpress, 2001–11.

**Advisory Board Memberships**

Centre de Recherches Mathématiques, Université de Montréal: 1986-1991. S.E.R.C. Nonlinear Systems Panel (U.K.): 1986-1990. Theory Center, Cornell University: 1987-1989. L'Institut des Sciences Mathématiques, Montréal: 1991-96. US National Committee on Theoretical and Applied Mechanics: 1996–2000. AMS NSF Postdoctoral Fellowship Selection Committee: 1998–2000 (Chair, 1999). AMS/SIAM Wiener Prize Committee: 2003. SIAM Jürgen Moser Prize Selection Committee: 2006. Membership Panel, American Academy of Arts and Sciences: 1997-98 and 2004-7 (Chair, 2005-7). Centrum voor Wiskunde en Informatica, Amsterdam: Advisory Council, 2008-10. Pacific Institute for the Mathematical Sciences (PIMS) Scientific Review Panel, 2013-16. SIAM Fellows Selection Committee: 2013-15. AMS Joseph L. Doob Prize Committee: 2013-19. SIAM George Pólya Prize Committee: 2014-16.

**Professional Society Memberships**

American Mathematical Society (AMS representative to US National Committee on Theoretical and Applied Mechanics, 1996-2000); American Physical Society; International Society for the Interaction of Mechanics and Mathematics; Society for Industrial and Applied Mathematics (Council member, 1987-89, Chair of Dynamical Systems Activity Group, 2006-7, Major Awards Committee, 2008-10, Fellows Selection Committee 2013-16); Society for Natural Philosophy; Society for Neuroscience.

## SELECTED PUBLICATIONS

### (1) Recent archival articles (2009-2017)

[1.177] M. Zacksenhouse, R. Bogacz and P. Holmes (2010) *J. Math. Psychol. 54, 230-246.* Robust versus optimal strategies for two-alternative forced choice tasks. Online pub. 13 Jan 2010, doi: 10.1016/j.jmp.2009.12.004.

[1.179] R. Bogacz, P. Hu, P. Holmes and J.D. Cohen (2010) *Quart. J. Exp. Psych. 63 (5), 863-891.* Do humans produce the speed-accuracy tradeoff that maximizes reward rate? Online publ. Sept 10th, 2009, doi: 10.1080/17470210903091643.

[1.181] J. Gao, G. Schwartz, P. Holmes and M. Berry II (2009) *Network: Computation in Neural Systems 20 (2), 106-135.* An oscillatory circuit underlying the detection of disruptions in temporally-periodic patterns. doi:10.1080/09548980902991705

[1.185] J.Gao, K.F. Wong-Lin, P. Holmes, P. Simen and J.D. Cohen (2009) *Neural Comput. 21 (9), 2407-2436.* Sequential effects in two-choice reaction time tasks: Decomposition and synthesis of mechanisms.

[1.186] P. Eckhoff, K.F. Wong-Lin and P. Holmes (2009) *J. Neurosci. 29 (13), 4301-4311.* Optimality and robustness of a biophysical decision-making model under nonepinephrine modulation. doi:10.1523/JNEUROSCI.5024-08.2009

[1.188] R. Kukillaya and P. Holmes (2009) *J. Theor. Biol. 261 (2), 210-226.* A model for insect locomotion in the horizontal plane: Feedforward activation of fast muscles, stability, and robustness. Online pub 29 Aug 2009, doi: 10.1016/j.jtbi.2009.07.036.

[1.189] S. Feng, P. Holmes, A. Rorie and W.T. Newsome (2009) *PLoS Comput. Biol. 5 (2), e1000284.* Can monkeys choose optimally when faced with noisy stimuli and unequal rewards? doi:10.1371/journal.pcbi.1000284

[1.190] X. Zhou, K.F. Wong-Lin and P. Holmes (2009) *Neural Comput. 21 (8), 2336-2362.* Time-varying perturbations can distinguish among integrate-to-threshold models for perceptual decision making in reaction time tasks.

