Joceline Lega

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Education

Elève	Ecole Normale Supérieure, Paris	Physics	1984-1988
Licence (B.S)	Université Pierre & Marie curie, Paris	Physics	1985
Maîtrise (M.S)	Université Pierre & Marie curie, Paris	Physics	1985
DEA	University of Nice, France	Dynamical Systems and Turbulence	1986
	Diplôme d'Etudes Approfondies, post-graduate degree		
Doctorat (PhD)	University of Nice, France	Theoretical Physics	1989
	Thesis title: *Topological defects associated with the breaking of time translation invariance*		

Professional Appointments

2022 – present	Adjunct faculty member, Simon A. Levin Mathematical, Computational and Modeling Sciences Center, Arizona State University
2019 – present	Member, BIO5 Institute, University of Arizona
2017 – present	Professor, Department of Epidemiology and Biostatistics, College of Public Health, University of Arizona
2006 – present	Professor, Department of Mathematics, University of Arizona
1997 – 2020	Assistant Professor, Associate Professor, and Professor, GIDP in Applied Mathematics, University of Arizona
2000 – 2006	Associate Professor, Department of Mathematics, University of Arizona
1997 – 2000	Assistant Professor, Department of Mathematics, University of Arizona
1997 – present	On leave without pay from CNRS (French National Center for Scientific Research)
1993 – 1997	Chargée de Recherche 1ère classe at CNRS, Institut Non Linéaire de Nice
1989 – 1993	Chargée de Recherche 2ème classe at CNRS, Laboratoire de Physique Théorique, Nice, France

Administrative Appointments

2019 – present	Associate Head for Postdoctoral Programs, Department of Mathematics, University of Arizona
2016 – 2019	Coordinator, Postdoctoral Mentoring Program, Department of Mathematics, University of Arizona
2009 – 2013	Director, Institute for Mathematics & Education, University of Arizona
2008 – 2011	Director, Program in Integrated Science, University of Arizona
2007 – 2009	Assistant Director, Institute for Mathematics & Education, University of Arizona

Visiting Positions

Fall 2004	Visitor, Fields Institute for Research in Mathematical Sciences, Toronto, Canada
1994 – 1997	Visiting Assistant Professor, Department of Mathematics, University of Arizona
Fall 1993	Research Associate, Department of Physics and Applied Physics, University of Strathclyde, Glasgow, UK
Oct-Dec 1991	Postdoctoral fellow, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK
Jan 90-Jun 91	Visiting Assistant Professor, Department of Mathematics, University of Arizona

Honors & Awards

- Outstanding Postdoctoral Mentoring Award, The University of Arizona, 2019
- Fellow of the American Association for the Advancement of Science, 2017
- First place, DARPA Forecasting Chikungunya Challenge, 2015
- Fellow of the Institute of Physics (London), 2004
- UA Department of Mathematics Lovelock Award, Spring 2006
- National Academies Education Fellow in the Life Sciences for 2005 – 2006

Editorial Boards

- Editor-in-Chief, *Physica D: Nonlinear Phenomena*, January 2008 – December 2017
- Editorial Board member, *Nonlinearity*, January 2004 – December 2015
- Editorial Board member, *Physica D: Nonlinear Phenomena*, January 2004 – December 2007

Research Interests

- Modeling of nonlinear phenomena, with applications to physics and biology
- Pattern formation and instabilities
- Dynamics and stability of coherent structures

Synergistic Activities

- Organizing Committee Member, *Hybrid: 2022 SIAM Annual Meeting*, July 11-15, 2022
- Organizing Committee Member, *Hybrid: 2022 SIAM Conference on the Life Sciences*, July 11-14, 2022
- Co-organizer, *Sixth International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems*, 2017, University of Arizona, Tucson
- Co-organizer, 2011 Conference on *Geometric Methods for Infinite-Dimensional Dynamical Systems*, Brown University, Providence
- Co-organizer, 2009 and 2010 IM&E Workshops on *Mapping the Calculus Curriculum*, University of Arizona

- Director, 2007 Arizona Summer Program on *Mathematical Modeling*, University of Arizona
- Co-chair, 2006 SIAM conference on *Nonlinear Waves and Coherent Structures*, Seattle
- Co-organizer, 2003 Workshop on *Patterns in Physics* at The Fields Institute, Toronto, Canada
- Co-organizer, SIAM Mini-symposium on the *Validity of Envelope Equations*, 2005 SIAM Conference on Applications of Dynamical Systems, Snowbird
- Organizer, SIAM Mini-symposium on the *Dynamics and Stability of Coherent Structures*, 2003 Joint Mathematics Meeting, Phoenix

