

Curriculum Vitae of Katepalli R. Sreenivasan

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Academic Degrees B.E. (Mech. Engg.), Bangalore University, 1968 (first rank, with Sir M. Visvesvaraya Memorial Prize, Indumati Lalbai Memorial Gold Medal, and Institution of Engineers Prize and Honorary Graduate Membership); M.E. (Aero. Engg.), Indian Institute of Science, 1970 (J. R. D. Tata Fellowship, first rank); Ph.D. (Aero. Engg.), Indian Institute of Science, 1975 (P. S. Narayana Gold Medal for the best Ph.D. thesis in Mechanical Sciences); M.A. (Privatim), Yale University, 1985

Employment history Post-doctoral Fellow, Universities of Sydney and Newcastle, Australia, 1975-77; Research Associate and Lecturer, Johns Hopkins University, 1977-79.

At Yale University: Assistant Professor, Department of Engineering and Applied Science, 1979-82; Associate Professor, Department of Mechanical Engineering, 1982-85; Professor, Department of Mechanical Engineering, 1985-2002; Harold W. Cheel Professor of Mechanical Engineering, 1988-2002; Andrew W. Mellon Professor, 1991-1996; Professor of Physics, 1989-2002; Professor of Applied Physics, 1993-2002; Professor of Mathematics, 2000-2002; member, Center for Computational Ecology 1995-2000; Chairman, Mechanical Engineering Department, 1987-1992; acting Chairman, Council of Engineering (equivalent, in a previous form, to the Faculty of Engineering, consisting of the departments of Applied Physics, Chemical Engineering, Electrical Engineering, and Mechanical Engineering), 1989.

At the University of Maryland, College Park: Distinguished University Professor, Professor of Physics, and Glenn L. Martin Professor of Engineering, since 2002; Director, Institute for Physical Science and Technology, 2002-July 2003.

Current (since March 2003): Abdus Salam Honorary Professor and Director, International Center for Theoretical Physics, Trieste, Italy. (In the UNESCO system, the position has the rank of Assistant Director General.) The Center houses about 27 permanent research scientists who do research in most areas of Physics and Mathematics, a number of consultants, about 50 post-docs, and about 4000 visiting scientists annually, both on short and long term visits. These scientists, about 50% of whom are from developing countries, take part in research and conference activities at the Center. An administrative staff of about 100 support the research, teaching and training activities at the Center.

Visiting Positions Visiting Scientist, Center for Atmospheric and Oceanic Sciences, Indian

Institute of Science, summers of 1981, 1982 and 1984; Visiting Scientist, DFVLR, Goettingen, Germany, 1983; Visiting Professor of Aeronautics, California Institute of Technology, Spring 1985; Visiting Professor of Physics, Rockefeller U, Spring 1988; Visiting Professor of Fluid Mechanics, Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, Fall 1992; Member, School of Mathematics, Institute for Advanced Study, Princeton, 1995-96; Rothschild Distinguished Visiting Professor, Newton Institute, Cambridge University, England, 1999 Spring; Professor Satish Dhawan Distinguished Professor of Aerospace Engineering, Indian Institute of Science, summer 2001; Distinguished Faculty Fellow, Jawaharlal Nehru Center for Advanced Scientific Research, since 2001; Sir C.V. Raman Distinguished Professor, Indian Academy of Sciences, summer 2002

Professional Society Membership American Association for Advancement of Science; American Institute of Aeronautics and Astronautics; American Mathematical Society; American Physical Society; American Society of Mechanical Engineers; Sigma Xi.

Research interests and publications Primary expertise: fluid mechanics and turbulence. Other interests: complex fluids, nonlinear and nonequilibrium phenomena, cryogenic helium. About 180 journal publications and book articles relating to these topics, and also on sonic booms, nucleation of droplets in condensation, chaos, fractals, cosmology, and so forth.

