J. J. P. Veerman

Curriculum Vitae

CONTENT

GENERAL: CONTACT INFORMATION

Name: J. J. P. Veerman

Location: MTH, Portland State University, Portland, OR 97201

Telephone: 1-503-725-3621 (department), 1-503-725-8187 (office)

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GENERAL: EDUCATION

Postdoctoral: *Physics*, 11/1987 – 08/1989: **Cornell University and Rockefeller University**, New York, USA.

Postdoctoral: *Mathematics*, 10/1986 – 11/1987: **Universidad Autónoma**, Madrid, and Universidad Central, Barcelona.

Doctor of Philosophy: *Applied Mathematics/Engineering*, 1986, **Cornell University**, Ithaca, New York, USA.

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

09/2018 – Present: Affiliate Professor of Physics, Portland State University.

08/2008 – Present: Full Professor of Mathematics with Tenure at 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.

08/2003 – 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: JOURNAL ARTICLES, REFEREED

[**1.58**] J. J. P. Veerman, *Navigating Around Convex Sets*, **The American Mathematical Monthly**, accepted, 2019.

[**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**, June, 2015. DOI: 10.1007/s12591-017-0377-3.

[**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, Springer, 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, Springer, 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. Tangerman, 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 Tangerman, *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* $\mathbb{R}^N$, **Boletin 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**13, 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: EXPOSITORY ARTICLES, REFEREED

[**2.3**] J. J. P. Veerman, M. V. Fonseca, *Misteriosos Rayos Cósmicos*, **El País**, 19-th of March, 1989, Madrid.

[**2.2**] J. J. P. Veerman, M. V. Fonseca, *Un Mundo Caótico*, **Revista Española de Física**, Vol 2, Num 2, 1988, 30-38.

[**2.1**] J. J. P. Veerman, M. V. Fonseca, *Un Mundo Caótico*, **El País**, 28-th of august, 1988, Madrid.

PUBLICATIONS: CHAPTERS IN BOOKS, REFEREED

[**3.2**] J. J. P. Veerman, *Two-Dimensional Generalizations of Haar Bases*, **Pitman Research Notes in Mathematics** 362, ed. F. Ledrappier, 1996.

[**3.1**] 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

[**4.8**] 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.

[**4.7**] 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.

[**4.6**] 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.

[**4.5**] 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.

[**4.4**] 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.

[**4.3**] J. J. P. Veerman, J. Bernhard, *Two Point Boundary Value Problems in Dynamical Systems* (abstract), **Sectional American Mathematical Society meeting, Los Angeles, 2004**.

[**4.2**] 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.

[**4.1**] 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

[**5.1**] P. E. Baldivieso, J. J. P. Veerman, *Necessary Conditions for Stability of Flocks in the Line*, **Submitted**.

PUBLICATIONS: ONLINE SEMINAR SERIES, NOT REFEREED

[**6.8**] 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`

[**6.7**] 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`.

[**6.6**] 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`.

[**6.5**] J. J. P. Veerman, F. M. Tangerman, *The Rockefeller Mathematics Seminar*, Spring 2008, (14 lectures summarized by JJPV and FT), Preprint, **Rockefeller University, 2008**.
`http://uqbar.rockefeller.edu/pradeep/mathseminar.php`.
`http://web.pdx.edu/~veerman/list08.pdf`.

[**6.4**] 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**.
`http://web.pdx.edu/~veerman/nosygs06.pdf`.

[**6.3**] 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**.
`http://web.pdx.edu/~veerman/nosygs05.pdf`

[**6.2**] 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`

[**6.1**] 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

[**7.7**] J. J. P. Veerman, *The Dynamics of Well-Ordered Orbits*, preprint, **Universidade Autónoma de Barcelona, 1995**.

[**7.6**] J. J. P. Veerman, Lectures on Circle Maps, preprint, 1995, Universidade Autónoma de Barcelona.

[**7.5**] F. M. Tangerman, J. J. P. Veerman, *A Remark on Herman's Theorem for Circle Diffeomorphisms*, IMS preprint, **SUNY Stony Brook, 1991** # 13.

[**7.4**] F. M. Tangerman, B. Bielefeld, J. J. P. Veerman, *Monotonicity of Kneading Sequences and Thurston's Algorithm*, preprint, **SUNY Stony Brook, 1990**.

[**7.3**] J. J. P. Veerman, *On Resonance Widths in Dynamical Systems*, Ph. D. Thesis, **Cornell University, 1986**.

[**7.3**] J. J. P. Veerman, *Periodic Hamiltonians* (thesis in fulfillment of doctorandus degree), preprint, 1982, **University of Utrecht**.