Mentoring

Current

- Adrienne Kinney is a graduate student in the Program in Applied Mathematics at the University of Arizona
- I serve as faculty advisor for 15+ undergraduate mathematics majors every semester

Postdoctoral fellows and junior faculty I have mentored

- Chris Bergevin, now Associate Professor of Physics and Astronomy at York University
- Heidi Brown, now Associate Professor of Public Health, Department of Epidemiology & Biostatistics, University of Arizona.
- Nicholas Brubaker, now Assistant Professor of Mathematics at California State Fullerton
- Stéphane Lafortune, now Professor of Mathematics at the College of Charleston
- Alan Lindsay, now Associate Professor of Applied Mathematics at the University of Notre Dame
- Derek Moulton, now Associate Professor of Mathematics at the University of Oxford
- Lidia Mrad, now Assistant Professor of Mathematics at Mount Holyoke College
- Nicole Sullivant, now a faculty member in the School of Math, Science & Engineering at Central New Mexico Community College

Former graduate students

- William Fries received his PhD in Applied Mathematics in June 2023 and works in the private sector (Raytheon Technologies)
- Hannah Biegel received her PhD in Mathematics in November 2020 and works in the private sector (SomaLogic)
- Alex Young received his PhD in Applied Mathematics in May 2017 and is currently Undergraduate Advisor and Lecturer in the Department of Statistics at Harvard University
- Joe Dinius received his PhD in Applied Mathematics in January 2014 and works in the private sector (AeroVironment)
- Marco Herrera-Valdez received his PhD in Mathematics in January 2014 and is currently an Associate Professor of Mathematics at UNAM (Mexico)
- Silvia Madrid-Jaramillo received her MS in Applied Mathematics in 2002

Former undergraduate students

➢ I have supervised about 20 undergraduates on a variety of research projects over the years, most recently Yuzhe Bai (Spring 2019), Hangyu Chen (Summer 2018 – Fall 2018), Sean Current (2018–2020), Chloë Paterson (2019–2020), Kyle Saxberg (2016–2017), Shitij Seth (Spring 2019), Craig Thompson (2016–2017), Zhongyu Yang (Fall 2018), Yu Zhang (Fall 2018).

➢ I developed and ran the 2007 Arizona Summer Program on Mathematical Modeling, which involved a dozen of undergraduates from various institutions.

Professional Memberships

➢ American Association for the Advancement of Science (AAAS)
➢ American Mathematical Society (AMS), 2004-2014
➢ Association des Anciens Elèves, Elèves et Amis de l'Ecole Normale Supérieure
➢ Council on Undergraduate Research (CUR)
➢ Entomological Society of America (ESA)
➢ Institute of Physics (IOP)
➢ Society for Industrial and Applied Mathematics (SIAM)

Service to the Profession

➢ AAAS Section A (Mathematics) Membership Engagement Chair, 2023
➢ Standing Member, Microbiology and Infectious Diseases B Research Committee (MID-B), National Institute of Allergy and Infectious Diseases (NIAID), 2020 – 2024
➢ AAAS Council Delegate, representing Section A (Mathematics), Feb. 2019 – Dec. 2022
➢ Advisory Board Member, SIAM Activity Group on Dynamical Systems, 2018 & 2019
➢ Chair, *Jürgen Moser Lecture* Selection Committee (SIAM), 2018
➢ External Review Committee member, Department of Applied Mathematics, University of Colorado Boulder, March 2017
➢ Electorate Nominating Committee, AAAS Section A (Mathematics), Member (Feb. 2015 – Feb. 2017), Chair (Feb. 2017 – Feb. 2018)
➢ Member-at-Large, AAAS Section A (Mathematics), Feb. 2011 – Feb. 2015
➢ Member, Nominating Committee, SIAM Activity Group on *Nonlinear Waves and Coherent Structures*, 2012 & 2014
➢ Member, *Kruskal Lecture Prize* Selection Committee (SIAM), 2011
➢ Chair, 2011 *Math Awareness Month* National Committee
➢ Chair (2008) and member (2007), *AWM-SIAM Kovalevsky Lecture Prize* Selection Committee
➢ Chair, Nominating Committee, SIAM Activity Group on *Nonlinear Waves and Coherent Structures*, 2006
➢ Secretary, SIAM Activity Group on *Nonlinear Waves and Coherent Structures*, 2004 – 2006
➢ Reviewer for major journals in my area of research

