

J. J. P. Veerman

Curriculum Vitae

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GENERAL: CONTACT INFORMATION

Name: J. J. P. Veerman
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GENERAL: EDUCATION

Research Fellow: *Mathematics*, 08/1989 – 09/1991, Institute for Mathematical Sciences, Stony Brook University, Stony Brook. Director: J. Milnor.
Postdoctoral: *Physics*, 11/1987 – 08/1989: **Cornell University and Rockefeller University**, New York, USA. Advisor: M. J. Feigenbaum.
Postdoctoral: *Mathematics*, 10/1986 – 11/1987: **Universidad Autónoma**, Madrid, and **Universidad Central**, Barcelona. Advisor: R. Moriyon.
Doctor of Philosophy: *Applied Mathematics/Engineering*, 1986, **Cornell University**, Ithaca, New York, USA. Committee: P. Holmes, J. Guckenheimer, M. J. Feigenbaum.
Doctorandus (Master of Science): *Theoretical Physics*, 1983, **University of Utrecht**, Utrecht, The Netherlands.
Kandidaat (Bachelor of Science): *Physics*, 1980, **University of Utrecht**, Utrecht, The Netherlands.

GENERAL: EMPLOYMENT

09/2023 – 07/2025: Director and Professor, Complex Systems Program, Portland State University.
05/2023 – 07/2023: Visiting Fellow, Institute for Advanced Studies, University of Bologna, Italy.
06/2022 – 12/2022: Joseph Meyerhoff Visiting Professor, Weizmann Institute of Science, Israel.
09/2018 – Present: Affiliate Professor of Physics, Portland State University.
08/2014 – 08/2015: Visiting Professor, Crete Center for Quantum Complexity and Nanotechnology, Physics Department, University of Crete, Greece.
04/2010 – 04/2012: Chair, Maseeh Department of Mathematics and Statistics, Portland State University.
08/2008 – Present: Full Professor of Mathematics with Tenure at Portland State University.
01/2008 – 07/2008: Visiting Professor, Rockefeller University, New York, USA.
08/2007 – 01/2008: Visiting Professor, Istituto Mauro Picone, Rome, Italy and Dept of Math, Università degli Studi, Salerno, both in Italy.
08/2006–07/2007: Visiting Professor, Dept of Differential Equations, University of Granada, Spain.
08/2003 – 07/2008: Associate Professor with Tenure of Mathematics at Portland State University.
01/2001 – 08/2003: Assistant Professor of Mathematics, Portland State University.
07/2000 – 12/2000: Gorenstein Professor of Mathematics, CUNY-Queens.
08/1999 – 07/2000: Visiting professor, Mathematics Department, Penn State University.
01/1999 – 07/1999: Visiting Professor, Mathematics Department, Georgia Institute of Technology, Atlanta.
05/1997 – 01/1999: Associate Professor (CNPQ-FIOCRUZ Fellowship), Centro de Pesquisas Ageu Magalhães, and Departamento de Física, Universidade Federal de Pernambuco, Recife, Brazil.
09/1996 – 04/1997: Associate Professor, Center for Physics and Biology, Rockefeller University, New York, USA.
01/1994 – 09/1996: Associate Professor, Universidade Federal de Pernambuco, Recife, Brazil.
01/1993 – 12/1993: Assistant Professor, Pontifícia Universidade Católica, Rio de Janeiro, Brazil.
10/1991 – 12/1992: Instituto de Matemática Pura e Aplicada, Rio de Janeiro, Brazil.
08/1989 – 09/1991: Research Assistant Professor, Institute for Mathematical Sciences, SUNY at Stony Brook, Stony Brook.
06/1987 – 09/1987: Experimental High Energy Physics group, Max Planck Institute, Munich, Germany.

GENERAL: DISSERTATION

Thesis, Cornell, 1986: *On Resonance Widths in Dynamical Systems.*

Advisors: P. J. Holmes, M. J. Feigenbaum, and J. Guckenheimer.

PUBLICATIONS: ONLINE ENCYCLOPEDIA OF INTEGERS (OEIS)

- [0.1]** Entry A384639. $a(n) :=$ Number of topologically distinct minimal separating finite graphs in oriented surface of genus n .
[0.2] Entry A387066. $a(n) :=$ Number of topologically distinct minimal separating finite graphs in oriented surface of genus n that do not separate genus $n - 1$.
[0.3] Entry A387067. $a(n) :=$ Number of topologically distinct connected minimal separating finite graphs in oriented surface of genus n that do not separate genus $n - 1$.

- [0.4] Entry A387068. $a(n) :=$ Number of topologically distinct connected minimal separating embeddings of finite graphs in oriented surface of genus n that do not separate genus $n - 1$.
- [0.5] Apart from the 4 we authored, I am cited in 6 other entries in OEIS: A001850, A006506, A103627, A103626, A191779, A327620.

PUBLICATIONS: JOURNAL ARTICLES, REFEREED

- [1.69] C.N. Aagaard, J.J.P. Veerman, *Classification of Minimal Separating Sets of Low Genus Surfaces*, **Topology and Its Applications**, Accepted, 2025.
- [1.68] J.J.P. Veerman, *Geodesics on Regular Constant Distance Surfaces*, **Journal of Geometry**, Accepted, 2023.
- [1.67] L.S. Fox, J.J.P. Veerman, *Equidistant sets on Alexandrov surfaces*, **Differential Geometry and Its Applications**, 90, 2023, 102042.
- [1.66] J. Petrovic, J. Krsic, A. Maluckov, J. J. P. Veerman, *High-density Optical Interconnects Based on Self-Imaging in Coupled Waveguide Arrays*, **Optics and Laser Technology**, 163, 2023, 109381.
- [1.65] J. J. P. Veerman, T. Whalen-Wagner, E. Kummel, *Chemical Reaction Networks in a Laplacian Framework*, **Chaos, Solitons, and Fractals** 136, Article 112859, 2023.
- [1.64] J. J. P. Veerman, L. S. Fox, P. J. Oberly, *A Remarkable Summation Formula, Lattice Tilings, and Fluctuations*, **The American Mathematical Monthly**, 2022, DOI: 10.1080/00029890.2022.2131165.
- [1.63] J. J. P. Veerman, P. Oberly, L. S. Fox, *Statistics for a Family of Piecewise Linear Maps*, **Physica D**, Vol 427, 133019, 2021.
- [1.62] R. Lyons, J. J. P. Veerman, *Linear Nearest Neighbor Flocks with All Distinct Agents*, **European Physical Journal B** 94: 174, 2021.
- [1.61] L. S. Fox, P. Oberly, J. J. P. Veerman, *One-Sided Derivative of Distance to a Compact Set*, **Rocky Mountain Journal of Mathematics** 51 (2), 491-508, 2021.
- [1.60] P. E. Baldivieso, J. J. P. Veerman, *Stability Conditions for Coupled Autonomous Vehicle Formations*, **IEEE Transactions on Control of Network Systems** Vol 8, No 1, 513-522, 2021.
- [1.59] A. Bountis, J. J. P. Veerman, F. Vivaldi, *Cauchy distributions for the integrable standard map*, **Physics Letters A** 384, Issue 26, 2020, 126659.
- [1.58] J. J. P. Veerman, *Navigating Around Convex Sets*, **The American Mathematical Monthly**, 127 (6), 504-517, 2020.
- [1.57] J. J. P. Veerman, Ewan Kummel, *Diffusion and Consensus on Weakly Connected Directed Graphs*, **Linear Algebra and Its Applications** 578, 184-206, 2019.
- [1.56] J. J. P. Veerman, D. K. Hammond, P. Baldivieso, *Spectra of Certain Large Tridiagonal Matrices*, **Linear Algebra and Its Applications**, Vol. 548, 123-147, 2018.
- [1.55] J. Petrovic, J. J. P. Veerman, *A New Method for Multi-Bit and Qudit Transfer Based on Commensurate Waveguide Arrays*, **Annals of Physics**, Vol. 392, 128-141, 2018.
- [1.54] J. J. P. Veerman, *Social Balance and the Bernoulli Equation*, **The American Mathematical Monthly**, Vol 125, Issue 8, 724-732, 2018.
- [1.53] J. Herbrych, A. G. Hazirakis, N. Christakis, J. J. P. Veerman, *Dynamics of Locally Coupled Oscillators with Next-Nearest-Neighbor Interaction*, **Differential Equations and Dynamical Systems**, July, 2017. DOI: 10.1007/s12591-017-0377-3. In print: **Differ Equ Dyn Syst** 29, 487-509 (2021).
- [1.52] P. Herreros, M. Ponce, J. J. P. Veerman, *Equators Have At Most Countably Many Singularities With Bounded Total Angle*, **Annales Academiæ Scientiarum Fennicæ**, Vol. 42, 837-845, 2017.

- [1.51]] C. E. Cantos, D. K. Hammond, J. J. P. Veerman, *Transients in the Synchronization of Oscillator Arrays*, **European Physical Journal Special Topics** 225, 1199-1209, 2016.
- [1.50]] C. E. Cantos, J. J. P. Veerman, D. K. Hammond, *Signal Velocities in Oscillator Networks*, **European Physical Journal Special Topics**, 225, 1115-1126, 2016.
- [1.49]] I. Herman, D. Martinec, and J. J. P. Veerman, *Transients of Platoons with Asymmetric and Different Laplacians*, **Systems & Control Letters**, Vol. 91, 28-35, May 2016.
- [1.48]] J. J. P. Veerman, D. K. Hammond, *Tridiagonal Matrices and Boundary Conditions*, **SIAM Journal of Matrix analysis and Applications**, Vol 37, No 1, 1-17, 2016.
- [1.47]] J. J. P. Veerman, F. J. Prieto, *Erratum to: On Rank Driven Dynamical Systems*, **Journal of Statistical Physics**, 161 (5), p. 1324, 2015.
- [1.46]] S. S. Akmal. N. M. Nam, J. J. P. Veerman, *On a Convex Set with Nondifferentiable Metric Projection*, **Optimization Letters**, Volume 9, Issue 6, pp 1039-1052, August 2015.
- [1.45]] J. J. P. Veerman, F. J. Prieto, *On Rank Driven Dynamical Systems*, **Journal of Statistical Physics** 156, 455-473, 2014, (DOI 10.1007/s10955-014-1012-0).
- [1.44]] N. Torrado Robles, J. J. P. Veerman, *Asymptotic Reliability Theory of k-out-of-n systems*, **Journal of Statistical Planning and Inference** 142, 2646-2655, 2012.
- [1.43]] F. M. Tanagerman, J. J. P. Veerman, B. D. Stosic, *Asymmetric Decentralized Flocks*, **IEEE Transactions on Automatic Control** Vol 57, Issue 11, 2844-2853, 2012.
- [1.42]] C. M. da Fonseca, J. J. P. Veerman, *On the Spectra of Certain Directed Paths*, **Applied Mathematics Letters** 22 (2009) 1351-1355.
- [1.41]] J. J. P. Veerman, B. D. Stošić, F. M Tanagerman, *Automated Traffic and the Finite Size Resonance*, **Journal of Statistical Physics** 137, Issue 1, 189-203, 2009.
- [1.40]] J. J. P. Veerman, B. D. Stošić, A. Olvera, *Spatial Instabilities and Size Limitations of Flocks*, **Networks and Heterogeneous Media**, Vol 2, No. 4, 647-660, 2007.
- [1.39]] J. J. P. Veerman, D. Daescu, M.-J. Romero-Vallés, P. J. Torres, *A Single Particle Impact Model for Motion in Avalanches*, **Physica D** 238, No 18, 1897-1908, 2009.
- [1.38]] John S. Caughman, J. J. P. Veerman, *Kernels of Directed Graph Laplacians*, **Electronic Journal of Combinatorics** 13, No 1, R39, 2006.
- [1.37]] J. Campos, M. J. Romero-Vallés, P. J. Torres, J. J. P. Veerman, *Dynamics of a Jumping Particle on a Staircase Profile*, **Chaos, Solitons, and Fractals**, Vol 32, Issue 2, 415-426, 2007.
- [1.36]] J. J. P. Veerman, G. Lafferriere, John S. Caughman, A. Williams, *Flocks and Formations*, **Journal of Statistical Physics** 121, Vol 5-6, 901-936, 2005.
- [1.35]] G. Lafferriere, A. Williams, John S. Caughman, J. J. P. Veerman, *Decentralized Control of Vehicle Formations*, **Systems & Control Letters**, 54, 899-910, 2005.
- [1.34]] James Bernhard, J. J. P. Veerman, *The Topology of Surface Mediatrices*, **Topology and its Applications**, 154, 54-68, 2007.
- [1.33]] John S. Caughman, Clifford R. Haithcock, J. J. P. Veerman, *A Note on Lattice Chains and Delannoy Numbers*, **Discrete Mathematics** 308, 2623-2628, 2008.
- [1.32]] J. J. P. Veerman, *A Solvable Model for Gravity Driven Granular Dynamics*, **Dynamical Systems: An International Journal** 20, No 2, 237-254, 2005.
- [1.31]] J. J. P. Veerman, J. Bernhard, *Minimally Separating Sets, Mediatrices, and Brillouin Spaces*, **Topology and its Applications** 153, 1421-1433, 2006.
- [1.31]] A. J. Bae, W. A. M. Morgado, J. J. P. Veerman, G. L. Vasconcelos, *Single Particle Model for a Granular Ratchet*, **Physica A** 342, 22-28, 2004.