Invited lectures Delivered numerous plenary and principal invited lectures in international meetings and workshops on fluid dynamics, plasma physics, aeronautics, condensed matter physics, nonlinear dynamics, applied mathematics, fractals, complexity, etc; many invited seminars in Universities and in Government and Industrial Research Laboratories all over the world. Among them: Emerging Scholar Lecture, University of Notre Dame, 1986; the first Stanley Corrsin Memorial Lecture, Johns Hopkins University, 1987; Phillips Lecture, Haverford College, 1988; Sabita Choudhury Memorial Lecture, Indian Institute of Science, 1992; Distinguished Lecturer, University of Illinois, Urbana-Champaign, 1995; P.-Y. Zhou memorial plenary lecture at the seventh Asian Congress of Fluid Mechanics, Chennai, 1997; Sadowsky Lecture in Applied Mechanics, Rensselaer Polytechnic Institute, 1998; Distinguished Lecturer, University of Maryland, College Park, 1998; Carl Gunnard Johnson Lecturer, Worcester Polytechnic Institute, 1998; Distinguished Lecturer in Fluid Mechanics, Pennsylvania State University, February 2001; Shih-I Pai Lecturer, University of Maryland, March 2001; C.H.B. Priestley Lecturer, CSIRO Atmospheric Research, Aspendale, 2002; Burgers Lecturer, Technological University, Delft, 2003; lecture at the hundredth anniversary of Professor Carlo Ferrari, Politecnico di Torino, 2003; Satish Dhawan memorial plenary lecture at the tenth Asian Congress of Fluid Mechanics, Peradeniya, Sri Lanka, 2004

Other Organized, at the international level, scientific workshops, conferences and meetings such as: Third World-Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics; Developments in Fluid Dynamics and Aerospace Engineering; Turbulence for Physicists; Ultra-High Reynolds Number Turbulent Flows Using Cryogenic Helium; Interna-

tional Meeting on Turbulence, and so forth; a six-month Program on Hydrodynamic Turbulence at the Institute for Theoretical Physics, UC Santa Barbara; various invited sessions and discussion sections in meetings such as IUTAM, SIAM, APS, ASME, AIAA, etc.

Participated in collaborative atmospheric and oceanic measurement expeditions in Australia, as well as in field experiments on sonic booms in India; several other atmospheric experiments such as collaborative experiments at Dugway Proving Grounds.

Short seminar courses in summer schools on chaos, multifractals, wavelets, drag reduction, modelling problems in biology, etc.

Awards and Honors Humboldt Fellow, 1983; Fellow, American Physical Society, 1985; Member, Connecticut Academy of Science and Engineering, 1988; Guggenheim Fellow, 1989; Society of Scholars, Johns Hopkins University, 1991; Distinguished Alumnus Award, Aerospace Department, Indian Institute of Science, 1992; Fellow, American Society of Mechanical Engineers, 1993; Associate Fellow, AIAA, 1993; Otto Laporte Award, American Physical Society, 1995; Distinguished Scholar Award, American Chapter of the Indian Physics Association, 1996; Fellow, American Academy of Arts and Science, 1997; Fellow, American Association for the Advancement of Science, 1998; Member, National Academy of Engineering, 1999; Associate Fellow, Third World Academy of Sciences, Trieste, Italy, 1999; Member, Connecticut Academy of Arts and Science, 1999; Ulam Scholar, Los Alamos National Laboratory (2000, deferred); Professor B. D. Tilak Distinguished Fellow, Department of Chemical Technology, Mumbai University, 2001; 2002 Medal & Lecture in Engineering Sciences, Third World Academy of Sciences, 2003; Honorary Fellow, Indian Academy of Sciences, 2003

Editorial, Journals Associate Editor, *ASME Journal of Applied Mechanics*, 1984-1990; Editorial Board Member, *Proceedings of the Indian Academy of Science, series C (Sadhana)*, 1988-1991; Editorial Board Member, *American Scientist*, 1990; Member, Advisory Board, Springer Book Series on *Interdisciplinary Applied Mathematics*, 1990-2000; Editorial Board Member, *Journal of Nonlinear Science*, 1991-2002; Divisional Associate Editor, *Physical Review Letters*, 1991-1995; Editor, *Journal of Theoretical and Computational Fluid Dynamics*, 1992-1995; Associate Editor, *Physical Review E*, 1994-1997; Associate Editor, *Physics of Fluids*, 1995-2000; Editorial Board Member, *Physical Review E*, 1997-2001; Editorial Board Member, Springer Book Series on *Applied Mathematics*, since 2000; Editorial Board Member, Elsevier Book Series on *Applied Mathematics and Mechanics*, since 2000; Associate Editor (in charge of fast-track papers), *Journal of Fluid Mechanics*, since 2000.

Editorial, Books Co-editor of: *Experimental Heat Transfer, Fluid Mechanics and Thermodynamics*, volumes 1 and 2, Elsevier, 1993 (conference proceedings), with ???; *Developments in Fluid Dynamics and Aerospace Engineering*, Interline, 1995 (conference proceedings), with S.M. Deshpande, A. Prabhu and P.R. Viswanath; two volumes of *Pramana: Journal of Physics*, on *Nonlinearity and Chaos in the Physical Sciences*, Indian Academy of Science, 1997, with R. Ramaswamy; *Flow at Ultra-High Reynolds and Rayleigh Numbers: A Status Report*, Springer, 1998, with R.J. Donnelly; *Perspectives and Problems in Nonlinear Physics*, Springer, 2003,

with E. Kaplan and J.E. Marsden.

A few service activities at Yale University Yale College Faculty Review Committee, 1993; member, Advisory and Tenured Appointments Committee for Physical Sciences and Engineering, 1993 and 1996-2000; Faculty Development Committee, co-chair, 1993, member, 1994-1996; factfinder, Yale College Executive Committee, 1994-95; Silliman Lecture Committee, 1994-1998 (chairman 1997); Applied Mathematics Committee, 1993-1996 (chairman 1996); Member, Executive Committee, Cowles Foundation for Economics Research, 1998; Geophysics search committee, Department of Geology and Geophysics, 1998; Chairman, Committee for Assistant Dean for Yale College and Director of Asian American Cultural Center, 1999; Member, Search Committee for Dean of Engineering, 1999; Member, Yale Health Plan Advisory Committee, 2000, etc

Some service activities at the University of Maryland Chairman, Search Committee, Director of Cooperative Institute for Earth Systems and Climate Studies, 2002; Member, Selection Committee for the Kim Endowed Professor, 2003; Member, Selection Committee for Outstanding Research Award, 2003; Member, Advisory Committee for the Applied Mathematics and Scientific Computation Program Committee, 2003; Member for the Physical Science Complex, 2003, etc.

Recent service activities elsewhere Member, NRC Committee on Nonlinear Science, 1993; Member, External Advisory Committee for the Department of Mechanical Engineering, Johns Hopkins University, since 1994, Chairman 2000-2003; Member, Committee of Visitors, National Science Foundation (Fluid Dynamics and Hydraulics), 1995; Member, NRC Committee on Condensed Matter and Materials Physics, Board on Physics and Astronomy, 1997-1999; Member, Nominating Committee, Connecticut Academy of Science and Engineering, 1997-2000; Member (2001-2003), Vice-Chair (2002) and Chair (2003) of the Mechanical Engineering Peer Committee, U.S. National Academy of Engineering; Member, Committee of Human Rights, U.S. National Academy of Sciences, since 2001; Member, Biomass Task Force, Connecticut Academy of Science and Engineering, 2001; Secretary (2003), Vice-Chair (2004) and Chair (2005), Section 10 of the U.S. National Academy of Engineering; Member, Committee on Membership, U.S. National Academy of Engineering, since 2003; Member, Governing Council, Third World Academy of Sciences, since 2003.

Representative, Division of Fluid Dynamics (DFD) of the American Physical Society (APS), for the Committee on the International Freedom of Scientists, 1981-1987; Member, Executive Committee of DFD, 1986-1991 (Chairman 1990; Ex-Officio Member until 1997); Frenkiel Award Committee, DFD, Member 1989, Chairman 1999; Member, Fluid Dynamics Prize Committee, APS, 1991; Member, Publications Committee, DFD, 1992-1994; Member, Otto Laporte Award Committee, APS, 1996; Founder-Chair, Topical Group in Statistical and Nonlinear Physics, APS, 1996 and 1997; Onsager Prize Committee, APS, Member 1997-2000 (Chair 1997); Member, Fluids Engineering Division of the American Society of Mechanical Engineers (ASME), 1988-1991; Member, New Haven Chapter of ASME, 1998; Member,

Publications Oversight Committee, American Physical Society, 1999-2002; Member, Search Committee for Editor of Physical Review E, etc

Miscellaneous Mentioned in “American Men and Women of Science”, “Who is Who in the East,” “Who is Who in the World”, “Who is Who in America”, etc.

Ph.D. students, the titles of their theses and last known positions

1. P.J. Strykowski: “The control of absolutely and convectively unstable flows”, 1985. Professor of Mechanical Engineering, University of Minnesota, MN
2. T.B. Lynn: “Manipulation of the structure of a turbulent boundary layer”, 1987. Vice President, Dexsil Corporation, CT
3. S. Raghu: “The control of combustion and acoustic coupled fluid dynamic instabilities”, 1987. President, Advanced Fluidics, MD
4. M.S. Garelick: “Numerical analysis of manipulated laminar flows”, 1988. Professor of Engineering, U.S. Merchant Marine Academy, NY
5. R. Ramshankar: “The dynamics of countercurrent mixing layers”, 1988. Director, Marketing and Strategic Analysis, Cummins Inc.
6. C. Meneveau: “The multifractal nature of turbulence”, 1989. Professor of Mechanical Engineering, Johns Hopkins University, MD
7. A.B. Chhabra: “The thermodynamic formalism of multifractals and its applications to chaotic dynamical systems and turbulence”, 1989. Vice President, Derivatives Research, Chase Manhattan Bank, NY (formally registered with R.V. Jensen)
8. D.J. Olinger: “Universality in the transition to chaos in open fluid flows”, 1990. Associate Professor of Mechanical Engineering, Worcester Polytechnic Institute, MA
9. M.S. Fan: “Features of vorticity in turbulent flows”, 1990. Department Manager, Microelectronics Group, NASA Goddard Space Flight Center, Greenbelt, MD
10. D.M. Kyle: “The instability and breakdown of a round variable-density jet”, 1991. Staff Researcher, Oak Ridge National Laboratory, TN
11. A.W. Johnson: “Laminarization and retransition of turbulent boundary layers in supersonic flow”, 1993. Combustion/aerothermal design engineer, General Electric Aircraft Engines, OH
12. L.M. Zubair: “Studies in turbulence using wavelet transforms for data compression and scale separation”, 1993. Research Scientist, Earth Institute, Columbia University, NY
13. P. Kailasnath: “Reynolds number effects and the momentum flux in turbulent boundary layers”, 1993. Senior Research Scientist, Diagnostic Radiology, Yale Medical School, CT

14. J.R. Saylor: “Differential diffusion in turbulent and oscillatory, non-turbulent water flows”, 1993. Assistant Professor, Clemson University, SC
15. G. Stolovitzky: “Statistical order of small scales in turbulence”, 1994. Manager, Functional Genomics Program, IBM, Yorktown Heights, NY
16. A. Juneja: “Scaling laws in turbulence: their manifestation and utility”, 1995. Director of Product Quality, Egain Corp., Sunnyvale, CA
17. A. Denner: “Classification of cardiac disease state by electrocardiographic signal processing”, 1996. Systems Analyst, Morgan Stanley, NY
18. A. Sahay: “The mean velocity and Reynolds shear stress in turbulent pipe and channel flows”, 1997. Lecturer, Department of Mathematics, University of Wisconsin, Madison
19. B. Dhruva: “Experiments in high-Reynolds-number turbulence”, 1999. Senior Scientist, Schlumberger and Doll, Connecticut
20. R. Bhiladvala: “Development of microfabricated thermal sensors with guard heating for wall shear stress measurements in turbulent flows”, 2000. Post-doctoral Fellow, Nanofabrication Center, Cornell University
21. I. San Gil, “Fractal character of isoscalar surfaces in shear free turbulence and some effects of shear on the turbulence structure”, 2001. Bioinformatics Specialist, Yale Medical School
22. S. Kurien, “Anisotropy and the universal properties of turbulence”, 2001. Post-doctoral Fellow, CNLS, Los Alamos National Laboratory, from Dec. 2001
23. C.M. White, “High Reynolds number turbulence in small apparatus”, 2001. Post-doctoral Fellow, Department of Mechanical Engineering, Stanford University, CA
24. K.G. Aivalis, “Measurement and analysis of scalar fluctuations in turbulent flows”, 2004.