[1.191] R. Kukillaya, J. Proctor and P. Holmes (2009) *Chaos 19 (2), 026107.* Neuromechanical models for insect locomotion: Stability, maneuverability, and proprioceptive feedback. doi: 10.1063/1.3141306

[1.192] P. Eckhoff, K.F. Wong-Lin and P. Holmes (2011) *SIAM J. on Appl. Dyn. Systems 10 (1), 148-188.* Dimension reduction and dynamics of a spiking neuron model for decision making under neuromodulation. Online pub. 22 Feb 2011, doi: 10.1137/090770096.

[1.193] J. Proctor and P. Holmes (2010) *Biol. Cybern. 102, 513-531.* Reflexes and preflexes: On the role of sensory feedback on rhythmic patterns in legged locomotion. Online pub. 1 April 2010, doi: 10.1007/s00422-010-0383-9

[1.194] T. Broderick, K.F. Wong-Lin and P. Holmes (2010) *Applied Mathematics Research eXpress Vol 2009 (2), 123-141.* Closed-form approximations of first-passage distributions for a stochastic decision-making model. Online pub. 11 Feb 2010, doi: 10.1093/amrx/abp008.

[1.195] K.F. Wong-Lin, P. Eckhoff, P. Holmes and J.D. Cohen (2010) *Brain Research 1318, 178-187.* Optimal control of countermanding saccades. Online pub. 27 Jan 2010, doi: 10.1016/j.brainres.2009.12.018.

[1.196] F. Balci, P. Simen, R. Niyogi, A. Saxe, P. Holmes and J.D. Cohen (2011) *Attention, Perception & Psychophysics 73 (2), 640-657.* Acquisition of decision making criteria: Reward rate ultimately beats accuracy. Online pub. 19 Nov 2010, doi: 10.3758/s13414-010-0049-7.

[1.197] P. Simen, F. Balci, L. deSouza, J.D. Cohen and P. Holmes (2011) *J. Neurosci. 31 (25), 9238-9253.*

A model of interval timing by neural integration. Online pub. 22 June 2011, doi: 10.1523/JNEUROSCI.3121-10.2011

[1.198] D. Tomlin, A. Nedic, D.A. Prentice, P. Holmes and J.D. Cohen (2013) *PLoS ONE 8 (1), e52630.* The neural substrates of social influence on decision making. doi:10.1371/journal.pone.0052630

[1.199] J. Proctor, R.P. Kukillaya and P. Holmes (2010) *Phil. Trans. Roy. Soc. Lond. A368, 5087-5104.* A phase-reduced neuro-mechanical model for insect locomotion: Feedforward stability and proprioceptive feedback. doi: 10.1098/rsta.2010.0134.

[1.200] A. Nedic, D. Tomlin, P. Holmes, D.A. Prentice and J.D. Cohen (2012) *Proc IEEE 100 (3), 713-733.* A decision task in a social context: Human experiments, models, and analyses of behavioral data. doi:10.1109/JPROC.2011.2166437

[1.201] E. Fuchs, P. Holmes, T. Kiemel and A. Ayali (2011) *Frontiers in Neural Circuits 4: 125.* Intersegmental coordination of cockroach locomotion: Adaptive control of centrally coupled pattern generator circuits. Online pub. 20 Jan 2011, doi: 10.3389/fncir.2010.00125.

[1.202] E.D. Tytell, P. Holmes and A.H. Cohen (2011) *Current Opinion in Neurobiology 21 (5), 816-822.* Spikes alone do not behavior make: Why neuroscience needs biomechanics. Online pub 21 June 2011, doi: 10.1016/j.conb.2011.05.017.

[1.203] E. Shlizerman and P. Holmes (2012) *Neural Comput. 24 (8), 2078-2118.* Neural dynamics, bifurcations and firing rates in a quadratic integrate-and-fire model with a recovery variable. I: deterministic behavior.

[1.204] F. Balci, D. Freestone, P. Simen, L. deSouza, P. Holmes and J.D. Cohen (2011) *Frontiers in Integrative Neurosci. 5: 56.* Optimal temporal risk assessment. Online pub 27 Sept 2011, doi: 10.3389/fnint.2011.00056.

[1.205] P. Simen, F. Balci, L. deSouza, J.D. Cohen and P. Holmes (2011). *Frontiers in Integrative Neurosci. 5: 28.* Interval timing by long-range temporal integration. Online pub 1 July 2011, doi: 10.3389/fnint.2011.00028.