- [1.30] R. L. Costa, J. J. P. Veerman, G. L. Vasconcelos, *Dynamics of a Particle in a Vertical Rough Channel*, **Europhysics Letters** 60, 220-226, 2002.
- [1.29] J.J.P. Veerman, F. V. Cunha-Jr., G. L. Vasconcelos, *Dynamics of a Granular Particle on a Rough Surface with a Staircase Profile*, **Physica D** 168/169, 220-234, 2002.
- [1.28] L. B. Jonker, J. J. P. Veerman, *Semicontinuity of Dimension and Measure of Locally Scaling Fractals*, **Fundamenta Mathematicae** 173, 113-131, 2002.
- [1.27] G. Swiatek, J. J. P. Veerman, *On a Conjecture of Fúrstenberg*, **Israel Journal of Mathematics** 130, 145-156, 2002.
- [1.26] G. L. Vasconcelos, F. V. Cunha-Jr., J. J. P. Veerman, *Chaotic Behavior in a Model for Grain Dynamics*, **Physica A** 295, 261-267, 2001.
- [1.26] J. J. P. Veerman, B. D. Stošić, *On the Dimensions of Certain Incommensurably Constructed Sets*, **Experimental Mathematics**, Vol 9, No 3, 413-425, 2000.
- [1.25] S.-M. Ngai, V. F. Sirvent, J. J. P. Veerman, Y. Wang, *2-Reptiles in the Plane*, **Geometriae Dedicata** 82, No 1-3, 325-344, 2000.
- [1.24] J. J. P. Veerman, M. M. Peixoto, A. C. Rocha, S. Sutherland, *On Brillouin Zones*, **Communications in Mathematical Physics** 212/3, 725-744, 2000.
- [1.23] G. L. Vasconcelos, J. J. P. Veerman, *Geometrical Models for Grain Dynamics*, **Physica A** 271, 251-259, 1999.
- [1.22] J. J. P. Veerman, D. Bazeia, F. Moraes, *Soliton Stability in a $Z(2)$ Field Theory*, **Journal of Mathematical Physics** 40, 3925-3929, 1999.
- [1.21] G. L. Vasconcelos, J. J. P. Veerman, *Geometrical Model for a Particle on a Rough Inclined Surface*, **Physical Review E** 59, 5641-5646, 1999.
- [1.20] J. J. P. Veerman, *Hausdorff dimension of boundaries of self-affine tiles in \mathbb{R}^N* , **Boletín de la Sociedad Mexicana de Matematica** 3, vol 4, no 2, 1998, 159-182.
- [1.19] B. D. Stošić, T. Stošić, I. P. Fittipaldi, J. J. P. Veerman, *Residual Entropy of the Square Ising Antiferromagnet in Maximum Critical Field: the Fibonacci Matrix*, **Journal of Physics A: Mathematical and General** 30, L1-L7, 1997.
- [1.18] J. J. P. Veerman, *Intersecting Self-Similar Cantor Sets*, **Boletim da Sociedade Brasileira de Matematica** 26, 1995, 167-181.
- [1.17] D. Hacon, N. C. Saldanha, J. J. P. Veerman, *Remarks on Self-Affine Tilings*, **Experimental Mathematics** 3, 317-327, 1995.
- [1.16] J. Graczyk, L. Jonker, G. Swiatek, F. M. Tangerman, J. J. P. Veerman, *Differentiable Circle Maps with a Flat Interval*, **Communications in Mathematical Physics** 173, 1995, 599-622.
- [1.15] B. Bielefeld, S. Sutherland, F. M. Tangerman, J. J. P. Veerman, *Dynamics of a Non-Conformal Degree Two Map of the Complex Plane into Itself*, **Experimental Mathematics** Vol 2, 1993, No 4, 281-300.
- [1.14] F. M. Tangerman, J. J. P. Veerman, *Erratum*, **Communications in Mathematical Physics** 141 (2), 1991, 291.
- [1.13] J. Graczyk, G. Swiatek, F. M. Tangerman, J. J. P. Veerman, *Scalings in Circle Maps (III)*, arXiv:math/9202209.
- [1.12] F. M. Tangerman, J. J. P. Veerman, *Scalings in Circle Maps (II)*, **Communications in Mathematical Physics** 141 (1991), 279-291.
- [1.11] J. J. P. Veerman, F. M. Tangerman, *Scalings in Circle Maps (I)*, **Communications in Mathematical Physics** 134, 89-107 (1990).
- [1.10] F. M. Tangerman, J. J. P. Veerman, *Asymptotic Geometry of Hyperbolic Well-Ordered Cantor Sets*, **Journal of Statistical Physics**, Vol 59, No 1-2, 1990, 299-321.

- [1.9] J. J. P. Veerman, *Irrational Rotation Numbers*, **Nonlinearity** 2, 1989, 419-428.
- [1.8] J. J. P. Veerman, F. M. Tangerman, *Intersection Properties of Invariant Manifolds in Certain Twist Maps*, **Communications in Mathematical Physics** 139 (1991), 245-265.
- [1.7] J. J. P. Veerman, F. M. Tangerman, *On Aubry Mather Sets*, **Physica D** 46 (1990), 149-162.
- [1.6] J. J. P. Veerman, *Hausdorff Dimension of Order-Preserving Sets*, **Communications in Mathematical Physics**, 127, 1990, 313-317.
- [1.5] J. J. P. Veerman, F. M. Tangerman, *Renormalization of Aubry Mather Cantor Sets*, **Journal of Statistical Physics**, Vol 56, No 1-2, 1989, 83-98.
- [1.4] J. J. P. Veerman, *Symbolic Dynamics of Order-Preserving Orbits*, **Physica D**29, 1987, 191-201.
- [1.3] J. J. P. Veerman, P. J. Holmes, *Resonance Bands in a Two Degree of Freedom Hamiltonian System*, **Physica** 20D, 1986, 413-422.
- [1.2] J. J. P. Veerman, *Symbolic Dynamics and Rotation Numbers*, **Physica A**134, 1986, 543-576.
- [1.1] J. J. P. Veerman, P. J. Holmes, *The Existence of Arbitrarily Many Periodic Orbits in a Two Degree of Freedom Hamiltonian System*, **Physica D**14, 1985, 177-192.

PUBLICATIONS: BOOKS, REFEREED

- [2.1] J. J. P. Veerman, *Numbers from all Angles*, In Press with **Springer Nature**, approx 450 pages. This is a graduate text in Number Theory.
- [2.2] J. J. P. Veerman, *Networks and Graphs*, In Preparation. Graduate Text in Graph Theory and Networks.

PUBLICATIONS: EXPOSITORY ARTICLES, REFEREED

- [3.3] J. J. P. Veerman, M. V. Fonseca, *Misteriosos Rayos C3smicos*, **El Pa3s**, 19-th of March, 1989, Madrid.
- [3.2] J. J. P. Veerman, M. V. Fonseca, *Un Mundo Ca3tico*, **Revista Espa3ola de F3sica**, Vol 2, Num 2, 1988, 30-38.
- [3.1] J. J. P. Veerman, M. V. Fonseca, *Un Mundo Ca3tico*, **El Pa3s**, 28-th of august, 1988, Madrid.

PUBLICATIONS: CHAPTERS IN BOOKS, REFEREED

- [4.2] J. J. P. Veerman, *Two-Dimensional Generalizations of Haar Bases*, **Pitman Research Notes in Mathematics** 362, ed. F. Ledrappier, 1996.
- [4.1] J. J. P. Veerman, M. J. Feigenbaum, *Scaling Behavior and Thermodynamics*, in: **Fundamental Problems in Statistical Mechanics VII** (ed. H. van Beijeren), North-Holland, 1990, 31-69.

PUBLICATIONS: CONFERENCE PROCEEDINGS, REFEREED

- [5.9] J. J. P. Veerman, R. Lyons, *A Primer on Laplacian Dynamics in Directed Graphs*, **Nonlinear Phenomena in Complex Systems** No. 2, Vol. 23, No. 2, pp. 196-206, 2020. (Proceedings of the 6th Ph.D. School/Conference on Mathematical Modeling of Complex Systems, Pescara (IT), 2019.)
- [5.8] J. Petrovic, J. J. P. Veerman, *Periodic State Revivals in Commensurate Waveguide Arrays*, International Workshop on Advances in Nanophysics and Nanophotonics, Book of Abstracts 21-22, Bucharest Aug 1 - Sep 2, 2015.
- [5.7] I. Herman, D. Martinec, J. J. P. Veerman, M. Sebek, *Stability of a Circular System with Multiple Asymmetric Laplacians*, **5th IFAC Workshop on Distributed Estimation and Control in Networked Systems**, University of Pennsylvania, 2015.

- [5.6] J. J. P. Veerman, *Symmetry and Stability of Homogeneous Flocks (a Position Paper)*, **Proceedings 1st International Conf on Pervasive and Embedded Computing and Communication Systems**, Algarve, Portugal, 2011.
- [5.5] He Hao, Prabir Barooah, J. J. P. Veerman, *Effect of Network Structure on the Stability Margin of Large Vehicle with Distributed Control*, **Proceedings 49th IEEE Conference on Decision and Control**, 2010.
- [5.4] A. Williams, G. Lafferriere, J. J. P. Veerman, *Stable Motions of Vehicle Formations*, **Proceedings 44th IEEE Conference on Decision and Control**, 72-77, 12-15 Dec. 2005.
- [5.3] J. J. P. Veerman, J. Bernhard, *Two Point Boundary Value Problems in Dynamical Systems* (abstract), **Sectional American Mathematical Society meeting, Los Angeles, 2004**.
- [5.2] L. A. Ruedas, P. D. Jones, J. J. P. Veerman, and L. J. Dizney, *Mesoscale Population Fluctuation in Urban Parks' Small Mammals: Conservation Implications of Disease Load and Ecology* (abstract), **Urban Ecology and Conservation Symposium, annual meeting: Urban Ecosystem Research Consortium**, Portland OR, 23 January 2004.
- [5.1] J. J. P. Veerman, *Strange Attractors in Dissipative Maps with One Angular Variable*, in: **Proceedings of the 1989 European Conference on Iteration Theory** (ed: C. Alsina e.a.), 1991, World Scientific Publishing.

PUBLICATIONS: SUBMITTED OR IN PROGRESS

- [6.1] E. O'Neil, J. J. P. Veerman, *Complete Interval Maps are Mixing*, In Progress.
- [6.2] J. J. P. Veerman, F. M. Tangerman, *a Remark on the Riemann Hypothesis*, **Submitted**.
- [6.3] D. Ralston, F. M. Tangerman, J. J. P. Veerman, H. Wu, *Birkhoff Measures, Birkhoff Sums, and Discrepancies*, **Submitted**.