- Reviewer for the National Science Foundation (NSF), the Engineering and Physical Sciences Research Council (EPSRC, UK), the US-Israel Binational Science Foundation (BSF), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Netherlands Organization for Scientific Research (NW0), and Université Côte d'Azur (UCA)

Past and Current Funding (as PI or co-PI)

- 2020 – 2023: *RAPID: Networked Data-Driven Modelling of the COVID-19 Outbreak with a Performativity-Aware Calibration Learning Algorithm*, National Science Foundation (PI: Faryad Sahneh)
- 2018 – 2019: *Improved mosquito abundance predictions for advanced public health planning*, BIO5 Institute Team Scholars Program
- 2017 – 2018: *The Sixth International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems*, National Science Foundation (PI: Jim Cushing)
- 2015 – 2025: *DARPA Chikungunya Challenge Prize*, DARPA
- 2012 – 2013: *Intel Math National Training Agency: Revision of the Intel Math Curriculum*, Intel Foundation
- 2011 – 2012: *Intel Math National Training Agency*, Intel Foundation
- 2009 – 2011: *Intel Math National Training Agency*, Intel Foundation
- 2009 – 2015: *NSF GK-12: Graduate Students and Teacher Engaging in Mathematical Sciences (G-TEAMS)*, National Science Foundation
- 2008: *Laptops for the Program in Integrated Science,* Gateway Strategic Alliance Grant, The University of Arizona
- 2008 – 2011: *Explorations in Integrated Science: An Interdisciplinary Laboratory Course,* National Science Foundation (PI: Gail Burd)
- 2007 – 2009: *Q-Bio: Integration of Quantitative Concepts into Introductory Biology,* National Science Foundation (PI: Kate Dixon)
- 2006 – 2009: *Imaging of markers for skin cancer risk,* Arizona Biomedical Research Commission (P.I. Kate Dixon)
- 2004 – 2008: *Current problems in nonlinear dynamics: Macroscopic modeling of microscopic interactions and instability of coherent structures*, National Science Foundation
- 2003 – 2004: *Junior US-based Mathematicians at 03/04 Special Year at Fields Institute*, National Science Foundation
- 2003 – 2006: *New Mathematical Modeling Course*, TRIF (Technology and Research Initiative Fund), The University of Arizona
- 2000 – 2004: *Hydrodynamics of bacterial colonies*, National Science Foundation (U.S. – France Cooperative Research)
- 2000 – 2004: *Analysis and modeling of pattern formation in biological and physical systems*, National Science Foundation
- 1999 – 2000: *Hydrodynamics of bacterial colonies*, The University of Arizona Research Foundation
- 1997 – 1999: *Modeling of filament dynamics with applications to bacterial growths*, NATO Collaborative Research Grant (with A. Goriely and M. Tabor)
- 1994 – 1996: *Dynamic response, stabilisation, modulation and control of semiconductor lasers and laser amplifiers*, European Union

Publications

73 peer-reviewed publications (see http://lega.uazmath.org/ for links to articles), listed below.
4 article in progress, not listed; 11 articles in books or reports, not listed.