[1.206] M.K. van Vugt, P. Simen, L.E. Nystrom, P. Holmes and J.D. Cohen (2014) *PLoS ONE 9 (3), e90943.* Lateralized readiness potentials reveal properties of a neural mechanism for implementing a decision threshold. doi:10.1371/journal.pone.0090943

[1.207] E. Fuchs, P. Holmes, I. David and A. Ayali (2012) *J. Exp. Biol. 215, 1884-1891.* Proprioceptive feedback reinforces centrally-generated stepping patterns in the cockroach. doi:10.1242/jeb.112805

[1.208] S. Goldfarb, K.F. Wong-Lin, M. Schwemmer, N.E. Leonard and P. Holmes (2012) *Frontiers in Psychology 3: 213.* Can post-error dynamics explain sequential reaction time patterns? Online pub 16 July 2012, doi: 10.3389/fpsyg.2012.00213

[1.209] M.K. van Vugt, P. Simen, L. Nystrom, P. Holmes and J.D. Cohen (2012) *Frontiers in Neurosci. 6: 106.* EEG oscillations reveal neural correlates of evidence accumulation. Online pub 17 July 2012, doi: 10.3389/fnins.2012.00106

[1.210] P. Holmes and J.D. Cohen (2014) *Topics in Cog. Sci. 6 (2), 258-278.* Optimality and some of its discontents: Successes and shortcomings of existing models for binary decisions. Online pub 19 Mar 2014, doi: 10.1111/tops.12084

[1.211] P. Holmes (2014) *J. Nonlinear Sci. 24 (2), 201-242.* Some joys and trials of mathematical neuroscience (also *J. Nonlinear Sci. 24 (2), 243-244.* Erratum). Online pub 29 Nov 2013, doi: 10.1007/s00332-013-9191-4 & 12 Mar 2014, doi: 10.1007/s00332-014-9198-5

[1.212] J.I. Tam and P. Holmes (2014) *J. Sound Vib. 333 (6), 1767-1780.* Revisiting a magnetoelastic strange attractor. Online pub 9 Dec 2013, doi: 10.1016/j.jsv.2013.11.022 (also *J. Sound Vib. 367, 256.* Corrigendum. doi: 10.1016/j.jsv.2015.12.045)

[1.213] S. Goldfarb, P. Simen, N.E. Leonard and P. Holmes (2014) *Frontiers in Neurosci. 8: 148.* A comparative study of drift-diffusion and leaky ballistic accumulator models in a reward-maximization perceptual choice task. Online pub 5 Aug 2014, doi: 10.3389/fnins.2014.00148

[1.214] E. Couzin-Fuchs, T. Kiemel, O. Gal, P. Holmes and A. Ayali (2015) *J. Exp. Biol. 218, 285-297.* Intersegmental coupling and recovery from perturbations in freely-running cockroaches. doi: 10.1242/jeb.112805

[1.215] A. Ayali, E. Couzin-Fuchs, I. David, O. Gal, P. Holmes and D. Knebel (2014) *J. Comparative Physiol. A 201, 841-850.* Sensory feedback in cockroach locomotion: current knowledge and open questions. Online pub 2 Dec 2014, doi: 10.1007/s00359-014-0968-1

[1.216] M. Schwemmer, S. Feng, P. Holmes, J. Gottlieb and J.D. Cohen (2015) *PLoS ONE 10 (8), e0136097.* A multi-area stochastic model for a covert visual search task. Online pub 19 Aug 2015, doi: 10.137/journal.pone.0136097

[1.217] E. Couzin-Fuchs, O. Gal, P. Holmes and A. Ayali (2015) *J. Insect Physiol. 79, 96-104.* Differential control of temporal and spatial aspects of cockroach leg coordination. Online pub 20 June 2015, doi:10.1016/j.jinsphys.2015.06.007

[1.218] D.Y. Takahashi, A.R. Fenley, Y. Teramoto, D.Z. Narayanan, J.I. Borjon, P. Holmes and A.A. Ghazanfar (2015) *Science 349 (6249), 734-738.* The developmental dynamics of marmoset monkey vocal production. doi:10.1126/science.aab1058

[1.219] J.L. Proctor and P. Holmes (2017) *(In review.)* The effects of feedback on stability and maneuverability of a phase-reduced model for insect locomotion.