PUBLICATIONS: ONLINE SEMINAR SERIES, NOT REFEREED

- [7.8] E. Riley et al, *Listing of the 2011 Nonlinear Systems Group Seminar* (Summaries of about 9 lectures by Students), Preprint **Portland State University, 2011**.
<http://web.pdx.edu/~veerman/nosygs11.pdf>
- [7.7] J. J. P. Veerman et al, *Listing of the 2010 Nonlinear Systems Group Seminar*, (Summaries by various students and JJPV of about 15 lectures), Preprint **Portland State University, 2010**.
<http://web.pdx.edu/~veerman/nosygs10.pdf>.
- [7.6] J. J. P. Veerman, F. M. Tangerman, *The Rockefeller Mathematics Seminar*, Spring 2009, (4 lectures summarized by JJPV and FT), Preprint, **Rockefeller University, 2009**.
<http://uqbar.rockefeller.edu/pradeep/mathseminar.php>.
<http://web.pdx.edu/~veerman/list09.pdf>.
- [7.5] J. J. P. Veerman, F. M. Tangerman, *The Rockefeller Mathematics Seminar*, Spring 2008, (14 lectures summarized by JJPV and FT), Preprint, **Rockefeller University, 2008**.
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- [7.4] Isaac Erskine, Robert Thompson, J. J. P. Veerman, *Listing of the Summaries of the Winter and Spring 2006 Nonlinear Systems Group Seminar*, (Summaries by IE, RT, and JJPV of about 10 lectures), Preprint **Portland State University, 2006**.
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- [7.3] Faisal Khan, J. J. P. Veerman, *Listing of the 2005 Nonlinear Systems Group Seminar*, (Summaries by FK and JJPV of about 10 lectures), Preprint **Portland State University, 2005**.
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- [7.2] J. J. P. Veerman, F. M. Tangerman, *The Rockefeller Mathematics Seminar*, Spring 1997, (5 lectures summarized by the speakers), Preprint, **Rockefeller University, 1997**.
<http://uqbar.rockefeller.edu/pradeep/mathseminar.php>.
<http://web.pdx.edu/~veerman/list97.pdf>
- [7.1] J. J. P. Veerman, *Listing of The Rockefeller Mathematics Seminar*, Fall 1996, (15 lectures summarized by JJPV), Preprint, **Rockefeller University, 1996**.
<http://uqbar.rockefeller.edu/pradeep/mathseminar.php>.
<http://web.pdx.edu/~veerman/list.pdf>

PUBLICATIONS: TECHNICAL REPORTS AND THESES, NOT REFEREED

- [8.7] J. J. P. Veerman, *The Dynamics of Well-Ordered Orbits*, preprint, **Universidade Aut3noma de Barcelona, 1995**.
- [8.6] J. J. P. Veerman, *Lectures on Circle Maps*, preprint, 1995, **Universidade Aut3noma de Barcelona**.
- [8.5] F. M. Tangerman, J. J. P. Veerman, *A Remark on Herman's Theorem for Circle Diffeomorphisms*, IMS preprint, **SUNY Stony Brook, 1991 # 13**.
- [8.4] F. M. Tangerman, B. Bielefeld, J. J. P. Veerman, *Monotonicity of Kneading Sequences and Thurston's Algorithm*, preprint, **SUNY Stony Brook, 1990**.
- [8.3] J. J. P. Veerman, *On Resonance Widths in Dynamical Systems*, Ph. D. Thesis, **Cornell University, 1986**.
- [8.3] J. J. P. Veerman, *Periodic Hamiltonians* (thesis in fulfillment of doctorandus degree), preprint, 1982, **University of Utrecht**.
- [8.2] J. J. P. Veerman, *Saddle-point Integrals applied to Vibro-seismics*, preprint in Dutch, **University of Utrecht, 1982**.
- [8.1] J. J. P. Veerman, *Homomorphic Deconvolution*, preprint, **University of Utrecht, 1981**.

PUBLICATIONS: ARXIV INTERNATIONAL PREPRINTS, NOT REFEREED

- D. Ralston, F. M. Tangerman, J.J.P. Veerman, H. Wu, *Birkhoff Measures, Birkhoff Sums, and Discrepancies*, arXiv:2511.22802 [math.DS].
- S. Portnoy, N. Torrado, J.J.P. Veerman, *The Bunching and Monotonicity Properties of Families of Probability Distributions*, arXiv:2406.02894 [math.ST].
- J.J.P. Veerman, *Geodesics on Regular Constant Distance Surfaces*, arXiv:2309.05808 [math.MG].
- Logan S. Fox, J.J.P. Veerman, *Equidistant sets on Alexandrov surfaces*, arXiv:2205.09155 [math.MG].
- C. A. Fish, J. J. P. Veerman, *The Cutoff Value in the Bak-Sneppen Model*, arXiv:2111.10473.
- J. J. P. Veerman, L. S. Fox, P. J. Oberly, *A Remarkable Summation Formula, Lattice Tilings, and Fluctuations*, arXiv:2109.06844 [math.DS].
- R. Lyons, J. J. P. Veerman, *Linear Nearest Neighbor Flocks with All Distinct Agents*, arXiv:2102.09020 [math.OC]
- J. J. P. Veerman, T. Whalen-Wagner, E. Kummel *Chemical Reaction Networks in a Laplacian Framework*, arXiv:2010.12982 [math.DS].
- J. J. P. Veerman, P. J. Oberly, L. S. Fox, *Statistics for a Family of Piecewise Linear Maps*, arXiv:2010.00155v2 [math.DS].
- A. Bountis, J. J. P. Veerman, F. Vivaldi, *Cauchy Distributions for the Integrable Standard map*, arXiv:2004.12912v2 [math.DS].
- J. J. P. Veerman, R. Lyons, *A Primer on Laplacian Dynamics in Directed Graphs*, <https://arxiv.org/abs/2002.02605>.

- L. S. Fox, P. Oberly, J.J.P. Veerman, *One-Sided Derivative of Distance to a Compact Set*, <http://arxiv.org/abs/2001.01154>.
- J. J. P. Veerman, *Navigating Around Convex Sets*, <http://arxiv.org/abs/1906.07281>.
- P. E. Baldivieso, J. J. P. Veerman, *Stability Conditions for Coupled Autonomous Vehicle Formations*, <http://arxiv.org/abs/1902.06873>.
- J. J. P. Veerman, *Symmetry and Stability of Homogeneous Flocks (a Position Paper)*, <http://arxiv.org/abs/1810.12107v1> [cs.SY]
- Paula Neeley, Daniel Taylor-Rodriguez, J.J.P. Veerman, Thomas Roth, *On the Uniformity of $(3/2)^n$ Modulo 1*, <http://arxiv.org/abs/1806.03559>
- J.J.P. Veerman, E. Kummel, *Diffusion and Consensus on Weakly Connected Directed Graphs*, <http://arxiv.org/abs/1807.09846>.
- J. J. P. Veerman, D. K. Hammond, P. E. Baldivieso, *Spectra of Certain Large Tridiagonal Matrices*, <http://arxiv.org/abs/1801.06946>.
- J. J. P. Veerman, *Social Balance and the Bernoulli Equation*, <http://arxiv.org/abs/1701.06946>.
- J. J. P. Veerman, W. J. Maxwell, V. Rielly, A. K. Williams, *Classification of Minimal Separating Sets in Low Genus Surfaces*, <https://arxiv.org/abs/1701.04496>.
- J. J. P. Veerman, J. Petrovic, *Optical Waveguide Array with Commensurate Eigenspectra*, <http://arxiv.org/abs/1507.04154>.
- J. Herbrych, A. G. Hazirakis, N. Christakis, J. J. P. Veerman, *Dynamics of locally coupled oscillators with next-nearest-neighbor interaction*, <http://arxiv.org/abs/1506.07381>.
- I. Herman, D. Martinec, J. J. P. Veerman, *Transients of Platoons with Asymmetric and Different Laplacians*, [arXiv:1504.06075v1](https://arxiv.org/abs/1504.06075v1) [cs.SY]
- S. S. Akmal, N. M. Nam, J. J. P. Veerman, *On a Convex Set with Nondifferentiable Metric Projection*, [arXiv:1412.0058](https://arxiv.org/abs/1412.0058).
- P. Herreros, M. Ponce, J. J. P. Veerman, *Regularity of Mediatrices in Surfaces*, [arXiv:1411.1803](https://arxiv.org/abs/1411.1803).
- J. J. P. Veerman, David K. Hammond, *Tridiagonal matrices and Boundary conditions*, [arXiv:1408.1145](https://arxiv.org/abs/1408.1145).
- C. E. Cantos, J. J. P. Veerman, *Transients in the Synchronization of Oscillator Arrays*, [arXiv:1308.4919](https://arxiv.org/abs/1308.4919).
- C. E. Cantos, J. J. P. Veerman, David K. Hammond, *Signal Velocity in Oscillator Arrays*, [arXiv:1307.7143](https://arxiv.org/abs/1307.7143).
- J. J. P. Veerman, F. J. Prieto, *On Rank Driven Dynamical Systems*, [arXiv:1307.0570](https://arxiv.org/abs/1307.0570).
- J.J.P. Veerman, C.M. da Fonseca, *Stability of Linear Flocks on a Ring Road*, [arXiv:1002.0787](https://arxiv.org/abs/1002.0787).
- J. J. P. Veerman, F. M. Tangerman, *Impulse Stability of Large Flocks: an Example*, [arXiv:1002.0782](https://arxiv.org/abs/1002.0782).
- J. J. P. Veerman, *Stability of Large Flocks: an Example*, [arXiv:1002.0768](https://arxiv.org/abs/1002.0768).
- A. J. Bae, W. A. M. Morgado, J. J. P. Veerman, G. L. Vasconcelos, *Single-particle model for a granular ratchet*, [arXiv:cond-mat/0312412](https://arxiv.org/abs/cond-mat/0312412).
- Giovanni L. Vasconcelos, J. J. P. Veerman, *Geometrical model for a particle on a rough inclined surface*, [arXiv:cond-mat/9904139](https://arxiv.org/abs/cond-mat/9904139).
- J.J.P. Veerman, M.M. Peixoto, A.C. Rocha, S. Sutherland, *On Brillouin Zones*, [arXiv:math/9806154](https://arxiv.org/abs/math/9806154)
- J. J. P. Veerman, Leo B. Jonker, *Rigidity properties of locally scaling fractals*, [arXiv:math/9701216](https://arxiv.org/abs/math/9701216).
- J. J. P. Veerman, *Hausdorff dimension of boundaries of self-affine tiles in R^n* , [arXiv:math/9701215](https://arxiv.org/abs/math/9701215).
- Jacek Graczyk, Grzegorz Swiatek, Folkert Tangerman, J. J. P. Veerman, *Scalings in circle maps III*, [arXiv:math/9202209](https://arxiv.org/abs/math/9202209).
- Ben Bielefeld, Scott Sutherland, Folkert Tangerman, J. J. P. Veerman, *Dynamics of certain non-conformal degree two maps on the plane*, [arXiv:math/9201293](https://arxiv.org/abs/math/9201293).

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INVITED LECTURES: SEMINARS AND COLLOQUIA

- 05/2026:** Invited Seminar, Students of the Applied Math Dept, Universidad Autonoma de Mexico.
- 05/2026:** Invited Colloquium, Applied Math Dept, Universidad Autonoma de Mexico.
- 04/2026:** Invited Seminar Physics Society (Physics students at Portland State).
- 03/2026:** Mathematics Seminar at University of Oregon.
- 03/2026:** Mathematics Seminar at Oregon State University.
- 02/2026:** Physics Seminar at Portland State.
- 12/2025:** Mathematics, Physics, and Philosophy seminar, Chapman University, California.
- 10/2025:** Physics Seminar at Portland State.
- 09/2024:** Three lectures as invited speaker at the University of Chieti-Pescara in Italy.
- 08/2024:** Three lectures as keynote speaker at the 30th Summer School and Conference “Dynamical Systems and Complexity” in Chalkidiki, Greece.
- 08/2024:** Invited 2 hour lecture in the Mathematics Department of the University of Zurich, Switzerland.
- 04/2024:** Invited lecture at the University of Toronto.
- 02/2024:** Analysis seminar at Portland State.
- 02/2024:** Two invited seminars at Stony Brook University.
- 10/2023:** Physics colloquium, Portland State.
- 07/2023:** Colloquium, Mathematics Dept, Rijksuniversiteit Groningen, The Netherlands.
- 06/2023:** Floris Takens Seminar, Mathematics Dept, Rijksuniversiteit Groningen, The Netherlands.
- 06/2023:** Two invited seminars, School of Economics, University of Chieti-PEscara, Italy.
- 06/2023:** Invited seminar, Physics Dept, University of Bologna, Italy.
- 05/2023:** Two invited seminars, Physics Dept, University of Bologna, Italy.
- 05/2023:** Invited public lecture, Istituto di Studi Avanzati, University of Bologna, Italy.
- 03/2023:** Invited seminar, School of Medicine, Harvard University.
- 03/2023:** Three analysis seminars, mathematics department, Portland State University.
- 02/2023:** Biomathematics seminar, mathematics department, Oregon State University.
- 01-02/2023:** Three colloquia, mathematics department, Portland State University.
- 12/2022:** Eight (remote) Invited Lectures in the INdAM Visiting Professor Program at Insubria University, Como, Italy.
- 11/2022:** Mathematics Department, Technion (Israel). (Primes!)
- 09/2022:** Chemical and Biological Physics, Weizmann Institute of Science (Israel). (The Bak-Sneppen model).
- 07/2022:** Analysis Seminar, Math Department, Weizmann Institute of Science (Israel). (The Bak-Sneppen model).
- 04/2022:** Analysis Seminar, Math/Stats Department, Portland State University (2 lectures: proof of the Birkhoff ergodic theorem).