Current Graduate students: K.G. Aivalis (passive scalars); F. Li (experimental fluid dynamics); A. Karpikov (lattice Boltzmann methods for polymer flows); G. Bewely (rotating turbulence); Jochen Cleve (scaling problems in turbulence); Kaveri Joshi (thermal convection)

Post-Doctoral—only those who stayed for significant amounts of time are listed (along with the positions to which they moved next)—Surya Raghu (Ph.D., Yale, Assistant Professor, Department of Mechanical Engineering, SUNY Stonybrook, NY); Rahul Prasad (Ph.D., Yale, Vice President, Science Research Laboratory, CA); Ashvin Chhabra (Ph.D., Yale, Post Doc-

toral Fellow, University of Chicago); Richard Everson (Ph.D., Leeds, Research Associate, Rockefeller University, NY); John Ringland (Ph.D., Texas, Assistant Professor of Mathematics, SUNY Buffalo); Hyundoo Shin (Ph.D., Brown, Samsung Electronics Company, South Korea); Anil Suri (Ph.D., Harvard, unknown); Daniel Lathrop (Ph.D., Texas, Assistant Professor of Physics, Emory University, Atlanta); Lareef Zubair (Ph.D., Yale, Assistant Professor, Institute of Fundamental Research, Sri Lanka); Anupam Sahay (Ph.D., Yale, Lecturer, Department of Mathematics, University of Madison-Wisconsin); Eric van Doorn (Ph.D., Duke, Research Assistant Professor, Department of Physics, Rutgers University); Adonios Karpētis (Ph.D., Yale, Combustion Research Facility, Sandia National Laboratory, Livermore, CA); Rustom Bhiladvala (Ph.D., Yale, Nanofabrication Center, Cornell University)

Many visitors (both short and long term).

Publications of Katepalli R. Sreenivasan¹

1. Relaminarization in highly accelerated boundary layers. *J. Fluid Mech.* **61**, 417-448 1973 (with R. Narasimha)
2. Rapid distortion of axisymmetric turbulence. *Current Science* **42**, 632-634, 1973
3. Distorted wakes. *Adv. Geophys.* **18B**, 317-328, 1974 (with A. Prabhu & R. Narasimha)
4. Rapid distortion of shear flows. *Aero. Soc. India, Silver Jubilee Technical Conference, Bangalore*, Paper 2.3, 1974 (with R. Narasimha)
5. The determination of intermittency from the probability density function of a passive scalar. *Phys. Fluids* **19**, 1471-1474, 1976 (with R.W. Bilger & R.A. Antonia)
6. Diffusion from a heated wall-cylinder immersed in a turbulent boundary layer. In *Proc. Thermofluids Conference, Institution of Engineers, Hobart, Australia*, 103-106, 1976 (with H.Q. Danh & R.A. Antonia)
7. Conditional probability densities in a turbulent heated round jet. In *Proc. Sixth Australian Hydraulics and Fluid Mechanics Conference, Adelaide, Australia*, 411-414, 1977 (with R.A. Antonia)
8. Temperature dissipation fluctuations in a turbulent boundary layer. *Phys. Fluids* **20**, 1238-1249, 1977 (with R.A. Antonia & H.Q. Danh)
9. On the log-normality of temperature dissipation in a turbulent boundary layer. *Phys. Fluids* **20**, 1986-1988, 1977 (with R.A. Antonia)
10. Skewness of temperature derivatives in a turbulent boundary layer. *Phys. Fluids* **20**, 1986-1988, 1977 (with R.A. Antonia)
11. Measurements of turbulent fluxes in Bass-Strait. *Physical Oceanography* **78**, 28-37, 1977 (with R.A. Antonia, A.J. Chambers, S. Rajagopalan & C.A. Friehe)
12. Properties of wall shear stress fluctuations in a turbulent duct flow. *J. Appl. Mech. Trans. ASME Ser. A* **44**, 389-395, 1977 (with R.A. Antonia)
13. Rapid distortion of axisymmetric turbulence. *J. Fluid Mech.* **84**, 497-516, 1978 (with R. Narasimha)
14. Structure of turbulent bulges in an axisymmetric jet. In *Structure and Mechanisms of Turbulence*, vol. 1. 19-30, 1978. *Lecture Notes in Physics* **75**, Springer-Verlag (with R.A. Antonia & D. Britz)

¹Not included are abstracts, extended abstracts, book reviews, unpublished technical and government reports, non-technical writings, and so forth.