1. N. Ercolani, J. Lega, and B. Tippings, *Non-recursive counts of graphs on surfaces*, ECA **3**:3, Article S2R20 (2023)
2. N. Ercolani, J. Lega, and B. Tippings, *Multiple scale asymptotics of map enumeration*, Nonlinearity **36**, 1663-1698 (2023)
3. F.D. Sahneh, W. Fries, J.C. Watkins, J. Lega, *Epidemics from the Eye of the Pathogen*, SIAM J. Appl. Math. **82**, 2036-2056 (2022)
4. E.Y. Cramer, Y. Huang, Y. Wang, Y. et al. (400+ authors), *The United States COVID-19 Forecast Hub dataset*, Scientific Data **9**, 462 (2022)
5. N. Ercolani, J. Lega, B. Tippings, *Dynamics of Non-polar Solutions to the Discrete Painlevé I Equation*, SIAM J. Appl. Dyn. Sys. **21**, 1322–1351 (2022)
6. E.Y. Cramer et al. (295 authors), *Evaluation of individual and ensemble probabilistic forecasts of COVID-19 mortality in the United States*, PNAS **119**, e2113561119 (2022)
7. A.C. Kinney, S. Current, J. Lega, *Aedes-AI: Neural network models of mosquito abundance*, PLoS Comput. Biol. **17**, e1009467 (2021)
8. J. Lega, *Parameter Estimation from ICC curves*, Journal of Biological Dynamics **15**, 195–212 (2021)
9. J. Lega, H.E. Brown, R. Barrera, *A 70% Reduction in Mosquito Populations Does Not Require Removal of 70% of Mosquitoes*, J. Med. Entomol. **57**, 1668–1670 (2020)
10. C.A. Thompson, K. Saxberg, J. Lega, D. Tong, H.E. Brown, *A cumulative gravity model for inter-urban spatial interaction at different scales*, Journal of Transport Geography **79**, 102461 (2019)
11. C.J. McGowan, M. Biggerstaff, M. Johansson, K.M. Apfeldorf, M. Ben-Nun, L. Brooks, M. Convertino, M. Erraguntla, D.C. Farrow, J. Freeze, S. Ghosh, S. Hyun, S. Kandula, J. Lega, Y. Liu, N. Michaud, H. Morita, J. Niemi, N. Ramakrishnan, E.L. Ray, N.G. Reich, P. Riley, J. Shaman, R. Tibshirani, A. Vespignani, Q. Zhang, C. Reed & The Influenza Forecasting Working Group, *Collaborative efforts to forecast seasonal influenza in the United States, 2015–2016*, Scientific Reports **9**, 683 (2019)
12. S.Y. Del Valle, B.H. McMahon, J. Asher, R. Hatchett, J.C. Lega, H.E. Brown, M.E. Leany, Y. Pantazis, D.J. Roberts, S. Moore, A.T. Peterson, L.E. Escobar, H. Q, N.W. Hengartner and H. Mukundan, *Summary results of the 2014-2015 DARPA Chikungunya challenge*, BMC Infectious Diseases **18**, 245 (2018)
13. Nicholas M. Ercolani, Nikola Kamburov, Joceline Lega, *The phase structure of grain boundaries*, Phil. Trans. R. Soc. A **376**, 20170193 (2018)
14. Joceline Lega, Sunder Sethuraman, Alexander L. Young, *On Collisions Times of 'Self-Sorting' Interacting Particles in One-Dimension with Random Initial Positions and Velocities*, J. Stat. Phys. **170**, 1088–1122 (2018)
15. J. Lega, H.E. Brown, R. Barrera, *Aedes aegypti (Diptera: Culicidae) abundance model improved with relative humidity and precipitation-driven egg hatching*, J. Med. Entomol. **54**, 1375–1384 (2017)
16. H.E. Brown, R. Barrera, A.C. Comrie, J. Lega, *Effect of temperature thresholds on modeled Aedes aegypti population dynamics*, J. Med. Entomol. **54**, 869–877 (2017)
17. J. Lega and H.E. Brown, *Data-driven outbreak forecasting with a simple nonlinear growth model*, Epidemics **17**, 19-26 (2016)

18. N.D. Brubaker and J. Lega, *Capillary induced deformations of a thin elastic sheet*, Phil. Trans. R. Soc. **A 374**, 20150169 (2016)

19. N.D. Brubaker and J. Lega, *Two-dimensional capillary origami*, Phys. Lett. **A 380**, 83-87 (2016)

20. H. E. Brown, A. Young, J. Lega, T. G. Andreadis, J. Schurich, A. Comrie, *Projection of Climate Change Influences on U.S. West Nile Virus Vectors*, Earth Interactions **19**, 1-18 (2015)

21. N. D. Brubaker and J. Lega, *Two-Dimensional Capillary Origami with Pinned Contact Line*, SIAM J. Appl. Math. **75**, 1275-1300 (2015)

22. A. E. Lindsay, J. Lega, K. B. Glasner, *Regularized model of post-touchdown configurations in electrostatic MEMS: interface dynamics*, IMA Journal of Applied Mathematics, doi: 10.1093/imamat/hxv011 (2015)

23. A.E. Lindsay, J. Lega, K.B. Glasner, *Regularized model of post-touchdown configurations in electrostatic MEMS: Equilibrium analysis*, Physica **D 280-281**, 95–108 (2014)

