CURRICULUM VITAE

January 23, 2025

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Born at Madrid, Spain on 1945
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ACADEMIC DEGREES

- Ph.D., Applied Mathematics (1973), California Institute of Technology, Pasadena, CA.
- Master Sc., Aeronautics (1970), California Institute of Technology.
- Aeronautical Engineer (1969), E.T.S.I. Aeronáuticos. Madrid. (Doctor in Aeronautics, 1975).

PROFESSIONAL EXPERIENCE

Besides fellowships for graduate studies in the United States, provided by European (ESRO) and American (NASA) institutions

- **2016-. Distinguished Res. Professor of Fluid Mechanics. E.T.S.I. Aeronáuticos** (Universidad Politécnica de Madrid).
- 2017 (Jan.-Feb.). Visiting Scientist, Kavli Inst. Theor. Phys. (UC Santa Barbara, USA).
- 2016 (October). Visiting Professor. (U. La Sapienza, Roma, IT).
- 2016 (April–May). Visiting Fellow, Sidney–Sussex College. (Cambridge Univ. UK).
- **1991-2015. Professor of Fluid Mechanics. E.T.S.I. Aeronáuticos.** (Universidad Politécnica de Madrid).
- **1989-2012. Senior Research Fellow and Visiting Professor, Centre Turbulence Research** (Stanford University and NASA Ames Research Centre). July–November approx.
- **1999-2005. Professor of Mechanics, Ecole Polytechnique. Palaiseau, FR.**
- 1980-81, 85-90. Associate Professor, Applied Mathematics and Fluid Mechanics. E.T.S.I. Aeronáuticos (Universidad Politécnica de Madrid).
- 1988 (November). Visiting Scientist, European Centre Engineering Scientific Computing (IBM-ECSEC) Rome.
- 1987 (July-August). Visiting Scientist, Centre Turbulence Research, Stanford University and Ames Research Centre.
- 1981-82. Visiting Associate, Applied Mathematics. California Institute of Technology, Pasadena, Ca.
- **1975-81, 82-89. Research Scientist, UAM-IBM Scientific Centre, Madrid.**
- 1974-79, 82-84. Instructor, Applied Mathematics and Fluid Mechanics. E.T.S.I. Aeronáuticos (Universidad Politécnica de Madrid).
- 1973-74. Research Fellow, Department of Applied Mathematics, Caltech.

OTHER PROFESSIONAL ACTIVITIES AND DISTINCTIONS

- **Member Spanish Academy of Science** (2008; corresponding member since 2006)
- **Member Spanish Academy of Engineering** (2005)
- ERC Advanced grantee (2011-2016, 2016-2021 and 2021-2026)
- Fluid dynamics prize, American Physical Soc. (2024)
- Biennial fluid mechanics prize, Euromech (2018)
- Annual prize of the Spanish Academy of Sciences (1998)
- Elected Fellow: American Physical Society (1993; member since 1986) *Div. Fluid Mech., Comput. Physics, Hist. of Physics*

- Elected Fellow: Euromech (2014), Inst. of Physics London (2010)
- Editorial Board, *Siam J. for Multiscale Modeling and Simulation* (2002-2004), *Journal of Turbulence* (1999-), *Nonlinearity* (1992-1995)
- Associate Editor, *Phys. Fluids* (1998-2003)
- Advisory Board, *European Journal of Mechanics, B: Fluids* (1992-2003)
- Committee on *e-Science*, (Fecyt) (2004-2005)
- Member European Turbulence Conference Committee (1990-1994, 2003-2005)
- Appointed Member, IUTAM Congress Committee (1995-2002)
- National Coordinator, Fluid Dynamics Panel (AGARD/NATO) (1987-1997)
- Chairman WG-21, *Data base of experimental data in turbulence*, (AGARD) (1995-1997)
- Advisory Committee for Research, Spanish Meteorological Inst. (1997)
- Spanish Representative at International Federation for Information Processing (1984-86)
- Contributor Mathematical Reviews. Ann Arbor. Michigan (1978-1989)
- Member: Euromech (2000-2005, 2009-), American Mathematical Society (1981-), Association Computing Machinery (1984-2005) *SIGGRAPH, SIGNUM.*

INVITED LECTURES AND BOOK CHAPTERS

1. "On chickens, eggs and turbulence", *First Spanish Fluid Dynamics Conference*, Cadiz, ES, June 19–22, 2022.