[1.220] A. Ayali, A. Borgmann, A. Büschges, E. Couzin-Fuchs, S. Daun-Gruhn and P. Holmes (2015) *Current Opinion in Insect Science 12, 1-10.* The comparative investigation of the stick insect and cockroach models in the study of insect locomotion. Online pub 20 Aug 2015, doi: 10.1016/j.cois.2015.07.004

[1.221] G. Domokos, P. Holmes and Z. Lángi (2016) *J. Nonlinear Sci. 26 (6), 1789-1815.* A genealogy of convex solids via local and global bifurcations of gradient vector fields. Online pub 29 June 2016, doi:10.1007/s00332-016-9319-4

[1.222] I. David, P. Holmes and A. Ayali (2016) *Biology Open 5, 1229-1240.* Endogenous rhythm and pattern generating circuit interactions in cockroach motor centers. Online pub 15 Sept 2016, doi:10.1242/bio.081705

[1.223] V. Srivastava, P. Holmes and P. Simen (2016) *J. Math. Psychol. 75, 96-109.* Explicit moments of decision times for single- and double-threshold drift-diffusion processes. doi:10.1016/j.jmp.2016.03.005

[1.224] S. Feng and P. Holmes (2016) *IMA J. Applied Math. 81, 432-456.* Will big data yield new mathematics? An evolving synergy with neuroscience. Online pub 11 July 2016, doi:10.1093/imamat/hxw026

[1.225] D. Tomlin, A. Nedic, D. Prentice, P. Holmes and J.D. Cohen (2017) *(In revision.)* The integration of social influence and reward: computational approaches and neural evidence.

[1.226] P. Kreuger, M.K. van Vugt, P. Simen, L. Nystrom, P. Holmes and J.D. Cohen (2017) *J. Neurosci. Methods 281, 21-32.* Evidence accumulation detected in BOLD signal using slow perceptual decision making. doi: 10.1016/j.jneumeth.2017.01.012

[1.227] Y. Teramoto, D.Y. Takahashi, P. Holmes and A.A. Ghazanfar (2017) *eLife 2017;6:e20782.* Vocal development in a Waddington landscape. doi: 10.7554/eLife.20872

[1.228] Z. Aminzare, V. Srivastava and P. Holmes (2017) *(In review.)* Gait transitions in a phase oscillator model of an insect central pattern generator.

[1.229] C. Mantziaris, T. Bockemühl, P. Holmes, A. Borgmann, S. Daun and A. Büschges (2017) *(In review.)* Intersegmental influences between central pattern generating networks in the walking system of the stick insect.

**(2) Recent conference proceedings, abstracts, book chapters and invited papers** (* indicates refereed paper or poster).

[2.196]* P. Holmes, P. Eckhoff, KF. Wong-Lin, R. Bogacz, M. Zacksenhouse and J.D. Cohen (2010) The physics of decision making: Stochastic differential equations as models for neural dynamics and evidence accumulation in cortical circuits. Plenary lecture at the XVIth International Congress on Mathematical Physics, Prague, Czech Republic, Aug 3-8, 2009; pp 123-142 in Proceedings volume, ed. P. Exner, World Scientific, 2010.

[2.198] J.L. Proctor and P. Holmes (2010) Chasing the Cockroach: How reflexes enhance running. Presentation at Society for Integrative and Comparative Biology Meeting, Seattle, WA, Jan 3-7, 2010. Integrative and Comparative Biology 50, E140-E140 Suppl. 1, 2010.

[2.199] P. Holmes (2010) The neural dynamics of decision making: multiple scales in a single brain. Invited presentation in the Symposium "Moving across scales: Mathematics for investigating biological hierarchies," AAAS Annual Meeting, San Diego, CA, Feb 18-22, 2010.

[2.200] P. Holmes (2010) Panel discussions on creativity in the arts and sciences (participant). Banff International Research Station for Mathematical Innovation and Discovery workshop on Creative Writing in

Mathematics and Science, The Banff Centre, Alberta, Canada, May 2-7, 2010.

[2.201] P. Holmes (2010) The neurodynamics of simple decisions: Drift-diffusion equations as models for single brains, and for group behaviors. Invited plenary lecture at SIAM Conference on the Life Sciences, Pittsburgh, PA, July 12-15, 2010.