24. J.C. Lega, S. Buxner, B. Blonder, F. Tama, *Explorations in Integrated Science*, Journal of College Science Teaching **43**, 55-60 (2014)

25. D.E. Moulton and J. Lega, *Effect of disjoining pressure in a thin film equation with non-uniform forcing*, Euro. Jnl of Applied Mathematics **24**, 887-920 (2013)

26. A.E. Lindsay, J. Lega, F.J. Sayas, *The Quenching Set of a MEMS Capacitor in Two-Dimensional Geometries*, J. Nonlinear Sci. **23**, 807-834 (2013)

27. A.E. Lindsay and J. Lega, *Multiple Quenching Solutions of a Fourth Order Parabolic PDE with a Singular Nonlinearity Modeling a MEMS Capacitor*, SIAM J. Appl. Math. **72**, 935-958 (2012)

28. J. Lega, *Collective Behaviors in Two-dimensional Systems of Interacting Particles*, SIAM J. Appl. Dyn. Sys. **10**, 1213-1231 (2011)
    Erratum: SIAM J. Appl. Dyn. Syst. **12**, 2093–2093 (2013)

29. S. Lafortune, J. Lega, and S. Madrid, *Instability of local deformations of an elastic rod: numerical evaluation of the Evans function*, SIAM J. Appl. Math. **71**, 1653-1672 (2011)

30. M. Herrera-Valdez and J. Lega, *Reduced models for the pacemaker dynamics of cardiac cells*, Journal of Theoretical Biology **270**, 164-176 (2011)

31. D. Moulton and J. Lega, *Reverse draining of a magnetic soap film - Analysis and simulation of thin film equation with non-uniform forcing*, Physica D **238**, 2153-2165 (2009)

32. J. Lega and T. Passot, *Hydrodynamics of bacteria colonies*, Nonlinearity **20**, C1-C16 (2007)

33. S. Lafortune and J. Lega, *Spectral stability of local deformations of an elastic rod: Hamiltonian formalism*, SIAM J. Math. Anal. **36**, 1726-1741 (2005)

34. J. Lega and T. Passot, *Hydrodynamics of bacterial colonies: phase diagrams*, Chaos **14**, 562-570 (2004)

35. J. Lega and T. Passot, *Inverse cascade and energy transfer in forced low-Reynolds number two-dimensional turbulence*, Fluid Dynamics Research **34**, 289-297 (2004)

36. S. Lafortune and J. Lega, *Instability of local deformations of an elastic rod*, Physica D **182**, 103-124 (2003)

37. J. Lega and T. Passot, *Hydrodynamics of bacterial colonies: a model*, Phys. Rev. E **67**, 031906 1-18 (2003)

38. B.R. Schöne, J. Lega, K.W. Flessa, D.H. Goodwin and D.L. Dettman, *Reconstructing daily temperatures from growth rates of the intertidal bivalve mollusk Chione cortezi (northern Gulf of California, Mexico)*, Palaeogeography, Palaeoclimatology, Palaeoecology **184**, 131-146 (2002)

39. T.A. Christensen, G. D'Alessandro, J. Lega and J.G. Hildebrand, *Morphometric modeling of olfactory circuits in the insect antennal lobe: I. Simulations of spiking local interneurons*, Biosystems **61**, 143-153 (2001)

40. J. Lega, *Traveling hole solutions of the complex Ginzburg-Landau equation: a review*, Physica D **152-153**, 269-287 (2001)

41. J. Lega and A. Goriely, *Pulses, fronts and oscillations of an elastic rod*, Physica D **132**, 374-392 (1999).

42. J. Lega and N. Mendelson, *A control-parameter dependent Swift-Hohenberg equation as a model for bioconvection patterns*, Phys. Rev. **E 59**, 6267-6274 (1999)

43. N. Mendelson and J. Lega, *A complex pattern of traveling stripes is produced by swimming cells of Bacillus subtilis*, Journal of Bacteriology **180**, 3285-3294 (1998)

44. S. Bottin and J. Lega, Pulses *of tunable size near a subcritical bifurcation*, Eur. Phys. J. B **5**, 299-308 (1998)

45. O. G. Calderón, V. M. Pérez-García, J. Lega, and J. M. Guerra, *Loss-induced transverse effects in lasers*, Opt. Comm. **143**, 315-321 (1997)