[**7.2**] J. J. P. Veerman, *Saddle-point Integrals applied to Vibro-seismics*, preprint in Dutch, **University of Utrecht, 1982**.

[**7.1**] J. J. P. Veerman, *Homomorphic Deconvolution*, preprint, **University of Utrecht, 1981**.

PUBLICATIONS: ARXIV INTERNATIONAL PREPRINTS, NOT REFEREED

- J. J. P. Veerman, *Navigating Around Convex Sets*, **http://arxiv.org/abs/1906.07281**.
- P. E. Baldivieso, J. J. P. Veerman, *Necessary Conditions for Stability of Flocks in the Line*, **http://arxiv.org/abs/1**
- J. J. P. Veerman, *Symmetry and Stability of Homogeneous Flocks (a Position Paper)*, **http://arxiv.org/abs/1810.** [**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/1801.044977**.

- J. J. P. Veerman, *Social Balance and the Bernoulli Equation*, **http://arxiv.org/abs/1701.06946**.
- W. Maxwell, A. K. Williams, J. J. P. Veerman, *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 [cs.SY]**
- S. S. Akmal. N. M. Nam, J. J. P. Veerman, *On a Convex Set with Nondifferentiable Metric Projection*, **arXiv:1412.0058**.
- P. Herreros, M. Ponce, J. J. P Veerman, *Regularity of Mediatrices in Surfaces*, **arXiv:1411.1803**.
- J. J. P. Veerman, David K. Hammond, *Tridiagonal matrices and Boundary conditions*, **arXiv:1408.1145**.
- C. E. Cantos, J. J. P. Veerman, *Transients in the Synchronization of Oscillator Arrays*, **arXiv:1308.4919**.
- C. E. Cantos, J. J. P. Veerman, David K. Hammond, *Signal Velocity in Oscillator Arrays*, **arXiv:1307.7143**.
- J. J. P. Veerman, F. J. Prieto, *On Rank Driven Dynamical Systems*, **arXiv:1307.0570**.
- J.J.P. Veerman, C.M. da Fonseca, *Stability of Linear Flocks on a Ring Road*, **arXiv:1002.0787**.
- J. J. P. Veerman, F. M. Tangerman, *Impulse Stability of Large Flocks: an Example*, **arXiv:1002.0782**.
- J. J. P. Veerman, *Stability of Large Flocks: an Example*, **arXiv: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**.
- Giovani L. Vasconcelos, J. J. P. Veerman, *Geometrical model for a particle on a rough inclined surface*, **arXiv:cond-mat/9904139**.
- J.J.P. Veerman, M.M. Peixoto, A.C. Rocha, S. Sutherland, *On Brillouin Zones*, **arXiv:math/9806154**
- J. J. P. Veerman, Leo B. Jonker, *Rigidity properties of locally scaling fractals*, **arXiv:math/9701216**.
- J. J. P. Veerman, *Hausdorff dimension of boundaries of self-affine tiles in R^n*, **arXiv:math/9701215**.
- Jacek Graczyk, Grzegorz Swiatek, Folkert Tangerman, J. J. P. Veerman, *Scalings in circle maps III*, **arXiv: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**.
- Ben Bielefeld (editor), Adrien Douady, Curt McMullen, Jack Milnor, Misuhiro Shishikura, Folkert Tangerman, J. J. P. Veerman, *Conformal dynamics problem list*, **arXiv:math/9201271**.

INVITED LECTURES: SEMINARS AND COLLOQUIA

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, *Pontifícia Universidad Católica*, Valparaiso, Chile.

06/2014: Mathematics Department, *Pontifícia 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, U*niversità degli Studi di Salerno*, Salerno, Italy.

05/2007: Applied Mathematics Department, Universidad de Granada, Spain.

11/2006: Mathematics Department, *Universidad Autoónoma 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 Mexico*, Mexico City, Mexico.

07/2006: Physics Department, *Universidade Federal de Paraíba*, João Pessoa, Brazil.

07/2006: Physics Department, U*niversidade 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*, 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: Phsyics 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

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, Valparaiso, 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*, Cataluña, Spain.

08/1986: *Meeting on Dynamical Systems, Thessaloniki*, Greece.

06/1985: *Dynamics Days Conference, La Jolla Institute*, La Jolla, California, USA.

HONORS AND AWARDS: AWARDS

02/2019: 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 opposition of the Dean of Arts and Sciences at Portland State.)

09/2016: Rockefeller University-SUNY Stony Brook, Visiting Professorship for 2 weeks: travel, lodging, and honorarium (about $7000 total).