15. Joint probability densities and quadrant contributions in a heated turbulent round jet. *AIAA J.* **16**, 867-868, 1978 (with R.A. Antonia)
16. Conditional measurements in a heated axisymmetric turbulent mixing layer. *AIAA J.* **16**, 869-870, 1981 (with R.A. Antonia & S.E. Stephenson)
17. Accuracy of moments of velocity and scalar fluctuations in the atmospheric surface layer. *Boundary-Layer Meteorology* **14**, 341-359, 1978 (with A.J. Chambers & R.A. Antonia)
18. Relaminarization of fluid flows. *Adv. Appl. Mech.* **19**, 221-309, 1979 (with R. Narasimha)
19. Local isotropy and large structures in a heated turbulent jet. *J. Fluid Mech.* **94**, 745-775, 1979 (with R.A. Antonia & D. Britz)
20. Response of atmospheric surface layer turbulence to a partial solar eclipse. *J. Geophys. Res.* **84**, 1689-1692, 1979 (with R.A. Antonia, A.J. Chambers, D. Phong-Anant & S. Rajagopalan)
21. Temperature fluctuations and scales in grid-generated turbulence. *J. Fluid Mech.* **100**, 783-795, 1980 (with S. Tavoularis & S. Corrsin)
22. On the skewness of the temperature derivative in turbulent flows. *J. Fluid Mech.* **101**, 783-795, 1981 (with S. Tavoularis)
23. Turbulent heat transport in passively heated homogeneous and inhomogeneous flows. In *Proc. Third Symposium on Turbulent Shear Flows*, Davis, CA. 1981 (with S. Tavoularis & S. Corrsin)
24. The skewness of temperature derivative in asymmetrically heated wake. *Phys. Fluids* **24**, 778-779, 1981 (with S. Tavoularis)
25. Evolution of the center-line probability density function of temperature in a plane turbulent wake. *Phys. Fluids* **24**, 1232-1234, 1981
26. The decay of scalar fluctuations in isotropic turbulence. *Phys. Fluids* **24**, 1909-1910, 1981
27. Approach to self-preservation in plane turbulent wakes. *AIAA J.* **19**, 1365-1366, 1981
28. The effect of cooling rate on binary nucleation. *Appl. Sci. Res.* **37**, 183-194, 1981 (with P.P. Wegener)
29. A test for gradient transport model and its generalizations. In *Turbulent Shear Flows 3*, edited by L.J.S. Bradbury, F. Durst, B.E. Launder, F.W. Schmidt & J.H. Whitelaw, Springer-Verlag, pp. 96-112, 1981 (with S. Tavoularis & S. Corrsin)
30. Laminarescent, relaminarizing and retransitional flows. *Acta Mechanica* **44**, 1-48, 1982