46. D. Hochheiser, J.V. Moloney and J. Lega, *Controlling optical turbulence*, Phys. Rev. A **55**, 4011-4014 (1997)

47. J. Lega and S. Fauve, *Traveling hole solutions to the complex Ginzburg-Landau equation as perturbations of Nonlinear Schrödinger dark solitons*, Physica **102** D, 234-252 (1997)

48. J. Lega and J.M. Vince, *Temporal forcing of traveling wave patterns*, J. Phys. I France **6**, 1417-1434 (1996)

49. G.K. Harkness, J. Lega, and G.L. Oppo, *Measuring disorder with correlation functions of averaged patterns*, Physica D **96**, 26-29 (1996)

50. M.R.E. Proctor and J. Lega, *Secondary bifurcations and symmetry breaking as a route towards spatiotemporal disorder*, Int. J. Bifurcation and Chaos **5**, 841 (1995)

51. J. Lega, J.V. Moloney, and A.C. Newell, *Universal description of laser dynamics near threshold*, Physica D **83**, 478-498 (1995)

52. G. K. Harkness, J.C. Lega and G.L. Oppo, *Correlation functions in the presence of optical vortices*, Chaos, Solitons and Fractals **4**, 1519-1533 (1994)

53. J. B. Geddes, J. Lega, J.V. Moloney, R.A. Indik, E.M. Wright and W.J. Firth, *Pattern selection in passive and active nonlinear optical systems*, Chaos, Solitons and Fractals **4**, 1261-1274 (1994)

54. J. Lega, J.V. Moloney, and A.C. Newell, *Swift-Hohenberg equation for lasers*, Phys. Rev. Lett. **73**, 2978-2981 (1994)

55. J. Lega, P.K. Jakobsen, J.V. Moloney, and A.C. Newell, *Nonlinear transverse modes of large-aspect-ratio homogeneously broadened lasers: II. Pattern analysis near and beyond threshold*, Phys. Rev. A **49**, 4201-4212 (1994)

56. P.K. Jakobsen, J. Lega, Q. Feng, M. Staley, J.V. Moloney, and A.C. Newell, *Nonlinear transverse modes of large-aspect-ratio homogeneously broadened lasers: I. Analysis and numerical simulation*, Phys. Rev. A **49**, 4189-4200 (1994)

57. J.V. Moloney, P.K. Jakobsen, J. Lega, S.G. Wenden and A.C. Newell, *Space-time complexity in nonlinear optics*, Physica D **68**, 127-134 (1993)

58. A. C. Newell, T. Passot and J. Lega, *Order parameter equations for patterns*, Ann. Rev. Fluid Mech. **25**, 399-453 (1993)

59. J. Lega, S. Jucquois, B. Janiaud and V. Croquette, *Localized phase jumps in wave trains*, Phys. Rev. A **45**, 5596-5604 (1992)

60. F. Daviaud, J. Lega, P. Bergé, P. Coullet and M. Dubois, *Spatio-temporal intermittency in a 1-d convective pattern: theoretical model and experiments*, Physica D **55**, 287-308 (1992)

61. J. Lega, *Secondary Hopf bifurcation of a one-dimensional periodic pattern*, Eur. J. Mech. B/Fluids **10**, #2 - Suppl., 145 (1991)

62. P. Coullet, J. Lega and Y. Pomeau, *Dynamics of Bloch walls in a rotating magnetic field: a model*, Europhys. Lett. **15**, 221 (1991)

63. J. Lega, *Defect-mediated turbulence*, Computer Methods in Applied Mechanics and Engineering **89**, 419-424 (1991)

64. Y. Pomeau and J. Lega, *Structures macroscopiques en spirales comme configurations d'équilibre d'un ensemble de molécules chirales*, C. R. Acad. Sci. Paris II **311**, 1135 (1990)

65. S. Ciliberto, P. Coullet, J. Lega, E. Pampaloni and C. Perez-Garcia, *Defects in roll-hexagon competition*, Phys. Rev. Lett. **65**, 2370-2373 (1990)

66. P. Coullet, J. Lega, B. Houchmanzadeh and J. Lajzerowicz, *Breaking chirality in nonequilibrium systems*, Phys. Rev. Lett. **65**, 1352-1355 (1990)

67. L. Gil, J. Lega and J.L. Meunier, *Statistical properties of defect-mediated turbulence*, Phys. Rev. A **41**, 1138-1141 (1990)