06/2021: Analysis Seminar, Math/Stats Department, Portland State University (3 lectures: proof of the prime number theorem).

07/2019: 2 Invited Lectures, 6th PhD Summerschool-Conference on “Mathematical Modeling of Complex Systems”, University “d’Annunzio”, Pescara, Italy.

07/2019: Minicourse: “Tutorial on Information Flow and Directed Graphs”, University “d’Annunzio”, Pescara, Italy.

04/2019: Department Seminar, Physics Department, Portland State University.

03/2019: Applied and Computational Mathematics Seminar, Oregon State University.

01/2019: Discrete Mathematics Seminar, Math/Stats Department, Portland State University.

09/2018: Two Invited Seminars, Department of Mathematics, Stony Brook University, Stony Brook (LI).

04/2018: Invited Colloquium, Dept of Applied Math and Stats, Case Western Reserve University, Cleveland, OH, USA.

06/2018: Analysis Seminar, Math/Stats Department, Portland State University.

05/2018: Department Colloquium, Math/Stats Department, Portland State University.

05/2018: Department Seminar, Physics Department, Portland State University.

04/2018: Short talk, R.A.I.N. (rapid and informal communication of ongoing research activities in computational and applied mathematics in the northwest region) meeting, Portland.

11/2017: Seminar, Mathematics Department, Universidad Católica, Santiago, Chile.

04/2017: Department Seminar, Physics Department, Portland State University.

12/2016: Research Seminar, Pacific Northwest National Laboratory.

12/2016: Department Colloquium, Math/Stats Dept, Portland State University.

09/2016: Department of Mathematics, SUNY-Stony Brook, Stony Brook (LI), two Invited Lectures.

09/2016: Department of Mathematics, Courant Institute, New York City, two Invited Lectures.

09/2016: Center for Physics and Biology, Rockefeller University, New York City, two Invited Lectures.

05/2016: Department of Economics, Research Seminar, Portland State University.

04/2016: Department of Electrical and Computer Engineering, Research Seminar, Oregon State University.

04/2016: Department Seminar, Physics Department, Portland State University.

04/2016: Geometry Topology Seminar, Oregon State University.

04/2016: Mathematics Colloquium, Oregon State University.

03/2016: Discrete Mathematics Seminar, Portland State University.

02/2016: Physics Colloquium, Oregon State University.

12/2015: Mathematics Colloquium, Portland State University.

11/2015: Mathematics Colloquium, Portland State University.

07/2015: Mini course on Complexity in Physics, *5th PhD School - Conference, “Mathematical Modeling of Complex systems”*, University of Patras, Patras, Greece.

06/2015: Seminar, International Center for Nonlinear Dynamics and Complex Systems, “Gabriele d’Annunzio” University, Pescara, Italy.

05/2015: Seminar, Crete Center for Quantum Complexity and Nanotechnology, Heraklion, Crete, Greece.

05/2015: Seminar, Vinca Institute of Nuclear Sciences, *University of Belgrade*, Belgrade, Serbia

05/2015: Colloquium, Vinca Institute of Nuclear Sciences, *University of Belgrade*, Belgrade, Serbia

04/2015: Analysis Seminar, Mathematics Department, *University of Crete, Heraklion*, Greece.

04/2015: Research Seminar, *Technical University of Crete*, Chania, Greece.

03/2015: Mathematics Seminar, *University of Nevada*, Las Vegas, USA.

03/2015: Dynamical Systems Seminar, *University of Patras*, Greece.

03/2015: Mathematics Colloquium, *University of Patras*, Patras, Greece.

03/2015: Research Colloquium, *Demokritos Institute*, Athens, Greece.

02/2015: Mathematics Colloquium, *University of Crete*, Heraklion, Greece.

01/2015: Research Seminar, Physics Department, *Università La Sapienza*, Rome, Italy.

12/2014: Research Seminar, Department of Industrial Engineering, *Università Degli Studi di Salerno*, Salerno, Italy.

12/2014: Applied and Computational Mathematics Seminar, Mathematics Department, *University of Crete*, Greece.

12/2014: PDE Seminar, Mathematics Department, *University of Crete*, Greece.

11/2014: Colloquium, Physics Department, *University of Crete*, Greece.

10/2014: Seminar Center for quantum Complexity and Nanotechnology, Physics Department, *University of Crete*, Greece.

10/2014: Seminar, Department of Control Engineering, *Czech Technical University in Prague*, Czech Republic.

10/2014: Colloquium, Department of Control Engineering, *Czech Technical University in Prague*, Czech Republic.

09/2014: Colloquium, Mathematics Department, *University of Crete*, Greece.

06/2014: Mathematics Department, *Pontificia Universidad Católica*, Valparaiso, Chile.

06/2014: Mathematics Department, *Pontificia Universidad Católica*, Santiago de Chile, Chile.

09/2013: School of Engineering, *Università degli Studi di Salerno*, Salerno, Italy.

09/2013: Physics Department, *Università Federico II*, Naples, Italy.

07/2013: *IBM, Thomas J. Watson Research Center*, Video Seminar.

06/2013: Theory Division, *Los Alamos National Lab*, two research seminars.

03/2013: Mathematics Department, *SUNY Stony Brook*, two seminars.

11/2012: School of Engineering, *University of Florida*, Gainesville.

06/2012: Statistics Department, *Universidad Carlos III*, Madrid, Spain.

03/2011: Department of Statistics, *Universidad Carlos III*, Madrid, Spain.

03/2011: Mathematics Department, *Universidade de Coimbra*, Portugal.

04/2010: Biometry Department, *Universidade Federal Rural de Pernambuco*, Recife, Brazil.

06/2009: Mathematics Department, *Universidade de Coimbra*, Portugal.

06/2009: Applied Mathematics Department, *Universidad de Granada*, Spain.

06/2009: Mathematics Department, *Bristol University*, UK.

05/2009: Center for Physics and Biology, *Rockefeller University*.

07/2008: Mathematics Department, *Universidade de Coimbra*, Portugal.

05/2008: Biometry Department, *Universidade Federal Rural de Pernambuco*.

05/2008: Physics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.

04/2008: Mathematics Department, *SUNY at Stony Brook*.

03/2008: Center for Physics and Biology, *Rockefeller University*.

10/2007: *Instituto Mauro Picone per le Applicazioni del Calcolo*, Rome, Italy.

10/2007: Department of Computer Science and Applied Mathematics, *Università degli Studi di Salerno*, Salerno, Italy.
05/2007: Applied Mathematics Department, *Universidad de Granada*, Spain.
11/2006: Mathematics Department, *Universidad Autónoma de Barcelona*, Spain.
11/2006: Joint Colloquium: Department of Applied Mathematics I, *Universitat Politècnica de Catalunya*, and: Department of Applied Mathematics and Analysis, *Universitat de Barcelona*, Barcelona Spain.
10/2006: Department of Solid State Physics, *Universidad de Granada*, Spain.
10/2006: Topology and Geometry Department, *Universidad de Granada*, Spain.
09/2006: Applied Mathematics Department, *Universidad de Granada*, Spain.
08/2006: Department of Applied Mathematics, *Universidad Nacional Autónoma de México*, Mexico City, Mexico.
07/2006: Physics Department, *Universidade Federal de Paraíba*, João Pessoa, Brazil.
07/2006: Physics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.
07/2006: Biometry Program, *Universidade Federal Rural de Pernambuco*, Recife, Brazil.
03/2006: *The Fields Institute*, Toronto, Canada.
12/2005: Applied Mathematics Department, *Universidad de Sevilla*, Spain.
09/2005: Mathematics Department, *Rijksuniversiteit Utrecht*, The Netherlands.
09/2005: *Niels Bohr Institute*, Copenhagen, Denmark.
08/2005: Applied Mathematics Department, *Universidad Nacional Autónoma de México*, Mexico City, Mexico.
07/2005: *Instituto de Matemática Pura e Aplicada*, Rio de Janeiro, Brazil.
07/2005: Physics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.
06/2005: Mathematics Department, *Universidade Federal de Ceará*, Fortaleza, Brazil.
06/2005: Physics Department, *Universidade Federal de Ceará*, Fortaleza, Brazil.
05/2005: Applied Mathematics Department, *Universidad de Sevilla*, Spain.
05/2005: Applied Mathematics Department, *Universidad de Granada*, Spain, (Doctoral Course).
09/2004: Mathematics Dept, *Università Roma Tre*, Italy.
07/2004: Department of Mathematics and Physics, *Universidade Federal Rural de Pernambuco*, Recife, Brazil.
07/2004: Physics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.
03/2004: Applied Mathematics Department, *Universidad de Granada*, Spain.
11/2003: Center for Physics and Biology, *Rockefeller University*, New York City.
10/2003: Mathematics Department, *SUNY Stony Brook*, New York.
09/2003: Mathematics Department, *Université Paris-Sud (Orsay)*, France.
09/2003: Applied Mathematics Department, *Universidade de Granada*, Granada, Spain.
08/2003: *The Newton Institute of Cambridge University*, Cambridge, UK.
12/2002: Physics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.
07/2002: Mathematics Department, *Université Paris-Sud (Orsay)*, France.
07/2002: Mathematics Department, *Université Paris-Sud (Orsay)*, France.
02/2002: Mathematics Department, *University of Washington*, Seattle, USA.
12/2001: Physics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.

12/2001: Mathematics Department, *Pontifícia Universidade Católica*, Rio de Janeiro, Brazil.
03/2001: Mathematics Department, *Universidad de Barcelona*, Barcelona, Spain.
03/2001: Departement of Applied Matematics I, *Universidad Politécnica*, Barcelona, Spain.
12/2000: Department of Mathematics, *City College of New York*.
06/2000: Center for Mathematics and Informatics, *University of Amsterdam*, The Netherlands.
06/2000: Physics Department, *University of Amsterdam*, The Netherlands
05/2000: Mathematics Department, *University of California at Berkeley*.
05/2000: Institute for Technology and its Applications, *University of Maryland*, USA.
03/2000: Mathematics Department, *SUNY Stony Brook*, New York.
03/2000: Mathematics Department, *CUNY-Queens College*, NY.
03/2000: Mathematics Department, *CUNY-Staten-Island College*, NY.
03/2000: Mathematics Department, *Portland State University*, Portland, OR.
03/2000: *Florida Atlantic Honor's College*, Jupiter, Florida.
04/1999: Mathematics Department, *Penn State University*, USA.
10/1998: Mathematics Department, *Universidade Federal de Ceará*, Fortaleza, Brazil.
06/1998: Center for Physics and Biology, *Rockefeller University*, New York, USA.
06/1998: Mathematics Department, *SUNY at Stony Brook*, Stony Brook, USA (1 month).
11/1997: Mathematics Department, *Universidade Federal de Ceará*, Fortaleza, Brazil.
11/1996: Mathematics Department, *SUNY at Stony Brook*, Stony Brook, USA.
11/1996: Mathematics Department, *Queen's University*, Kingston, Ontario, Canada.
10/1996: Applied Mathematics Department, *Universidad Nacional Autónoma*, Mexico City, Mexico.
09/1996: Mathematics Department, *City University of New York Graduate Center*, New York, USA.
07/1996: Mathematics Department, *Universidade Federal de Alagoas*, Maceio, Brazil.
06/1996: Mathematics Department, *SUNY at Stony Brook*, Stony Brook, USA.
06/1996: Mathematics Department, *Universidade de São Paulo*, São Carlos, Brazil.
06/1996: Mathematics Department, *Universidade Federal de Minas Gerais*, Belo Horizonte, Brazil.
06/1996: Center for Physics and Biology, *Rockefeller University*, New York, USA.
02/1996: *Instituto de Matemática Pura e Aplicada*, Rio De Janeiro, Brazil.
11/1995: Mathematics Department, *University of Amsterdam*, The Netherlands.
06/1995: Mathematics Department, *Universidad Autónoma*, Barcelona, Spain (2 months).
01/1995: Mathematics Department, *University of Amsterdam*, The Netherlands.
11/1994: Mathematics Department, *Centre de d'Estudis Catalans*, Barcelona, Spain (2 months).
09/1994: *Instituto de Matemática Pura e Aplicada*, Rio de Janeiro, Brazil.
08/1994: International Center for Condensed Matter Physic, *Universidade Nacional de Brasília*, Brazil.
11/1992: Physics Department, *Rockefeller University*, New York, USA.
11/1992: Institute for Mathematical Sciences, *SUNY Stony Brook*, New York, USA (1 month).
10/1992: Mathematics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.
10/1990: Mathematics Department, *Queen's University*, Kingston, Ontario, Canada.