2. "Beyond coherent structures", *Turbulence: where do we stand and where are we heading?*, Isaac Newton Inst., U. Cambridge, UK, Jan. 4–7, 2022.

3. "Collective structures in 2D turbulence", *XIX Hispano-French School Jacques-Louis Lions on Numerical Simulation in Physics and Engineering*, Madrid,ES. Aug. 30– Sept. 3, 2021.

4. "Coherent structures in turbulence: a data science perspective", *Course on Data Driven Fluid Mechanics: Combining First Principles and Machine Learning*, von Kármán Inst. Fluid Mech., Feb. 23–28, 2020

5. "Should we trust robot scientists?", *Scientific Computing Across Scales: Extreme Events and Criticality in Fluid Mechanics*, Fields Inst., Toronto, CA, Apr. 15-18, 2019.

6. "The impact of big data on turbulence research", *ACEEES Environment & Energy Forum*, Tenerife, ES, Dec 15-19, 2017.

7. "The turbulence cascade in space and time", *Euromech Coll. 589 Turbulent Cascades II*, Lyon, FR, Dec 5-7, 2017.

8. "The power of data: exploring the physics of turbulence from one to five dimensions", *Spanish supercomputing network users meeting*, Santiago, ES, Sept. 28, 2017.

9. "The Coherent Structures of Wall-bounded Turbulence", *Euromech Coll. 586 on Turbulent superstructures in closed and open flows*, Erfurt, DE, July 12-14, 2017.

10. "The turbulent/nonturbulent interface of forced and unforced boundary layers", *Int. Worksh. High-Reynolds Number Turbulence*, Lanzhou, China, Oct. 5-11, 2016.

11. "Coherent structures in wall-bounded turbulence", *Int. Conf. Theor. Appl. Mech., ICTAM*, Montreal, CA, Aug. 21-26, 2016.

12. "The many faces of the Reynolds stresses and other turbulent fluxes", *Int. Workshop Theor. Aspects Near-Wall Turbulence*, RIMS, Kyoto, JP June 28-30, 2016.

13. "Wall-bounded turbulence is not due to the wall", *Int. Symp. Near-Wall Flows: Transition and Turbulence*, RIMS, Kyoto, JP, June 20-22, 2016.

14. "The inertial eddies of wall-bounded turbulence", *Euromech-Ercoftac, Turbulence Cascades*, Lille, FR, Dec. 2–4, 2015.

15. "The inertial eddies of wall-bounded turbulence", *Wrksh. Conditional statistics along lines and trajectories in turbulence*, Aachen, DE, Aug. 24, 2015.

16. "The temporal evolution of inertial eddies in wall-bounded turbulence", *Basic issues extreme events in Turbulence*, Vienna, AT, May 4–8, 2015.

17. "The physics of boundary layers", *11th Europ. Turbomachinery Conf.*, Madrid, ES, Mar. 23–26, 2015.

18. "A numerical guide to turbulence theory", *Iutam Symp. advances in Computat.*, Goa, IN, Dec 15–18, 2014.

19. "A turbulent cascade of eddies", *IPAM Wrk. Turbulence in Engineering Appl.*, Los Angeles CA, USA, Nov. 17-21, 2014.

20. "Model- vs. data-driven turbulence theories", *iTi 2014*, Bertinoro IT. , Sept. 21–24, 2014.

21. "Simplified shear turbulence", *Vorticity and wall turbulence*, Roma IT. , Sept. 18–20, 2014.

22. "Turbulent structures in shear flows", *Wall Turbulence: A Colloquium under the Midnight Sun*, Trondheim, NO. , June 22–24, 2014.

23. "Structures in shear flows", *Wallturb 2014*, Lille, FR. , June 18–20, 2014.

24. "Turbulence in shear flows", *Int. Symp. Mathematical theories of turbulence*, Nara, JP. , March 3–5, 2014.

25. "How linear is of wall-bounded turbulence?", *High-Reynolds number Boundary Layers*, Durham NH., Nov. 20–22, 2013.