31. Equilibrium parameters for two-dimensional turbulent wakes. *J. Fluids Engg. Trans. ASME* **104**, 167-170, 1982 (with R. Narasimha)
32. Stabilization effects in flow through helically coiled pipes. *Experiments in Fluids* **1**, 31-36, 1983 (with P.J. Strykowski)
33. An instability associated with sudden expansion in pipe flows. *Phys. Fluids* **26**, 2766-2768, 1983 (with P.J. Strykowski)
34. Zero-crossings in turbulent signals. *J. Fluid Mech.* **137**, 251-272, 1983 (with A. Prabhu & R. Narasimha)
35. Some studies on non-simple pipe flows. *Trans. Inst. Engineers, Australia* **ME8**, 200-208, 1983 (also in *Proc. Eighth Australasian Fluid Mech. Conf.*, 1983)
36. On the Prandtl number variation in turbulent shear flows. *International Communication in Heat and Mass Transfer* **11**, 497-501, 1984 (with R.A. Antonia & A.J. Chambers)
37. Azimuthal correlations of velocity and temperature fluctuations in an axisymmetric jet. *Phys. Fluids* **27**, 867-875, 1984
38. On the scaling of the turbulence energy dissipation rate. *Phys. Fluids* **27**, 1048-1051, 1984
39. On analogies between turbulence in unconfined flows and chaotic dynamical systems. In *Turbulence and Chaotic Phenomena in Fluids*, edited by Tatsumi, 191-196, 1984 (with P.J. Strykowski)
40. The effect of contraction on homogeneous shear flows. *J. Fluid Mech.* **154**, 187-213, 1985
41. On the fine-scale intermittency in turbulence. *J. Fluid Mech.* **151**, 81-103, 1985
42. The control of pressure oscillations in combustion and fluid dynamical systems. *AIAA Paper-85-0540*, 1985 (with B.-T. Chu & S. Raghu)
43. The control of transitional flows. *AIAA Paper-85-0559*, 1985 (with P.J. Strykowski)
44. Transitional and turbulent wakes, and chaotic dynamical systems. In *Nonlinear Dynamics of Transcritical Flows*, edited by H.L. Jordan, H. Oertel & K. Robert, Springer-Verlag, pp. 59-70, 1985
45. Transition and turbulence in fluid flows and low-dimensional chaos. In *Frontiers of Fluid Mechanics*, edited by S.H. Davis & J.L. Lumley, Springer-Verlag, pp. 41-67, 1985
46. Chaos in open systems. In *Dimensions and Entropies in Chaotic Systems*, edited by G. Mayer-Kress, Springer-Verlag, pp. 222-230, 1986

47. The fractal facets of turbulence. *J. Fluid Mech.* **173**, 357-386, 1986 (with C. Meneveau); translated into Japanese: *J. Soc. Heating, Air Conditioning and Sanitary Engineers of Japan* **64**, 65-74, 1989.
48. Transitional intermittency in open flows, and intermittency routes to chaos. *Physica D* **23**, 246-258, 1986 (with R. Ramshankar)
49. The multifractal spectrum of the dissipation field in turbulent flows. In *Physics of Chaos and Systems Far from Equilibrium, Nucl. Phys. B. (Proc. Suppl.)*, edited by Minh Doung Van, North-Holland, **2**, 49-76, 1987 (with C. Meneveau)
50. A simple multifractal cascade model for fully developed turbulence. *Phys. Rev. Lett.* **59**, 1424-1427, 1987 (with C. Meneveau)
51. Hopf bifurcation, Landau equation and vortex 'shedding' behind circular cylinders. In *Forum on Unsteady Flow Separation, Trans. ASME*, edited by K.N. Ghia, pp. 1-13, 1987 (with P.J. Strykowski & D.J. Olinger)
52. A unified view of the origin and morphology of the turbulent boundary layer structure. In *Turbulence Management and Relaminarization*, edited by H.W. Liepmann & R. Narasimha, Springer-Verlag, pp. 37-61, 1987
53. The control of acoustically coupled combustion and fluid dynamic instabilities. *AIAA Paper-87-2690*, 1987 (with S. Raghu)
54. The fractal dimension of scalar interfaces in turbulent flows. *Fluid Dynamic Transactions of the Polish Academy of Sciences* **14**, 205-219, 1988 (with R.R. Prasad)
55. Nonlinear dynamics in the wake of an oscillating cylinder. *Phys. Rev. Lett.* **60**, 797-801, 1988; reprinted in *Chaos II*, edited by H. Bai-Lin, World-Scientific, pp. 493-496, 1990
56. The multifractal nature of the dissipation field of passive scalars in fully turbulent flows. *Phys. Rev. Lett.* **61**, 74-77, 1988 (with R.R. Prasad & C. Meneveau)
57. Flat plate drag reduction by turbulence management. *Proc. Ind. Acad. Sci., Series C (Sadhana)* **12**, 15-30, 1988 (with R. Narasimha)
58. Singularities of the equations of fluid motion. *Phys. Rev. A* **38**, 6287-6295, 1988 (with C. Meneveau)
59. Universal dynamics in the wake of an oscillating cylinder. In *Proc. Int. Symp. on Flow Induced Vibrations and Noise (ASME)* pp. 1-29, 1988 (with D.J. Olinger)
60. The fractal geometry of interfaces and the multifractal distribution of dissipation in fully turbulent flows. *J. Pure and Applied Geophys.* **131**, 43-60, 1989 (with R.R. Prasad, C. Meneveau & R. Ramshankar)