- 10/1992:** Mathematics Department, *Universidade Federal de Pernambuco*, Recife, Brazil.
- 05/1990:** Theoretical Physics Department, *Rijks Universiteit Utrecht*, The Netherlands.
- 05/1990:** Physics and Mathematics Departments, *Rijks Universiteit Amsterdam*, The Netherlands.
- 04/1989:** Theoretical Physics Group, *Los Alamos National Laboratories*, Los Alamos, New Mexico, USA.
- 03/1989:** Mathematics Department, *University of Texas*, Austin, Texas, USA.
- 11/1988:** Physics Department, *Universidad Complutense*, Madrid, Spain.
- 06/1987:** Applied Mathematics Department, *University of Arizona*, Tucson, Arizona, USA.
- 10/1986:** Mathematics Department, *Queen's University*, Kingston, Ontario, Canada.
- 06/1986:** Physics Department, *Universidad Complutense*, Madrid, Spain.
- 12/1985:** Mathematics Department, *Universidad Autónoma*, Madrid, Spain.

INVITED LECTURES: NATIONAL AND INTERNATIONAL MEETINGS

- 06/2023:** Invited seminar, workshop at the School of Economics, University of Chieti-Pescara, Italy.
- 05/2023:** Invited Public Lecture, Istituto di Studi Avanzati, University of Bologna, Italy.
- 07/2019:** 2 Invited Lectures, 6th PhD Summerschool-Conference on “Mathematical Modeling of Complex Systems”, University “d’Annunzio”, Pescara, Italy.
- 11/2017:** Invited Speaker, *Encuentro de Geometria Compleja y Dinámica Holomorfa*, Universidad Católica, Valparaíso, Chile.
- 03/2017:** Invited Speaker, *Pacific Northwest Geometry Seminar*, Lewis and Clark College, Portland, Oregon.
- 07/2015:** Invited Lecturer and Session Chair, *5th PhD School - Conference, “Mathematical Modeling of Complex systems”*, University of Patras, Patras, Greece.
- 08/2012:** Institute for Mathematics and Its Applications, *University of Minnesota*, Invited Speaker at International Workshop.
- 03/2011:** Symmetry and Stability of Homogeneous Flocks, *2011 meeting of Pervasive and Embedded Computing and Communication Systems*, Faro, Portugal.
- 04/2007:** Invited Speaker, Modeling and Control of Physical Networks, Pisa, Italy.
- 10/2006:** Participant, *Regional Conference on Dynamical Systems*, DANCE, Isla Cristina, Huelva, Spain.
- 09/2005:** Speaker, *25-th Colóquio Brasileiro de Matemática*, Instituto de Matemática Pura e Aplicada, Rio De Janeiro, Brazil.
- 09/2004:** Invited Talk at the *National (Italian) Meeting on Dynamical Systems: Classical, Quantum, Stochastic*, Acireale, Sicily, Italy.
- 04/2004:** Invited Talk by co-author J. Bernhard, at the *Sectional Meeting of the American Mathematica Society in Los Angeles*.
- 08/2003:** Granular Media Meeting at *Isaac Newton Institute at Cambridge University*.
- 07/2001:** *Summer Conference on Topology and Its Applications*, City College (CUNY), New York.
- 10/2000:** *Penn State University - University of Maryland Conference on Dynamical Systems*.
- 10/1999:** *Penn State University - University of Maryland Conference on Dynamical Systems*.
- 07/1996:** *Conference of the Mexican Mathematical Association*, Mexico City, Mexico.
- 03/1995:** *International Congress on Dynamical Systems*, Montevideo, Uruguay.
- 11/1994:** *Dynamical Systems Semester*, *Centre d’Estudis Catalans*, Barcelona, Spain.

- 04/1994:** *Congresso de Matemática, Universidade Federal de Bahia, Salvador de Bahia, Brazil.*
- 06/1987:** *Meeting on Dynamical Systems, Caldès de Malavella, Catalunya, Spain.*
- 08/1986:** *Meeting on Dynamical Systems, Thessaloniki, Greece.*
- 06/1985:** *Dynamics Days Conference, La Jolla Institute, La Jolla, California, USA.*
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HONORS AND AWARDS

- 09/2024:** Dean's Award for Change Making, Portland State University.
- 6/2023:** Floris Takens Seminar, Rijks Universiteit Groningen, The Netherlands (in-person).
- 06/2023:** Awarded grant for a minicourse (Number Theory) by the Visiting Professor Program of INdAM at the Insubria University in Como, Italy (in-person).
- 05/2023-07/2023:** Visiting Fellowship at the Institute of Advanced Studies of the Alma Mater Studiorum - University of Bologna.
- 12/2022:** Awarded grant for a minicourse (Graph Theory) by the Visiting Professor Program of INdAM at the Insubria University in Como, Italy (remote).
- 06/2022-12/2022:** Joseph Meyerhoff Visiting Professorship at the Weizmann Institute of Science (Israel). Travel, housing, and per diem (about \$35,000 est.).
- 12/2021:** Research Reinvestment Course Release for Winter 2022 from Portland State University.
- 02/2019:** Awarded Fulbright-Czech Distinguished Chair for the academic year 2019/2020 at the Technical University of Prague (estimated value \$60,000). Unable to accept due to administrative policies put in place by the Dean of the College of Arts and Sciences at Portland State.
- 09/2018:** Invited Visitor and Speaker, Stony Brook University, Stony Brook (NY). Travel plus lodging (about \$1300).
- 04/2018:** Invited Visitor and Speaker, Case Western reserve University, Cleveland (OH). Travel and lodging (about \$1000).
- 11/2017:** Invited Visitor and Speaker, Universidad Catolica, Santiago de Chile. Travel, lodging, and per diem (about \$4000).
- 09/2016:** Rockefeller University-SUNY Stony Brook, Visiting Professorship for 2 weeks: travel, lodging, and honorarium (about \$7000 total).
- 05/2016:** Invited Visitor, workshop on Dynamics and Differential Equations at the Institute for Mathematics and Its Applications, Minneapolis. Travel, lodging, and per diem (about \$1100).
- 05/2016:** Invited Visitor, workshop on Control at Large Scales: Energy Markets and Responsive Grids of the Institute for Mathematics and Its Applications, Minneapolis. Travel, lodging, and per diem (about \$1100).
- 10/2015:** Invited Visitor, workshop on Networks and Control of the Institute for Mathematics and Its Applications, Minneapolis. Travel, lodging, and per diem (about \$1700).
- 09/2015–present:** Scientific Adviser to the International Center for Nonlinear Dynamics and Complex Systems, Gabriele d'Annunzio University, Chieti-Pescara, Italy.
- 06/2015:** Invited Lecturer and Visitor at the 5th PhD School-Conference on Mathematical Modeling of Complex Systems. Joint grant from the University of Patras and the University of Crete. Travel, lodging, and per diem (about \$1700).
- 06/2015:** Invited Visitor to the School of Business Administration of the “Gabriele d'Annunzio” University of Pescara, Italy. Travel, lodging, and per diem (about \$900).
- 05/2015:** Invited Visitor at the Vinca Institute of the University of Belgrade. Travel, lodging, and per diem (about \$1000), shared by the University of Belgrade and the University of Crete.

- 03/2015:** Invited Visitor at the University of Las Vegas. Travel, lodging, and per diem (about \$3500).
- 10/2014:** Invited Visitor at the Technical University of Prague for collaboration and lectures. Travel, lodging, and per diem (about \$1000).
- 06/2014:** Awarded Sabbatical Fellowship for the academic year 2014-2015 from the Crete Center for Quantum Complexity and Nanotechnology, which is a Research Program financed by the European Union. The Center is part of the Physics Department of the University of Crete. Estimated equivalent value \$45,000.
- 06/2014:** Awarded travel grant from PSU: \$3000.
- 06/2014:** Invited Visitor at the Pontificia Universidad Católica in Santiago de Chile. Travel, lodging, and per diem (about \$4000).
- 07/2013 – 12/2013:** Consulting for NIKE: Dynamic Shoe Design. Approx \$5,000.
- 07/2012:** Graduate Student Fellowship for 1 year (value about \$27,000) to contract graduate student to work on applications of statistics in Psychiatry.
- 06/2012:** Departmental travel grant awarded (about \$500).
- 06/2012:** Awarded Peer Review Grant of about \$1600.
- 07/2011:** Awarded Faculty Enhancement Grant by Portland State of about \$5000.
- 02/2011:** Awarded Faculty Travel Grant \$1400,-.
- 05/2009:** Awarded Faculty Enhancement Grant by Portland State of about \$4500.
- 05/2009:** Awarded Peer Review Grant of about \$3500.
- 03/2008 – 07/2008:** Rockefeller University Visiting Professorship: \$32,000.
- 09/2007 – 03/2008:** Grant from various Italian sources to teach a doctoral course in the Dipartimento di Ingegneria dell'Informazione e Matematica Applicata at the Università degli Studi di Salerno in Salerno, Italy, and to collaborate with research groups (mathematics of traffic) in Salerno and Rome (Italy). Estimated equivalent value: \$ 22,000
- 08/2006:** Awarded travel Grant, math dept, PSU. \$500.
- 07/2006:** Awarded International Travel Grant, PSU. \$1300.
- 04/2006:** Departmental travel grant awarded.
- 06/2006:** Awarded Sabbatical Fellowship from the Spanish Ministry of Education and Science, to spend a full year at the University of Granada. These Fellowships are competitive and awarded on both the merit of the receiving group as well as that of the applicant. Estimated equivalent value: \$60,000.
- 02/2006:** TOP25 Hottest Articles - downloaded during July, August and September, 2005 - within the journal Systems & Control Letters. Our paper Decentralized control of vehicle formations was number 3.
- 05/2005:** 2-week Visiting Professorship awarded through Fisymat (Mathematical Physics) program of the Universities of Granada, Málaga, Castilla - La Mancha and the Andalusian Inst. of Astrophysics.
- 05/2005:** Portland State University Faculty Enhancement Grant of about \$ 7100,- (Geometry/Topology project).
- 2001 – 2005:** Formulated and spearheaded the effort of the Mathematics & Statistics Department at Portland State to obtain funding for a Colloquium Series with Regional Projection. This led to funding in 2003/4 and 2004/5 of about \$10,000.- a year. The sustained success of the colloquium made it possible to obtain \$ 32,000.- for the colloquium in subsequent years.
- 05/2004:** Portland State University Faculty Enhancement Grant of about \$ 5000,- (Population Dynamics Focus Group).
- 12/2003:** Portland State University Internationalization Mini-Grant (about \$1000,-) awarded for the Visit of Giovanni Vasconcelos.
- 01/2003:** Portland State University, Undergraduate and Creative Activity grant, joint with David Schweizer (undergraduate student).

- 12/2002:** Grant awarded by the CNPQ (Brazilian NSF) for travel to and local expenses in Recife, Brazil. (Project: Geometrical Models for Granular Dynamics.)
- 04/2001:** Faculty Travel Grant awarded by Portland State University (for travel to Universidad Politécnic, Barcelona, Spain).
- 07/2000 – 12/2000:** Awarded Gorenstein Professorship (Endowed Chair) at CUNY-Queens.
- 04/1998 – 04/2002:** Awarded a PRONEX Grant joint with the group of Theoretical and Computational Physics, at the Universidade Federal de Pernambuco, Recife, Brazil. This is a large grant that covers 4 years of travel, equipment, maintenance, and other costs, valued at about 80.000 dollars a year.
- 04/1997 – 06/1998:** CNPQ-FIOCRUZ Fellowship (Bolsa de Desenvolvimento Regional 2C, Health Sciences), Centro de Pesquisas Ageu Magalhães, Universidade Federal de Pernambuco, Recife, Brazil.
- 08/1995 – 08/1997:** CNPQ Fellowship for two years supplementary salary (Bolsa de pesquisa 2A, Mathematics).
- 08/1993 – 07/1995:** CNPQ Fellowship for two years supplementary salary (Bolsa de pesquisa 2C, Mathematics).
- 10/1991 – 12/1992:** CNPQ Fellowship (Bolsa de Pesquisador 2C, Mathematics), Instituto de Matematica Pura e Aplicada, Rio de Janeiro, Brazil.
- **06/1989 – 06/1991:** NSF grant for Research in Dynamical Systems (joint with F. M. Tangerman). This grant covered 2 years summer salary.

HONORS AND AWARDS: VISITING AND HONORARY APPOINTMENTS

- 06/2022-12/2022:** Joseph Meyerhoff Visiting Professorship in the Department of Chemical and Biological Physics at the Weizmann Institute of Science (Israel).
- 09/2018 – present:** Affiliate Appointment as Professor in the Physics Department of Portland State University.
- 09/2015 – present:** Scientific Adviser to the International Center for Nonlinear Dynamics and Complex Systems, “Gabriele d’Annunzio” University, Pescara, Italy.
- 09/2014 – 08/2015** Visiting Professor, Crete Center for Quantum Complexity and Nanotechnology.
- 03/2008 – 07/2008:** Associate Professor, Center for Biology and Physics, Rockefeller University, New York.
- 09/2007 – 02/2008:** Visiting Professor, Joint between Università Degli Studi di Salerno (Salerno, Italy) and Istituto per le Applicazioni del Calcolo Mauro Piccone (Rome, Italy).
- 11/2007 – 11/2007:** Judging Committee for the Realization of the title of Doctor of Research in Mathematics (6th Cycle, New Series), Università degli Studi di Salerno. (Commissione Giudicatrice per il Conseguimento del Titolo di Dottore di Ricerca in MATEMATICA (VI Ciclo - Nuova Serie) 2-a Commissione.)
- 09/2006 – 08/2007:** Visiting Professor, Applied Mathematics Department, Universidad de Granada, Granada, Spain.
- 06/2005 – present:** Adjoint Professor, Graduate Program in Biometry, Universidade Federal Rural de Pernambuco, Recife, Brazil.
- 06/2005 – present:** Adjoint Professor, Graduate Program in Physics, Universidade Federal de Pernambuco, Recife, Brazil.
- 07/2000 – 12/2000:** Gorenstein Professor of Mathematics, CUNY-Queens.

HONORS AND AWARDS: NOMINATIONS

- 04/2016:** Nominated for the Portland State University *Senior Faculty Research Excellence Award*
- 12/2015:** Nominated for the position of *Dean of the Mellon College of Science* at Carnegie Mellon University.

01/2013: Nominated for the 2 year position of *Associate Director of the Institute of Pure and Applied Mathematics* at UCLA.

TEACHING: SUCCESS STORIES

The names of the ex-students mentioned here can be found in other contributions throughout this cv. All these students were excellent and, without exception, a joy to work with.

Paula Neeley: worked with me as an undergraduate and co-authored a number theory paper. She went on to Carnegie Mellon to do a Master's in formal methods and started her PhD there. But before finishing this, she decided to accept a job offer and currently she is a Senior Formal Methods researcher at Johns Hopkins University.

Albert Bae: worked with me as an undergraduate and published several papers with me. Later finished his PhD at Cornell (Physics), was postdoc at the Max Planck institute, came back to Portland to work at of teh prestigious liberal arts colleges here (Lewis and CLark), where he set up a thriving biophysics group, studying single celled organisms.

Shyan Akmal: wrote an excellent paper with me when he was a high school student (2015). Went on to Harvey Mudd, and finished his dissertation at MIT (Theoretical Computer Science). Currently working as postdoc in Sofia Bulgaria doing impactful work. I am proud to notice that he thanks me on his current (2025) website.

Peter Oberly: Did his Master's with me on ergodic theory. By then he already was a mature mathematician. Did not get funded at PSU, went Oregon State where he was their star student. Finished PhD and went to University of Rochester where he is a very successful assistant professor.

TEACHING: UNDERGRADUATE

I have taught the Undergraduate Curriculum across both Mathematics and Physics (except experimental Lab courses).

Abstract Algebra: 2025.

Number Theory: 2017, 2018, 2019.

Calculus: 1990, 1991, 1993, 1994 (2 courses), 1995 (2 courses), 1996, 1999 (7 courses, with extensive use of graphics calculators), 2001, 2003, 2004, 2013, 2014.

Mathematical Analysis: 2001, 2002, 2015/6

Linear Algebra: 1993, 1995, 2016.

Ordinary Differential Equations: 1993, 2001, 2012, 2013, 2014, 2024

Introduction Topology: 1991

Complex Analysis: 1995

Discrete Mathematics: 2000, 2013

Mathematics for Elementary School Teachers: 2000

Group Theory: 2009, 2016, 2023.

Excursions in Mathematics: 2012

Mechanics: 1985

General Physics (1st year): 1994/95, 1995/96

General Physics (2nd year): 1998

TEACHING: GRADUATE

Complex Systems (Agent Based Modeling of Social Behavior): 2025.
Game Theory: 2024.
Directed Networks: 2021.
Number Theory: 2020-21.
(Advanced) Algebraic Topology: 1992, 2019/20.
Complex Analysis: 2018.
Algebraic Graph Theory: 2017/8.
Graph Theory: 2017.
Set Theory: 2003, 2018, 2019.
Enumerative Combinatorics: 2003, 2004
Introduction Topology: 2004, 2019
Introduction Geometry: 2005
Advanced Riemannian Geometry: 2002, 2006/7
Dynamical Systems: 1990, 1992 (mini-course), 1994, 2002
Introduction Abstract Algebra: 1996
Advanced Analysis: 2002, 2006/7
Fractal Geometry: 2003
Research in Dynamical Systems: 2003/4
Ordinary Differential Equations: 2008/9, 2010/11, 2015/6, 2020.
Advanced Ordinary Differential Equations (Dynamical Systems): 2009/10, 2011/12, 2017/18, 2020/21.
History of Mathematics: 2009.
Mathematical Modeling: 2006, 2010, 2012, 2013, 2016, 2017.
Mathematical Methods of Physics: 2017.
Modeling of Coherent Movement of Flocks: Special Doctoral Course, Univ. degli Studi di Salerno, Italy, 2008
Digraphs: Special course at the 6th PhD Summer School “Modeling of Complex Systems”, Pescara, Italy, 2019.

TEACHING: NEW COURSES

2020 – present, Directed Graphs: I have started designing a course in the theory of directed graphs. The course is still in its early stages — slides that summarize the lectures but nothing written in textbook form. This is one of the most quickly expanding areas of mathematics, currently most fueled by research in the applied science disciplines. The applications in any applied science (data science, social sciences, biosciences, traffic, to name only a few) are so manifold that they defy description. Nonetheless, quality mathematics textbooks in this area are still very hard to come by. So the effort to introduce students to the basic mathematical principles is very timely.

It is too early to outline the pedagogical approach, but one attractive choice goes along the lines of the number theory course outlined below.

2017 – present, Number Theory: Design and implementation a full year graduate course on number theory. The first guiding principle is to give students the basic tools for each unit of about 2 weeks in the form of blackboard lectures in the first week, and drill and develop that knowledge in the form of accessible exercises in group form in the second week. The second guiding principle is that it is motivated by curiosity. Instead of an approach from the axioms on up, we try to answer the major questions — covering all major branches of number theory — that almost every beginning number theory student has. These two principles make the course unique, amongst all standard texts that we know of.

Under *Numbers from All Angles*, this book of about 450 pages has been accepted by Springer Nature. Not only is it explicitly designed to mesh well with the curriculum of Portland State and similar universities, but unlike any other text in this area it is designed to be inclusive of non pure-math graduate students. The material should be accessible for mathematically mature students from, for example, physics and computer science. It emphasizes applications of, and reinforces principles of, core courses of the early graduate education, namely mathematical analysis, complex analysis, and abstract algebra. Also in that aspect, it is unique among text books on number theory.

TEACHING: FACULTY-MENTORED STUDENT RESEARCH

Especially for graduate students faculty-mentored research is of crucial importance. I list a few of the more recent independent projects I have undertaken with students. These projects are in addition to research projects that were part of a Master's or PhD, and that are listed under "Teaching: Graduate Students".

2021, Choomno Moos: *Bunching Properties of Probability Distributions*, McNair Fellowship.

2021, Cameron Fish: *The Value of the Bak-Snappen Cut-Off*, Independent Research.

2018, Ewan Kummel: *Characterization of Random Walks on Directed Walks*, Independent Research.

2018, Paula Neeley: *Distribution of Fractional Values of $(3/2)^i$* , Honor's Project.

2017, Julie Davenport: *Supply Chains with Disruption Risk*, Independent Research.

2017, Jacob Wagner: *The Cut-off Value in the Bak-Sneppen Model*, Independent Research.

2017, Asya Volkova: *Distribution of Fractional Values of $(3/2)^i$* , Honor's Project.

2016, Victor Rielly: *Classification of Surface Embeddings of Minimally Separating Sets*, Independent Research.

2016, Kaelyn Flowerday: *Social Gossip Networks*, Master's Student, Independent Research.

2016, William Maxwell: *Embeddings of Minimal Separating Sets in Surfaces of Genus 3 and 4*, Master's Student, Independent Research.

2016, Jacob Wagner: *Numerical Study of the Bak Sneppen Model*, Undergraduate, Independent Research.

2016, Thomas Ronay: *Supply Chains*, Undergraduate, Independent Research.

2014, Robyn Reid: *A Counter-Example in Convex Analysis*, Undergraduate Honor's Thesis in Mathematics. She did not finish.

2013, Shyan Akhmal: Shyan is a brilliant high school student and he approached me to do research. I consented and we ended up publishing a paper: S. S. Akmal, N. M. Nam, J. J. P. Veerman, *On a Convex Set with Nondifferentiable Metric Projection* **Optimization Letters**, Volume 9, Issue 6, pp 1039-1052, August 2015.

2013, Austin Williams: Austin had just finished his Master's. We designed algorithm to numerically solve certain questions in Algebraic Topology.

2013, Robert De Dios: Robert had just finished his Master's with me and wanted to continue doing research. We worked on a project with He Hao at UC Berkeley on perturbation theory of Networks of Oscillators: **R. DeDios, He Hao, J. J. P. Veerman**, *Eigenvalue Perturbation Theory in Oscillator Networks*.

2012/13, Carlos Cantos: Carlos co-authored two very original works with me, in which we settle a long-standing problem: **Carlos E. Cantos, J. J. P. Veerman**, *Control of Transients in the Synchronization of Oscillator Networks* and **Carlos E. Cantos, J. J. P. Veerman**, *Signal Velocity in Oscillator Networks*. Both papers have appeared in the **European Physical Journal Special Topics**.

2012/13, Jarrod Brockman: A project in Computational Behavioral Neuroscience. We worked with faculty from the Oregon Health and Sciences University on a project in part funded by them.

2012, Max Orhai: *Mathematical Study of Algorithms in Parallel Computing*, Undergraduate Honor's Thesis in Mathematics. Did not finish.

2003, David Schweizer: We concentrated on the numerical implementation of analysis done in the project with Albert Bae.

2002, Albert Bae: Successful research project with then undergraduate student Albert Bae, resulting in a paper with 2 Brazilian physicists. **A. J. Bae, W. A. M. Morgado, J. J. P. Veerman, G. L. Vasconcelos**, *Single Particle Model for a Granular Ratchet*, **Physica A** 342, 22-28, 2004.

TEACHING: ADVISOR OF POSTDOC

2002 – 2003, James Bernhard We published two papers and James gave an invited talk. He subsequently received offers from Reed College, and Puget Sound University. **James Bernhard, J. J. P. Veerman**, *The Topology of Surface Mediatrices*, **Topology and its Applications**, 154, 54-68, 2007. And: **J. J. P. Veerman, J. Bernhard**, *Minimally Separating Sets, Mediatrices, and Brillouin Spaces*, **Topology and its Applications** 153, 1421-1433, 2006.

TEACHING: PhD ADVISOR:

2019 – 2022, Logan Fox: *Equidistant Sets in Spaces of Bounded Curvature*, Portland State University. Successfully defended.