26. "The logarithmic layer of wall-turbulence", *Fluid Days 2013*, Bangalore, IN., June 18-20, 2013.

27. "The logarithmic layer of wall-bounded turbulent flows", *Am. Phys. Soc. Div. Fluid Dyn.*, San Diego CA, USA, Nov. 18, 2012.

28. "Turbulent bursts", J. Jiménez, *Directions. in Comput. Flow Phys.*, San Diego CA, Oct. 12–14 (2012)

29. "Wall turbulence", *Penner Lecture Ser.*, UC San Diego, La Jolla CA, USA, June 4, 2012.

30. "Microscale turbulence and interactions with organisms", *Microenvironments modulating biological interactions in the ocean*, Aspen, CO, USA, Jan. 17-21 , 2011.

31. "Turbulent boundary layers and channels", *Tutorial presentation at the 13th Summer School of the Centre for Turbulence Res.*, Stanford Univ., USA, July 21, 2010.

32. "Direct simulations of wall-bounded flows", *Ercoftac Direct and Large-eddy Simulation 8*, Eindhoven, Holland, July 7-9, 2010.

33. "Supercomputing requirements for turbulence simulations", *Kick-off meeting Swedish e-Science Centre*, Stockholm, Sweden, April 22, 2010.

34. "Simulation results in wall-bounded turbulence", *Nordita School on Boundary Layers*, Stockholm, Sweden, April 16, 2010.

35. "Transition-like structures in high-Reynolds-number wall-bounded turbulence", *Int. Symp. on Turbulence*, Beijing, China, Sept. 21–26, 2009.

36. "Inner-outer interactions in wall turbulence", *Int. Conf. Turb. and Interactions*, S. Luce, Martinique, June 1-5, 2009. *Notes on Numerical Fluid Mechanics* **110** (eds. M. Delville, T.–H. Lê and P. Sagaut) pp. 3–14, Springer.

37. "Direct numerical simulations of turbulent flows", *Symp. in honour of P.G. Saffman*, Pasadena CA, May 28, 2009.

38. "Numerical simulations of turbulent flows", *Int. Symp. Math. Simulation in Sci. and Technology*, Sevilla Acad. Sci., Jan. 29-30, 2009.

39. "Prospects and recent accomplishments in simulating wall-bounded turbulence", *Int. Symp. Frontiers Comput. Sci.*, Nagoya, JP, Nov 27-29, 2008.

40. "Intermittency in imperfect multiplicative cascades", *Worksh. on Inertial-range Dyn. and Mixing*, I. Newton Inst. Cambridge UK, Sept. 29 – Oct. 3, 2008.

41. "What are we going to need to keep computing turbulence, and what can we get in return", *Worksh. on Prospects of High-performance Computing in Turbulence Res.*, I. Newton Inst. Cambridge UK, Sept. 26, 2008.

42. "Introduction to transition", *Worksh. on Wall-bounded shear flows: Transition and Turbulence.* I. Newton Inst. Cambridge UK, Sept. 8–12, 2008.

43. "Computational evidence for the stress-carrying structures in the logarithmic layer", *NSF Worksh. on Friction,* Montreux, Switzerland, March 13-15, 2008.

44. "Simulating wall-bounded turbulence", *Minisymp. on Turb. Simulations and advence Cyberinfrastructure.* in 6oth. Ann. meeting of the APS DFD division, Salt Lake City, Utah. Nov. 18-20, 2007.

45. "Supercomputing from a user's point of view" *Worksh. on Supercomputing,* Spanish Acad. Engng., Madrid, Oct. 23, 2007.

46. "Models for the logarithmic and outer layers", *Worksh. in honour of J. Kim,* Stanford, CA. Sep. 14–15, 2007.

47. "Self-similarity and coherence in the turbulent cascade", *15th. Aha-Huliku'a Worksh. on 'Extreme events'.* Honolulu, Hawaii. Jan. 23–26, 2007. (P. Müller, C. Garrett & D. Henderson, eds.), 81–90.

48. "Contributions and challenges of computational turbulence research", *IUTAM Symp. on Computational Physics and new Perspectives in Turbulence.* Nagoya, