

CURRICULUM VITAE (short version)

Lawrence Sirovich
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EDUCATION

A.B. (Mathematics) Johns Hopkins University 1956
Ph.D. (Aeronautical Engineering) Johns Hopkins University and (Applied Mathematics) Courant Institute, NYU 1960

ACADEMIC APPOINTMENTS

Research Scientist, Courant Institute, NYU, 1958-1961
Staff, Courant Institute of Mathematical Sciences, NYU, September 1962-September 1963
Assistant Professor, Applied Mathematics, Brown University, September 1963-September 1965
Associate Professor, Applied Mathematics, Brown University, September 1965-September 1967
Professor, Applied Mathematics, Brown University, 1967-1995
Professor, Biomathematics, Mt. Sinai School of Medicine, 1995-2011
Adjunct Professor, Rockefeller University, September 1972-present
Director & Founder, Center for Fluid Mechanics, September 1986-July 1991

Visiting Professor, Yale University, 1990
Visiting Professor of Mathematical Physics, Rockefeller University, September 1993-1995
Director, Laboratory of Applied Mathematics. Rockefeller University, September 1993-1995
Director, Laboratory of Applied Mathematics. Mt. Sinai School of Medicine, July 1, 1995-2011
Chairman, Department of Biomathematical Sciences, Mt. Sinai School of Medicine, Nov. 2002-2005
Professor of Biomathematics, Department of Pharmacology and Systems Therapeutics, 2006-2011
Adjunct Professor, Courant Institute, NYU, 2008
Professor of Biomathematics, Emeritus, The Mount Sinai School of Medicine, October 2011
Adjunct Professor, The Rockefeller University, September 2011
Scholar in Residence, Courant Institute, NYU, October 2011

PROFESSIONAL HONORS

Fulbright Scholar, Universite Libre Bruxelles, November 1961-August 1962
Professeur Associe, Institute Henri Poincare, Universite de Paris, 1968-1968
Professeur d'Echange, Univ. de Paris VI, January-February 1974
Guggenheim Fellow, 1978-1979
Chairman, Frenkiel Prize Committee, 1988, American Institute of Physics
Member, Frenkiel Prize Committee, 1989, American Institute Physics
Byron Short Lecturer, University of Texas, 1991.
Fellowship, The American Physical Society, November 1991.
Otto Laporte Prize Committee, 1992-1994.
Arne Magnus Prize, Colorado State University, 1994
Frontiers in Mathematics Lectureship, Texas A & M, 2002
Perspectives and Problems in Nonlinear Science, A celebratory volume in honor of Lawrence Sirovich, Springer-Verlag New York Inc., 2003.
Fellowship, American Association for the Advancement of Science, 2007.

PROFESSIONAL ACTIVITIES

Editor, Applied Mathematical Sciences, Springer-Verlag (New York)
Editor, Interdisciplinary Mathematical Sciences, Springer-Verlag (New York)
Contributing Editor, Le Bulletin des Sciences Mathematiques, Paris
Editor, Quarterly of Applied Mathematics
Associate Manager Editor, SIAM Journal Applied Mathematics
Chairman, Advanced Defense Science and Engineering Computing Project (ADSEC) 1988-1989
Editor, Textbooks in Applied Mathematics (TAMS) Springer Verlag. 1988-
Associate Editor, Physics of Fluids, AIP, 1988-1996
NSF Steering Committee, 1995-1998
National Selection Committee, NDSEG (National Defense Science and Engineering Graduate) Fellowship Program, 1989

OTHER ACTIVITIES

Planning Commission, Village of Saltaire, NY
Board of Directors, Intelligent Optics Corp., CT, 1987-1989
Consultant, NASA-ICASE Langley Research Center
Consultant, United Technologies, Hartford, CT
Consultant, ORMAT, Israel
Consultant, ANSER Corp., Washington, D.C.
Consultant & Director of Research, Aurora Biometrics
Board of Directors, Aurora Biometrics, Washington, D.C.

RESEARCH FUNDING

Dr. Sirovich has received well over \$10 million dollars in grant support.

PUBLICATIONS

MAJOR PAPERS

The Faithful Copy Neuron *J. Comput. Neurosci.* Published Online 11 January (2012).