68. J. Lega, *Forme spirale de la dislocation des ondes stationnaires*, C. R. Acad. Sci. Paris, **309** II, 1401 (1989)

69. P. Coullet, L. Gil, and J. Lega, *A form of turbulence associated with defects*, Physica **37** D, 91-103 (1989)

70. P. Coullet, L. Gil, and J. Lega, *Defect-mediated turbulence*, Phys. Rev. Lett. **62**, 1619-1622 (1989)

71. P. Coullet, L. Gil, and J. Lega, *Une forme de turbulence associée aux défauts topologiques*, Bulletin de la Société Française de Physique, **67**, 12 (1988); and Mathematical Modeling and Numerical Analysis **23**, 385-394 (1989)

72. P. Coullet and J. Lega, *Defect-mediated turbulence in wave patterns*, Europhys. Lett. **7**, 511 (1988)

73. P. Coullet, C. Elphick, L. Gil, and J. Lega, *Topological defects of wave patterns*, Phys. Rev. Lett. **59**, 884-887 (1987)

Invited Scholarly Presentations

120 invited scholarly presentations

Keynotes and other selected invited presentations

1. *Spatio-temporal intermittency in a 1-d cellular structure of Rayleigh-Bénard convection in an annulus*; Department of Applied Mathematics and Theoretical Physics, Cambridge (U.K.), November 8, 1991

2. *Hydrodynamics of bacterial colonies: a model*; The Fields Institute, Toronto, Canada, February 7, 2001

3. *Dynamics and growth of bacterial colonies*; 2003 Clifford Lectures on Theoretical Fluid Mechanics in Biology, Tulane University, New-Orleans, Louisiana, March 24-28, 2003

4. *Instability of local deformations of an elastic filament*; Applied Mathematics Colloquium, The Fields Institute, Toronto, Canada, September 15, 2003

5. *A hydrodynamic model for the growth of bacterial colonies*; Mathematics Colloquium, University of Notre Dame, December 1, 2004

6. *Molecular dynamics simulations of live particles*; Mathematics Colloquium, Tulane University, November 9, 2007

7. *Thin film equations with non-uniform forcing*; Mathematics Colloquium, College of Charleston, November 5, 2010

8. *Capillary Origami*; Mathematics Colloquium, University of Central Florida, November 5, 2015

9. *Patterns, defects, and phase singularities*; Rocky Mountain Partial Differential Equations Conference, Provo, UT, 18-19 May, 2017

10. *Three models to help understand the spread of mosquito-borne diseases*; 10th IIMAS Colloquium, Universidad Nacional Autónoma de México, Mexico City, Mexico, April 20, 2017

11. (Cancelled due to the pandemic). *Phase Singularities and Defects in Pattern-Forming Systems*; 2020 SIAM Conference on Nonlinear Waves and Coherent Structures, Bremen, Germany, July 27-30, 2020

12. *Modeling in the time of the pandemic*; Mathematics Colloquium, Southern Methodist University, delivered online, February 24, 2021

13. *On the Number of Quadrangulations of a Topological Surface*; Mathematics Colloquium, University of Houston, delivered online, October 12, 2022

Invited presentations in the last 5 years

1. *Forecasting the Flu with Simple Nonlinear Models;* CSTE/CDC Seasonal Influenza Forecasting Workshop, Council of State and Territorial Epidemiologists, Atlanta, GA, August 30 – 31, 2018

2. *Modeling the spread of vector-borne diseases on regional transportation networks*; MUVE Section Symposium on Predicting Vector-Borne Diseases Spread in Changing Natural and Social Landscapes, 2018 ESA, ESC, and ESBC Joint Annual Meeting, Vancouver, BC, Canada, November 11 – 14, 2018

3. Panel presentation: *Mathematical Perspectives and Vision for Preparation and Pathways in Mathematical Modeling*; Critical Issues in Mathematics Education 2019: Mathematical Modeling in K-16: Community and Cultural Context, MSRI, Berkeley, CA, March 6 – 8, 2019

4. *Transdisciplinary modeling of mosquito-borne diseases*; The Southwestern Undergraduate Mathematics Research Conference (SUnMaRC), The University of Arizona in Tucson, AZ, March 29 – 31, 2019

5. *Grain boundaries of the Swift-Hohenberg equation: simulations and analysis*; Special Session on Nonlinear Evolutionary Equations: Theory, Numerics and Experiments, 11th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens, GA, April 17–19, 2019