2019 – 2021, Tessa Whalen-Wagner: *Chemical Reaction Networks*, Portland State University. Student job offer, did not finish thesis.

2019 – 2023, Chris Aagaard: *Minimal Separating Sets in Surfaces*, Portland State University. Successfully defended.

2018 – 2021, Robert Lyons: *Linear Nearest Neighbor Flocks with All Distinct Agents*, Portland State University. Successfully defended.

2017 – 2018, Victor Rielly: *Minimally Separating Sets for Higher Genus Surfaces*, Portland State University. Student changed to applied math, did not finish thesis.

2011 – 2019, Pablo Baldvieso: *Necessary Conditions for Stability of Vehicle Formations*, Portland State University. Successfully defended in 2019.

TEACHING: MASTER'S THESIS ADVISOR

2021, Ed Crouser: *Convergence to Stability of Flocks*, Master's in Mathematics.

2020, Cameron Fish: *Rank Driven Dynamics*, Master's in Mathematics.

2019, Chris Aagaard: *Eulerian Graphs*, Master's in Mathematics.

2019, Logan Fox: *Wandering Domains*, Master's in Mathematics.

2019, Peter Oberly: *Ergodic Theory*, Master's in Mathematics.

2019, Tess Whalen-Wagner: *Evolution and Gender Variability*, Master's in Mathematics.

2017, Matthew Meerdinck: *A Continuous Time Model of Social Balance*, Master's in Mathematics.

2016, Erin Tannenbaum: *Minimal Separating Sets of Non-Orientable Surfaces*, Master's in Mathematics, Portland State University, unfinished.

- 2016, Julie Davenport:** *Economic Networks*, Master's in Mathematics, Portland State University.
- 2016, Spenser Barlow:** *The Mathematics of Complexity*, Master's in Mathematics, Portland State University, unfinished.
- 2016, Jennifer Meneghin:** *Genetic Algorithms*, Master's in Mathematics, Portland State University, unfinished.
- 2014, Carlos Cantos:** *Ridge Regression*, Master in Statistics, co-advisor with Ian Dinwoodie, Portland State University.
- 2012/13, Carlos Cantos:** *Control of Transients in Newtonian Networks*, Master's in Mathematics, Portland State University.
- 2012/13, Ben Wutzke:** *Nesterov Smoothing Method and Accelerated Gradient Algorithm with Applications to Support Vector Machines*, Portland State University. I was co-advisor with Mau Nam Nguyen.
- 2012/13, Austin Williams:** *Minimally Separating Sets*, Master's in Mathematics, Portland State University.
- 2011/12, Shuichi Masuda:** *Graph-Theoretic Properties of the Spectrum and Kernels of Directed Graph Laplacians*, Master's in Mathematics, Portland State University.
- 2011/12, Robert De Dios:** *Expansiveness of Geometric Lorenz Maps*, Master's in Mathematics, Portland State University.
- 2011/12, James Mahoney:** *k-Fibonacci Sequences Modulo m*, Master's in Mathematics, Portland State University.
- 2010/11, Megan Fitzgerald:** *Mathematical Model of a Zombie Outbreak*, Master's in Mathematics, Portland State University.
- 2009/10, Will Sullivan:** *Boundary Conditions and a One Lane Linear Model of Traffic Flow*, Master's in Mathematics, Portland State University.
- 2009/10, Nicole Kraft:** *Rotation Systems of Graphs in Surfaces*, Portland State University. Nicole moved to California and did not finish.
- 2009/10, Aaron Keel:** *Separating and Non-Separating Embeddings of Graphs in Closed Surfaces*, Master's in Mathematics, Portland State University.
- 1999, Jeff Baker:** *Numerical Experiments with Models of Particle on a Rough Inclined Plane*, Master's in Mathematics, Georgia Tech.
Co-advisor: Luca Dieci, Don Estep.
- 1999, Marcelo Sardelich:** *Random Walks*, Master's in Physics, Universidade Federal de Pernambuco, Recife, Brazil.
Co-advisor: Maurício Coutinho.

TEACHING: HONORS THESIS ADVISOR

- 2023 – 2024, Heather Moore** , *Birkhoff sums of Rotations*, Honor's Thesis.
- 2018, Gil Parnon** *Qualitative Stability in Model Eco-Systems*, Honor's Thesis.
- 2018, Paula Neeley** *The distribution of $(3/2)^n$ modulo 1*, Honor's Thesis.
- 2017, Asya Volkova** *Game Theory on Graphs*, Honors Thesis.
- 2016, Nick Gilla** *Efficient Curing Policy on Graphs*, Honors Thesis, unfinished.

TEACHING: PhD THESIS COMMITTEE MEMBER

- 2021 – present: Ari Herman** *Quantum Walks*, Portland State University (Math).
- 2021 – 2024: Taiyo Terada** *Leonard Pairs and Rainbow Spanning Trees*, Portland State University (Math).

- 2021 – 2024: Shuichi Masuda** *Nearly Bipartite Leonard Pairs*, Portland State University (Math).
- 2019 – 2022: Ewan Kummel** *Spectral Techniques for Weakly Connected Digraphs*, Portland State University.
- 2012 – 2014, Rajesh Venkatachalapathy:** *Neural Dynamics of Quadruped Locomotion*, Portland State University, Resigned in 2014 because of Sabbatical.
- 2008, Vittorio Zampoli:** *Some Recent Results about Exponential Decay Estimates for Composite Materials*, 01/2008, Università degli Studi di Salerno, Salerno, Italy.
- 2008, Ivana Bochicchio:** *Longtime Behavior for Nonlinear Models of a Viscoelastic Beam*, 01/2008, Università degli Studi di Salerno, Salerno, Italy.
- 2008, Nunzia Cascone:** *Modeling and optimization of Traffic Flows on Networks*, 01/2008, Università degli Studi di Salerno, Salerno, Italy.
- 2008, Eliza Trapel:** *Numerical and Analytical Results for Real Systems based on Queueing Theory*, 01/2008, Università degli Studi di Salerno, Salerno, Italy.
- 1998, Benjamin Hinkle:** *Parabolic Limits of Renormalization*, 06/1998, SUNY Stony Brook.
Other Committee members: M. Lyubich (advisor), J. Milnor, J. Hubbard, M. Martens.
- 1996, Leroy Wenstrom:** *Scaling Laws for Quadratic Maps*, 06/1996, SUNY Stony Brook.
Other committee members: M. Lyubich (advisor), J. Milnor, M. Martens.

TEACHING: MASTER’S THESIS COMMITTEE MEMBER

- 2016, Dylan Greenwalt:** *New modified Secant-Like Method for Solving Nonlinear Equations*, 12/2016, Portland State University.
Advisor: Bin Jiang.
- 2016, Will Maxwell:** *Subgradients of Spectral Functions*, 12/2016, Portland State University.
Advisor: Mau Nam.
- 2006, Louis Kaskowitz:** *Fractional Graph Colorings*, 02/2006, Portland State University.
Advisor: John Caughman.
- 1997, Emerson O. Lima:** *The Markoff Spectrum*, 12/1997, Universidade Federal de Pernambuco, Recife, Brazil.
Other committee members: A. Rocha (advisor), M. M. Peixoto.

ADMINISTRATION: DIRECTOR OF COMPLEX SYSTEMS AT PSU

09/2023 – 07/2025, Director *The Complex Systems program has a very successful graduate component and no official undergraduate program, except for a minor. However, in 2023 and 2024, the remaining faculty retired, and so the ‘program’ (= small department) found itself without faculty. The dean and retiring faculty members asked me to assume the director role, in order to help resurrect the program in spite of the large scale budget cuts at PSU due to global lack of enrollment. Some of my initiatives:*

COSYS seminar series: For the first time in several years in 2025, the COSYS unit again had an interdisciplinary seminar. With speakers from a variety of disciplines and from across the country as well as from PSU. Attendance is in-person as well as online. I estimate that in both categories on average at least 20 attended. We maintain an email list of about 300 interested people.

Name Change: Previously the program was known as Systems Science, a name widely considered to be dated. I carried out a name change to the more accepted and modern ‘Complex Systems’, emphasizing interdisciplinary collaboration. The name change for the course prefix (SYSC to COSY) and the Master’s and PhD degrees (Systems Science to Complex Systems) is under way (as of 2025).

Advisory Group: We instated an group of influential citizens and prominent scientists to advise the Director and the University on important strategic issues for the unit. Prime among these, to assist in formulating strategies to hire replacements for the retired faculty.

Participation in new School: We joined the departments of Anthropology, Geography, Geology, and Environmental Science and Management, to form the the new School of Earth, Environment, and Society (SEES). I have been active part of the leadership of the new school, as Director of one of the five constituent units. This involved attendance on most of the important committees (lack of faculty makes it impossible to delegate).

First SEES Seminar: With Charles Klein from anthropology, I organized the first SEES seminar series on Climate, Society, and Environment in Winter and Spring of 2024. We had great speakers from across the entire university (among others from MTH, HIST, ECON, and GEOL) and an enthusiastic audience.

Quantitative Study of Social Behavior: Introduced the topic of Quantitative Study of Social Behavior. This is a strongly interdisciplinary topic (featuring among others elements of game theory, social science, statistical physics, statistics, economics, and biology). My intent was twofold. First, to unify the offerings of Complex Systems, as well as integrate better into SEES, and second, to lay the groundwork for a future cluster-hire in this area.

ADMINISTRATION: MATHEMATICS DEPARTMENT CHAIR

03/2010 – 03/2012, Department Chair. *In this period I chaired the Fariborz Maseeh Department of Mathematics and Statistics at Portland State University. At that point the department had roughly 85 employees (including office staff and temporary workers). Of those, about 32 were full time faculty. We oversaw some 250 undergraduate majors, but we teach each year several thousand others who take mathematics courses for other (non-math) majors. At the graduate level, the Department enrolled over 100 students in three Master's and three PhD programs. Our budget was about 4.3 million dollars a year, while the year's revenue (in teaching) was over double that. In addition, as Chair of the Fariborz Maseeh Department of Mathematics and Statistics, I managed a donation of \$4 million dollars plus \$2 million in matching funds. Some of my initiatives:*

Mathematics Placement: Under my leadership we successfully implemented a Mathematics Placement test which will be taken by on the order of 5000 students a year.

Large Classes: I pioneered the use of Large Classes, and instated a test program to incentivate the Dean's Office to give us enough Graduate TA's to have recitation section for these large classes.

Faculty Mentoring: I met periodically with new faculty through informal meetings I called 'beer and mentoring' sessions.

Administrative Re-organization: The administrative structure of the department was completely overhauled under my tenure: I delegated more responsibility to the faculty so that decisions can be taken closer to where they are important. In general the idea is that more people (as opposed to only the chair) are involved in the decision making.

Fund Raising: I initiated efforts fund students both from academic and private sources.

Private Donor: I obtained funds from a private source to start an ongoing collaboration between the Department of Statistics of the Carlos III University in Madrid, Spain, and our department.

Academic Donors: I secured funding for a 1 year research assistantship for a PhD student. The sources were Oregon Health and Science University and an anonymous donor. (See Outreach, below).

Outreach: Please see the separate Outreach section below.

ADMINISTRATION: OUTREACH

In my second year as Chair, I became very active in terms of outreach across the University and beyond. I had well over a dozen outreach projects that were designed to do two things: First, bring the visibility of the department, both

on and off-campus, to a new level. And second, bring in more research money. Here are the most important of these projects.

INTEL This is the world's leading microchip producer and has its major research center only a few miles from Portland State University. We placed our department on the radar with INTEL by back and forth visits. INTEL's research director visited us to talk about the possibility of joint research. When I left the Chair, there was an expectation to start common research projects in the near future.

Joint Graduate Student Research Assistant Fellowships: *I developed relations with important research centers in the area with the aim of enabling PhD students to do research in the interest of the community in return for funding research fellowship. This would allow student to finance their PhD. Here are examples:*

Oregon Health and Science University, Psychiatry This is the leading research hospital of the state of Oregon. I negotiated with their Department of Psychiatry that they fund part of a Research Assistantship in the department. The remainder of the fellowship I obtained from an unnamed source.

Oregon Health and Science University, Medical Physics With the Department of Medical Physics I set up a plan for a similar Research Assistantship.

Regence Cambia This is a Health Insurer. We investigated the possibility of close collaboration along the same lines. This was not feasible.