[2.202] P. Holmes (2010) How do neurons integrate information? Clues from optimal signal processing theory. Invited lecture in minisymposium on Understanding the Link Between Neuronal Dynamics and Neuronal Computation, SIAM Conference on the Life Sciences, Pittsburgh, PA, July 12-15, 2010.

[2.203] P. Holmes (2010) From spiking cortical cells to decisions and actions: Two neuroscience problems that I don't really understand. Invited lecture in OCCAM workshop on Future Challenges in Mathematical and Computational Neuroscience, Oxford University, Sept 13-15, 2010.

[2.204]* P. Holmes (2010) Caos e dinamica non lineare (Nonlinear Dynamics and Chaos: A mechanical and mathematical primer), pp 355-394 in La Matematica Vol 4: Pensare il mondo (Intertwinements of Mathematics and Science), ed. Claudio Bartocci and Piergiorgio Odifreddi, Einaudi editore, Torino, Italy.

[2.205] J.L. Proctor and P. Holmes (2011) Reflexes and running: Modeling neural feedback in a running cockroach. Presentation at Society for Integrative and Comparative Biology Meeting, Salt Lake City, UT, Jan 3-7, 2011.

[2.206] P. Holmes (2011) Still running! Recent work on the neuromechanics of insect locomotion. Invited lecture at Dynamics Days, University of North Carolina, Jan 5-8, 2011.

[2.207] P. Holmes (2011) The neuromechanics of insect locomotion: How cockroaches run fast and stably without much thought. Invited presentation at ICIAM 2011: 7th International Congress on Industrial and Applied Mathematics, Vancouver, BC, July 18-22, 2011.

[2.208] E. Shlizerman and P. Holmes (2011) Geometry of a hybrid dynamical system modeling cortical neurons. Minisymposium presentation at ICIAM 2011: 7th International Congress on Industrial and Applied Mathematics, Vancouver, BC, July 18-22, 2011.

[2.209] S. Feng, M. Schwemmer, S. Gershman, P. Holmes, and J.D. Cohen (2011) Computational constraints on cognitive control. Program No. 930.27 Neuroscience Meeting Planner. Society for Neuroscience Annual Meeting, Washington, DC, Nov 12-16, 2011.

[2.210] D. Tomlin, A. Nedic, M.T. Todd, R.C. Wilson, D.A. Prentice, P. Holmes, and J.D. Cohen (2011) Group foraging task reveals separable influences of individual experience and social information. Program No. 832.05 Neuroscience Meeting Planner. Society for Neuroscience Annual Meeting, Washington, DC, Nov 12-16, 2011.

[2.211] P. Holmes (2011) A short, truncated, and partial history of chaos. Opening lecture, IUTAM Symposium on 50 Years of Chaos: Applied and Theoretical, Kyoto University, Japan, Nov 28-Dec 2, 2011.

[2.212] P. Holmes (2011) The neuromechanics of insect locomotion: How cockroaches run fast and stably without much thought. Workshop on Applied Dynamical Systems, Kyoto University, Japan, Dec 3, 2011.

[2.213] P. Holmes (2012) Mathematical models of legged locomotion: from passive mechanics to neuromechanics. Winter Workshop of NSF Research Coordination Network on Neuromechanics and dynamics of locomotion, Princeton University, Jan 26-27, 2012.

[2.214] P. Holmes (2012) The neural dynamics of decision making: Multiple time scales and multiple brain areas. Symposium on cortical dynamics, codes and decisions, CUNY Graduate Center, New York, Feb 7, 2012.

[2.215] P. Holmes (2012) One and a quarter centuries of nonlinear dynamics, The neural dynamics of decision making, and The neuromechanics of insect locomotion: 3 lectures in NCTS Workshop on Dynamical Systems, National Center for Theoretical Sciences, Hsinchu, Taiwan, May 16-19, 2012.

[2.216] P. Holmes (2012) Dynamical systems goes loco and neuro. Tutorial review at the ARO/NSF Workshop on Locomotive Systems Science, Arlington, VA, May 29-31, 2012.