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.

HONORS AND AWARDS: GRANTS

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).

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).

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 Pontifícia 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.

05/2005: 2-week Visiting Professorship awarded through Fisymat (Mathematical Physics) program of the Universities of Granada, Málaga, Castilla - La Mancha and the Andalucian 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 Giovani 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 Politécnica, 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

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 Universita 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: UNDERGRADUATE

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

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

Introduction Topology: 1991

Complex Analysis: 1995

Discrete Mathematics: 2000, 2013

Mathematics for Elementary School Teachers: 2000

Group Theory: 2009, 2016.

Excursions in Mathematics: 2012

Mechanics: 1985

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

General Physics (2nd year): 1998

TEACHING: GRADUATE

Complex Analysis: 2018.

Algebraic Graph Theory: 2017/8.

Graph Theory: 2017.

Set Theory: 2003, 2018.

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

Algebraic Topology: 1992

Advanced Analysis: 2002, 2006/7

Fractal Geometry: 2003

Research in Dynamical Systems: 2003/4

Modeling of Coherent Movement of Flocks: Special Doctoral Course, Univ. degli Studi di Salerno, Italy, 2008

Ordinary Differential Equations: 2008/9, 2010/11, 2015/6

Advanced Ordinary Differential Equations (Dynamical Systems): 2009/10, 2011/12, 2017/18.

History of Mathematics: 2009.

Mathematical Modeling: 2006, 2010, 2012, 2013, 2016, 2017.

Graph Theory: 2017.

Mathematical Methods of Physics: 2017.

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".

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*, Master's Thesis.

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, Jennifer Meneghin: *Genetic Algorithms*, Master's in Mathematics, Portland State University.

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 aa 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 are designed algorithm to numerically solve certain questions in Algebraic Topology. We are submitting a paper: **A. K. Williams, J. J. P. Veerman**, *Embeddings of Minimal Separating Sets in Low Genus Surfaces.*

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 Behaviorial 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:

2018 – present, Robert Lyons: *Dynamics of multi-agents systems*, Portland State University.

2017 – 2018, Victor Rielly: *Minimally Separating Sets for Higher Genus Surfaces*, Portland State University. Student gave up, unfinished.

2011 – 2019, Pablo Baldivieso: *Stability of Coupled Oscillators*, Portland State University.

TEACHING: MASTER'S THESIS ADVISOR

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.

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*, Portland State University.

2011/12, Shuichi Masuda: *Graph-Theoretic Properties of the Spectrum and Kernels of Directed Graph Laplacians*, Portland State University.

2011/12, Robert De Dios: *Expansiveness of Geometric Lorenz Maps*, Portland State University.

2011/12, James Mahoney: *k-Fibonacci Sequences Modulo m.*

2010/11, Megan Fitzgerald: *Mathematical Model of a Zombie Outbreak*, Portland State University.

2009/10, Will Sullivan: *Boundary Conditions and a One Lane Linear Model of Traffic Flow*, 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*, Portland State University. Aaron became

1999, Jeff Baker: *Numerical Experiments with Models of Particle on a Rough Inclined Plane*, Georgia Tech.
Co-advisor: Luca Dieci, Don Estep.

1999, Marcelo Sardelich: *Random Walks*, Universidade Federal de Pernambuco, Recife, Brazil.
Co-advisor: Maurício Coutinho.

TEACHING: HONORS THESIS ADVISOR

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

2019, 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, Universitá degli Studi di Salerno, Salerno, Italy.

2008, Ivana Bochicchio: *Longtime Behavior for Nonlinear Models of a Viscoelastic Beam*, 01/2008, Universitá degli Studi di Salerno, Salerno, Italy.

2008, Nunzia Cascone: *Modeling and optimization of Traffic Flows on Networks*, 01/2008, Universitá degli Studi di Salerno, Salerno, Italy.

2008, Eliza Trapel: *Numerical and Analytical Results for Real Systems based on Queueing Theory*, 01/2008, Universitá 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: 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:

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 an extended visit of Sir Michael Berry, one of today's leading mathematical physicists.

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

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 Interdiciplinary 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: DEPARTMENT AND UNIVERSITY

2019-present: Member of the Graduate Council of Portland State University.

2018-2019: 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: Department Chair.

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

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 summershool 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 Institutes whose main mission lay in the Biomedical and Health Sciences. 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.*

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. It is my belief that leading educational institutions grow stronger by engaging in international 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. Slightly familiar with: Catalan, Classical Greek, Latin, Russian, Neapolitan.

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.*