Prominent Visitors With the dept of Physics, I have set up extended visits of several of world leaders in mathematical physicists, in particular Sir Michael Berry, Leo Kadanoff, and Mitchell Feigenbaum.

Involving other Departments on Campus With the dept of Architecture, I have set up a project for their students to design an appropriate entrance for the dept. They in turn are supposed to go to math students to incorporate math themes in the design.

Broadcasting our Lecture Series I have organized the webcast and website for our weekly colloquia. We were the first at PSU to have a fully online colloquium. (It is filmed every week and the colloquium can be seen online, in high quality, by the entire PSU community).

Service Course Improvement We interacted with departments across the University to assess the needs and successes of our service courses. Especially with the School of Business I was able to clear up misunderstandings and pave the way for a better communication that results in courses that better meet the needs of the Business School. We also conducted conversations with Social Science, the Sciences, and Engineering.

Funding for International Collaboration I obtained a private donation to fund an exchange program with the Carlos III University in Spain. I formulated a strategy for two departments in different countries (and languages) to successfully initiate collaborations. This strategy was approved by faculty on both sides. Our donation was matched by the other University's department. The exchanges took place for the first year. Unfortunately the severe financial crisis in Spain put an end to this initiative in 2012.

Interdisciplinary Reception With the Dean of Engineering, I started a series of Bring Your Idea receptions. These are informal gatherings designed to foment collaboration between the Mathematics and Statistics Department and other faculty. We organized two: the first one with the College of Engineering, and the second one with the Sciences. They were considered very successful by the participants.

ADMINISTRATION: CHAIRED COMMITTEES

2003 – 2004: Chair *Graduate Committee* of the Mathematics and Statistics department at Portland State University for two consecutive years.

This committee planned and approved all graduate courses (3 PhD and 3 Master's programs) in the department. Until then decisions were based on anecdotally available information. My role was to design and put into practice policies based recorded information. The excel document I designed was still in use in 2013.

2000 – 2003: Chairman *Colloquium Committee* of the Mathematics and Statistics department at Portland State University for three consecutive years.

I made the colloquium into a weekly Friday afternoon departmental event. I campaigned for financing and

wrote budgets. In 2004/5 the department received funding and the colloquium has had a major presence in the department ever since.

SERVICE: THE SCIENTIFIC COMMUNITY AT LARGE

- 2023:** Gave 2 one-hour talks (in Italian) for a large group (about 150) of Italian High School kids with an interest in studying mathematics. This was an initiative of the Insubria University in Como, Italy.
- 2019:** Guest-editor of the Proceedings of 6th School/Conference on “Mathematical Modeling of Complex Systems”, Pescara 2019. Issue to appear in the journal *Nonlinear Phenomena in Complex Systems*.
- 2019:** Co-organizer of the 6th PhD Summerschool-Conference on “Mathematical Modeling of Complex Systems”, University “d’Annunzio”, Pescara, Italy.
- 2015–2019:** Volunteered each year for the Oregon Invitational Math Tournament.
- 2015–present:** Member of Executive Board (as Scientific Adviser) of an Interdisciplinary Research Center to be created at the “Gabriele d’Annunzio” University in Pescara, Italy. The aim is to create a Center where mathematicians and physicists interact with social and biomedical scientists. We expect about 30 associated scientists to participate. We ultimately want the Center to participate in and originate European collaborative research grants.

SERVICE: REVIEW REPORTS FOR INTERNATIONAL JOURNALS OR EVENTS

Tracked since 2017.

- 2023:** American Mathematical Monthly.
- 2022:** Distributed Control-IEEE TAC.
IEEE, American Control Conference.
- 2021:** IEEE Automatica.
- 2020:** 1) Journal of Statistical Physics.
2) American Mathematical Monthly.
3) IEEE Automatica.
- 2018:** 1) American Mathematical Monthly.
2) Journal of Abstract and Applied Analysis.
- 2017:** 20th IFAC World Congress of the International Federation of Automatic Control.

SERVICE: DEPARTMENT AND UNIVERSITY

- 2023–present:** Director of Complex Systems program at Portland State.
- 2021:** Member of the Portland State “Re-imagine Systems Science” group, for which I wrote 9 reports in summer and fall of 2021. The last of these was the first version of an ambitious proposal for a new transformative, transdisciplinary Complex Systems unit to be founded at PSU. The final proposal was authored by the entire group Re-imagine System Science. In 2023, the Systems Science unit was transformed into the Complex Systems program that became part of a new School formed by it and the departments of Anthropology, Geography, Geology, and Environmental Science & Management.
- 2018–present:** Elections Committee MTH dept.

- 2019:** Post Tenure Review Committee (for Prof Leung), Physics Dept, Portland State University.
- 2017-present:** Promotion and Tenure Committee, Dept of Math, Portland State University.
- 2019-2020:** Member of the Graduate Council of Portland State University. (Membership ended because of time conflict with one of my classes.)
- 2018-2021:** Department representative of the Pacific Institute for the Mathematical Sciences (PIMS). Elections Committee. Library Committee.
- 2017-2019:** Library Committee.
- 2016-2017:** Putnam Committee, Elections Committee.
- 03/2016:** Represented the Department on Sponsor's Day of the Mathematical Sciences Research Institute at the University of Berkeley.
- 2015-2016:** UG Scholarship Committee.
- 2013:** I started discussions with the North-West Power and Conservation Council. This is the most important entity in the Pacific Northwest responsible for planning an affordable and reliable energy system while enhancing fish and wildlife. We are discussing the possibilities of eventually funding several PhD fellowships per year on an ongoing basis. Their interest is to create a pool of local top talent for the requirements of future energy management.
- 2013-2014:** Library Committee.
- 2013-present:** Started the development of a course in Dynamical Systems and Complexity for non-mathematicians. Several colleagues from across the University are interested and will give input from their perspective as course is developed.
- 2012-2013:** Curriculum Committee.
- 2012-2013:** Faculty Mentor for incoming faculty Mau Nam Nguyen, Curriculum Committee.
- 2010-2012:** Chair of Mathematics and Statistics Department.
- 03/2011:** Represented the Department on Sponsor's Day of the Mathematical Sciences Research Institute at the University of Berkeley.
- 2009-2010:** Curriculum Committee.
- 2008-present:** Designed and taught a successful course in Mathematical Modeling. *The course is based on actual real life problems often brought in by students of previous editions of the course. Evaluation is based on a weekly project done in groups for which individual reports are turned in.*
- 2008-2009:** Curriculum Committee, Elections Committee.
- 2005-2006:** Departmental Undergraduate Committee.
- 2004-2006:** Appointed Member of the University's 'Center for Emerging Technology'.
- 2004-2006:** Appointed to the University's 'Internationalization Action Council'.
- 2004-2005:** Chairman Graduate Committee, member Colloquium Committee.
- 2003-2004:** Chairman Graduate Committee, member Colloquium Committee, PP&T.
- 2002-2003:** Chair, Mathematical sciences Colloquium, Graduate Committee, PP&T, Pedersen Committee.
- 2002-2003:** Worked with postdoc J. Bernhard.
- 2001-2002:** Chair, Mathematical sciences Colloquium, Graduate Committee.
- 2000-2001:** Chairman Colloquium Committee, Graduate Committee.

SERVICE: MEETINGS AND SEMINAR SERIES ORGANIZED

- 2025:** Complex Systems seminar, Portland State University.

2024: Climate, Environment, and Society, a University wide seminar, Portland State University.

2023-24: Number Theory Seminar, Portland State University.

2019-20: Graph Theory and Dynamics seminar, co-organized w. Caughman, Portland State University.

Summer, 2018: Graph Theory Student Research Seminar, Portland State University.

Summer, 2016: Science and Computation Student Research Seminar, Portland State University.

2010 – 2011: Organizer of Nonlinear Systems Group Seminar (NOSYGS), *Portland State University*.

2009 – 2010: Organizer of Nonlinear Systems Group Seminar (NOSYGS), *Portland State University*.

Spring, 2009: The Rockefeller Mathematics Seminar. Co-organized with Mitchell Feigenbaum and Folkert Tangerman, *Rockefeller University*.

Spring, 2008: The Rockefeller Mathematics Seminar. Co-organized with Mitchell Feigenbaum and Folkert Tangerman, *Rockefeller University*.

Fall, 2007: Seminar/course in Coupled Ordinary Differential Equations and Modeling of Coherent Movement of Flocks, *Università degli Studi di Salerno, Italy*.

Spring, 2005: Organizer of Nonlinear Systems Group Seminar (NOSYGS), *Portland State University*.

Spring, 2004: Organizer of Nonlinear Systems Group Seminar (NOSYGS), *Portland State University*.

Fall, 2000: The Gorenstein Seminar in Mathematics, *CUNY-Queens College*.

Spring, 1997: Organizer of the Rockefeller Workshop on Renormalization (joint with F. M. Tangerman and M. J. Feigenbaum), *Rockefeller University*. Twelve lectures by leading specialists.

2006 – present: Co-organizer of the Pacific Northwest Geometry Seminar (with Serge Preston), *Portland State University*.

1996 – 1997: The Rockefeller Mathematics Seminar, lectures of about 20 leading mathematicians, *Rockefeller University*.

Jan-Febr, 1996: Organizer of the Summerschool of the Mathematics Department (joint with H. Cabral), *Universidade Federal de Pernambuco, Recife*. This summerschool accepted some 50 students and around 10 visiting professors (6 from abroad).

1994: Interdisciplinary Seminar, Centro de Ciencias Exatas e da Natureza, *Universidade Federal de Pernambuco*.

1990: Research Seminar, Mathematics, *SUNY at Stony Brook*.

1988 – 1990: Dynamical Systems Seminar (2 years) at *Rockefeller University*.

1986 – 1987: Student Seminar at *Cornell University*.

INTERESTS

Scientific: *My work is strongly Interdisciplinary. I have worked in Physics Departments and in Mathematics Departments, but also in a Complex Department and in an Institute whose main mission lay in the Biomedical and Health Sciences. At Portland State I have taught in the MATH, PHYS, and COSYS depts. I also took classes in WLL, ARTS, and Athletics (training with the tennis team). The following description gives an idea though it does not exhaust my interests. Other disciplines in which I have worked include Epidemiology, Statistics, and Statistical Physics.*

Dynamical Systems: We were among the first (in 1989) to mathematically prove the existence of scalings (as conjectured by Feigenbaum) in circle maps. We proved important results for twist maps, the simplest models of Hamiltonian systems. In 2013 we proposed a new type of dynamical system (called *Rank Driven*).

Fractal Geometry: In 2005 we proved a major result concerning the properties of certain notions of dimension and measure (semi-continuity). We also studied fractal tilings and their properties.

Modeling of Physical Processes: We have studied Formation of Flocks in Biology and Traffic and in 2013 succeeded in giving a quantitative characterization of transients in flocks. We have also studied many processes that involve Granular Flow. This is important in Physics and has many applications in daily life.

Geometry and Topology: We have been interested in focusing of geodesics in 2-manifolds. This led to a whole new set of queries in geometry and topology, namely the study of *mediatrices* and *minimally separating sets*.

Quantitative Study of Social Behavior: Models for social behavior are among the most important and least studied subjects. They typically involve elements of game theory, agent-based modeling, dynamics, and make heavy use of the social sciences.

Internationalization: *I have extensive experience living and working in the US, Brazil, Spain, Italy, Greece, and The Netherlands. I have worked with literally scores of international co-authors from these and other countries and taught or given talks in those languages (plus some others). It is my belief that educational institutions can grow stronger by engaging actively in international and interdisciplinary cooperation.*

International Collaboration and Contacts: For several years I was part of the *Portland State Internationalization Action Council*. I am interested in finding new ways to engage in international collaborations, both across disciplines or cultures and across languages. At Portland State I formulated a new strategy to initiate collaborations between two departments on different continents. This strategy was approved by faculty in our department as well as the Department of Statistics of Universidad Carlos III in Madrid. Unfortunately the severity of the Spanish crisis in 2012 put an end to this effort.

Languages: I am conversant in English, Dutch, French, German, Spanish, Portuguese, and Italian, and to a less extent in Modern Greek and Russian. Slightly familiar with: Catalan, Classical Greek, Latin, Neapolitan, (modern) Hebrew.

Language Webpage: I have a webpage on curiosities in several languages: *The Webpage of Sentences Up With Which We Find It Amusing to Put*, see:
<http://web.pdx.edu/~veerman/putup.html>

Other: *Reading, tennis, hiking, languages.*