61. Mixing, entrainment, and fractal dimension of interfaces in turbulent flows. *Proc. Roy. Soc. Lond.* **421A**, 79-108, 1989 (with R. Ramshankar & C. Meneveau)
62. Scalar interfaces in digital images of turbulent flows. *Experiments in Fluids* **7**, 259-264, 1989 (with R.R. Prasad)
63. New results on the fractal and multifractal structure of the large Schmidt number passive scalars in fully turbulent flows. *Physica D* **38**, 322-329, 1989 (with R.R. Prasad)
64. Absolute instability in variable density jets. *Experiments in Fluids* **7**, 309-317, 1989 (with S. Raghu & D. Kyle)
65. The turbulent boundary layer. In *Frontiers in Experimental Fluid Mechanics*, edited by M. Gad-el-Hak, Springer, pp. 159-209, 1989
66. Measurement of $f(\alpha)$ from scaling of histograms, and applications to dynamical systems and fully developed turbulence. *Phys. Lett. A* **137**, 103-112 (with C. Meneveau)
67. Extraction of underlying multiplicative processes from multifractals via the thermodynamic formalism. *Phys. Rev. A* **40**, 4593-4611, 1989 (with A. B. Chhabra & R.V. Jensen)
68. Direct determination of the $f(\alpha)$ singularity spectrum and its applications to fully developed turbulence. *Phys. Rev. A* **40**, 5284-5294, 1989 (with A.B. Chhabra, C. Meneveau & R.V. Jensen)
69. The measurement and interpretation of fractal dimensions of surfaces in turbulent flows. *Phys. Fluids A* **2**, 792-807, 1990 (with R.R. Prasad)
70. Joint multifractal measures: Theory and applications to turbulence. *Phys. Rev. A* **41**, 894-913, 1990 (with C. Meneveau, P. Kailasnath & M.S. Fan)
71. Interface dimension in intermittent turbulence. *Phys. Rev. A* **41**, 2246-2248, 1990 (with C. Meneveau)
72. Quantitative three-dimensional imaging and the structure of passive scalar fields in fully turbulent flows. *J. Fluid Mech.* **216**, 1-34, 1990 (with R.R. Prasad)
73. On the formation and suppression of vortex 'shedding' at low Reynolds numbers. *J. Fluid Mech.* **218**, 71-107, 1990 (with P.J. Strykowski)
74. Some results concerning the 'dynamical systems approach' to the 'turbulence problem'. In *Chaos: Soviet-American Perspectives in Nonlinear Science*, edited by D.K. Campbell, American Institute of Physics, pp. 223-242, 1990. Also, in a slightly different form and under the title: The utility of dynamical systems approaches: Comment 3. In *Whither Turbulence? Turbulence at Cross Roads*, edited by J.L. Lumley, Springer, 269-291, 1990
75. Wavelet analysis of the turbulent jet. *Phys. Lett. A* **145**, 314-322, 1990 (with R. Everson & L. Sirovich)

76. Turbulence and the tube. *Nature* **344**, 192-193, 1990
77. Fractal geometry of isoscalar surfaces in turbulence: theory and experiment. *Phys. Rev. Lett.* **67**, 1739-1742, 1991 (with P. Constantin & I. Procaccia)
78. Do scalar fluctuations in turbulent shear flows possess local universality? *Physica D* **51**, 567-568, 1991
79. The multifractal nature of the turbulent energy dissipation. *J. Fluid Mech.* **224**, 429-484, 1991 (with C. Meneveau)
80. Local isotropy of passive scalars in turbulent flows. *Proc. Roy. Soc. Lond.* **434**, 165-182, 1991
81. Fractals and multifractals in fluid turbulence. *Annu. Rev. Fluid Mech.* **23**, 539-600, 1991 (Translated into Japanese.)
82. Probabilistic multifractals and negative dimensions. In *New Perspectives in Turbulence*, edited by L. Sirovich, Springer-Verlag, pp. 271-288, 1991 (with A.B. Chhabra)
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