[2.217] A. Ayali, E. Fuchs, P. Holmes, T. Kiemel and I. David (2012) Adaptive control of centrally-coupled neuronal circuits in . Cold Spring Harbor Asia Conference on Invertebrate Neurobiology, Suzhou Dushu Lake Conference Center, June 18-22, 2012.

[2.218] P. Holmes (2012) Reading during 'An Afternoon of Mathematical Poetry.' Bridges Conference on Mathematics, Music, Art, Architecture, Culture, Towson University, Towson, MD, July 25-29, 2012.
`http://bridgesmathart.org/bridges-2012/2012-poetry-day/`

[2.219] E. Fuchs, A. Ayali, P. Holmes, T. Kiemel and I. David (2012) Adaptive control of six-legged locomotion. 10th International Congress of Neuroethology, University of Maryland, College Park, MD USA, August 5-10, 2012.

[2.220]* P. Reverdy, R.C. Wilson, P. Holmes and N.E. Leonard (2012) Towards optimization of a human-inspired heuristic for solving explore-exploit problems. Session TuB04.6: Persistent Monitoring, 51st IEEE Conference on Decision and Control, Maui, Hawaii, USA, Dec 10-13, 2012.

[2.221] P. Holmes (2012) The neural dynamics of decision making: multiple scales and a range of models. Invited presentation in Workshop on Cognitive Neuroscience, Mathematical Biosciences Institute, Ohio State University, Columbus, OH, Dec 10-14, 2012.

[2.222] P. Holmes (2013) The neuro-mechanics of running cockroaches: How much natural detail do we need? Invited presentation in Workshop on Natural Algorithms and the Sciences, Princeton, NJ, May 20-21, 2013.

[2.223] P. Holmes (2013) Presentation and discussions of poems at the workshop 'Creative Writing in Mathematics and Science,' Banff International Research Station, Alberta, Canada, Nov 10-15, 2013.

[2.224] P. Holmes (2014) Moving fast and moving slow: Feedforward and feedback control in insect locomotion. Invited presentation at Investigating Dynamics in Engineering and Applied Science: A workshop celebrating Gábor Stépán's 60th birthday, July 3-5, 2014, Budapest, Hungary.

[2.225] E. Couzin-Fuchs, A. Ayali, P. Holmes, T. Kiemel and I. David (2014) Leg coordination during cockroach locomotion: experiments and model-based analysis. Presentation at Invited Symposium 5, on Coordination of multilegged locomotion, 11th International Congress of Neuroethology, Sapporo, Japan, July 28-Aug 1, 2014.

[2.226] P. Holmes (2014) Some foundations and explorations in dynamical systems theory. Invited presentation at CDS 20: A "directions" workshop to celebrate the 20th anniversary of Control and Dynamical Systems, Aug 5-7, 2014, Caltech, Pasadena, CA.

[2.227] P. Holmes (2014) What can coupled, nonlinear oscillators say about noisy, perturbed cockroaches? Invited presentation at Advances in Applied Nonlinear Mathematics: A workshop celebrating the 60th birthday of S.J. Hogan, Sept 18-19, 2014, Bristol, UK.

[2.228] P. Holmes (2015) What can coupled, nonlinear oscillators say about noisy, perturbed cockroaches? Minisymposium presentation at SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, May 17-21, 2015.

[2.229] P. Holmes (2015) Approximate symmetries in insect locomotion. Invited presentation at Topics in Applied Dynamical Systems: Equivariance and Beyond, Dept. of Mathematics, Ohio State University, May 24-27, 2015.

[2.230]* P. Holmes (2015) Dynamical Systems. In "The Princeton Companion to Applied Mathematics," ed. N.J. Higham, M.R. Dennis, P. Glendinning, P.A. Martin, F. Santosa and J. Tanner, pp 383-393, Princeton University Press, Princeton, NJ, USA.

[2.231] P. Holmes (2015) ODEs for humble bugs and flies. Invited presentation at Waves, Spectral Theory and Applications, celebrating the research of Michael Weinstein, Princeton University, Sept 10-11, 2015.

[2.232] P. Holmes (2015) CPGs, Phase Oscillators, and cross-species studies. Collaborative Research in Computational Neuroscience PI Meeting, University of Washington, Seattle, Sept 28-30, 2015.

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