6. *Phase singularities and defects in pattern forming systems*; Mini-symposium on Existence and stability of nonlinear waves, 9th International Congress on Applied Mathematics, Valencia, Spain, July 15–19, 2019

7. Panel: *Moving to More Useful Forecasts at the State/Local Level: The Forecasters Perspective*, FluSight Seasonal Influenza Forecasting Workshop, Council of State and Territorial Epidemiologists, Atlanta, GA, August 20–22, 2019

8. *Epidemiological Forecasting with Simple Nonlinear Models*; Dynamical Systems seminar, University of Minnesota, October 6, 2020

9. *Epidemiological Forecasting with ICC curves and data assimilation*; Mathbio seminar, Arizona State University, October 16, 2020

10. *Phase singularities and defects in the Swift-Hohenberg equation*; Special session on Free boundary problems arising in applications, Fall Western AMS Sectional meeting, University of Utah, Salt Lake City, Utah, October 24–25, 2020

11. *Modeling and Forecasting the Spread of the Pandemic*; International research laboratory CNRS/ENS-PSL, COVIDAM Blog, and Institut des Amériques Webinar series on COVID-19: breaking and raising boundaries, Online, February 17, 2021

12. *Modeling in the time of the pandemic*; Mathematics Colloquium, Southern Methodist University, delivered online, February 24, 2021
13. *Forecasting Disease Risk and Spread*; French American Innovation Days: Facing the Predictably Unpredictable, Online, May 18–20, 2021
14. *A New Take on Outbreak Dynamics;* Minisymposium on Evolutionary Theory of Disease, Virtual SMB 2021 Annual Meeting, June 13–17, 2021
15. *A dynamical systems view of special solutions to the discrete Painlevé I equation*, Nonlinear Waves and Coherent Structures Webinar, Online, October 26, 2021
16. *Dynamical systems properties of the Freud recurrence*, delivered online; Session on Discrete Painlevé Equations and Related Topics, 12th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Athens Georgia, March 30 – April 1, 2022
17. *Models of Mosquito Abundance*, ASU Summer REU Colloquium Series, delivered online, Arizona State University, July 8, 2022
18. *On the Number of Quadrangulations of a Topological Surface*; Mathematics Colloquium, University of Houston, delivered online, October 12, 2022

Service to the University of Arizona

➢ University
   o TCE Vision Committee, Spring 2018
   o Academic Program Review Committee, Department of Ecology and Evolutionary Biology, February 2017
   o Faculty Senate: 2014-2015
   o University Promotion and Tenure Committee: senior co-chair (2011 – 2012), junior co-chair (2010 – 2011), and member (2009 – 2010)
   o University Learning Technologies Center Faculty Advisory Board: 2005 – 2009
   o Provost's Task Force on Core Mathematics: 2005 – 2006

➢ College of Science
   o Search Committee (Associate Dean for Research), Fall 2021
   o Promotion and Tenure Committee, 2019 – 2022
   o Women in STEM Leadership Steering Committee, 2018 – 2020
   o Integrated Science Advisory Board, 2007 – 2008
   o Grade Appeal Committee, 1997 – 2002, 2014

➢ Department of Mathematics
   o Biomath Committee: 2006 – 2010
   o Computer Committee: 2001 – 2003 (chair)
   o Graduate Committee: 2005 – 2007, 2016 – 2017, 2018 – 2020
   o Instructional Faculty Personnel Committee: 2012 – 2014
   o Lovelock Award Committee: 2006 – 2009
   o Peer-review Committee: 2012 – 2014

- o Personnel Committee: 2000 – 2002, 2008 – 2010, 2014 – 2015, 2016 – 2018
- o Planning Committee: 2009 – 2012, 2014 – 2015, 2016 – 2017 (chair)
- o Postdoctoral Committee: 2018 – present (chair)
- o Promotion and Tenure Committee: 2004 – 2005, 2017 – 2019 (chair)
- o Undergraduate Committee: 2005 – 2009

➢ Program in Applied Mathematics
  - o Analysis and its Applications seminar: co-organizer, 2005 – 2007
  - o Applied Mathematics Colloquium: co-organizer, 1998 – 1999, 2006 – 2007
  - o Self-study Committee: 2001 – 2002
  - o Admissions Committee: 2000 – 2001, 2016 – 2018