Structural Analysis of Biodiversity (with M.Y. Stoeckle and Y. Zhang), *PLoS ONE*, 4e:9266 (2010).

Dynamics of Neuronal Populations: Stability and Synchrony (with A. Omurtag & K. Lubliner) *Network: Computation in Neural Systems*, 17:3-29 (2006). Lays the theoretical foundation for describing the behavior of populations of cortical neurons.

Orientation and Spatial Frequency in Primary Visual Cortex. (with R. Uglesich) *PNAS*, 101: 16941-16946 (2004). Solves the long standing problem of how spatial frequency coding is organized in cortex.

A pattern analysis of the second Rehnquist U.S. Supreme Court. *PNAS*, 100:7432-7437 (2003). Applies methods of mathematical physics to the analysis of 'data' generated by a long sitting court.

Dynamics of neuronal populations: Eigenfunction Theory, some solvable cases. *Network: Comput. Neural Syst.*, 14:249-272 (2003). Basic mathematical theory for models of neuronal populations.

Analysis Methods for Optical Imaging. (with E. Kaplan) In: *Methods for In Vivo Optical Imaging of the Central Nervous System*, (R. Frostig, ed). CRC Press, pp. 43-76 (2002). A basic review of available methods for extracting information from image records.

Turbulent drag reduction by passive mechanisms. (with S. Karlsson) *Nature*, 388:753-755 (1997). This is a joint experimental/theoretical paper that presents a procedure for reducing turbulent drag. (U.S. Patent No. 5,362,179, and others)

Dynamical models of interacting neuron populations in visual cortex. (with B. Knight and D. Manin) In: *Symposium on Robotics and Cybernetics; Computational Engineering in Systems Application.*

(Gerf, E.C. ed) Cite Scientifique, Lille, France (1996). This is the fundamental paper, in neuroscience, on the dynamics and modeling of neuronal populations.

Turbulence and the dynamics of coherent structures, Parts I-III, *Quarterly of Applied Mathematics*, XLV:561-590 (1987). This, and related papers, by L. Sirovich established the field of low dimension dynamical models.

A low dimensional procedure for identifying human faces. (with M. Kirby) *Journal of Optical Society A*, 4:519 (March 1987). All basic technology for machine recognition of human faces is based on this paper. It also develops the framework for general image analysis

Effect of boundaries on the response of a neural network. (with S.E. Brodie, B.W. Knight) *Biophys. Journal*, 28: 423-446 (1979). This is a joint experimental/theoretical paper describing the behavior of the horseshoe crab visual system at a boundary. It led to astonishingly good agreement between theory and experiment, and represents a solved problem in biophysics.

On the propagation of forced soundwaves in rarefied gas-dynamics. (with J. Thurber) *Journal of the Acoustical Society*, 37:30 (February 1965). This paper solved the long standing problem of how sound traveled in dilute gases.

Current Publications

Large Scale Species Delimitation Method for Hyperdiverse Groups (with N. Puillandre, M.V. Modica, Y. Zhang, M.-C. Boisselier, C. Cruaund, M. Holford, S. Samadi) to appear (2012).

Spiking Neurons and the First Passage Problem (with B.Knight), *Neural Computation*, 23:1675-1703 (2011).

A Scalable Method for Analysis and Display of DNA Sequences (with M.Y. Stoeckle and Y. Zhang), *PLoS ONE*, 4:e7051 (2009).

Symmetry, Probability, and Recognition in Face Space (with M. Meytlis) *PNAS*, 106:6895-6899 (2009).

Populations of Tightly Coupled Neurons: the RGC/LGN System
Neural Computation, 20:1179-1210 (2008).

Survival and Apoptotic Pathways Initiated by TNF- α : Modeling and Predictions (with P. Rangamani) *Biotechnology and Bioengineering*, 97:1216-1229 (2007).

On the Dimensionality of Face Space (with M. Meytlis) *IEEE Transactions of Pattern Analysis and Machine Intelligence*, 29: 1262-1267 (2007).

Lawrence Sirovich has authored over 200 publications including five books.

PH.D. STUDENTS & POST-DOCS

Dr. Sirovich has mentored well over fifty Ph.D. students and post-docs.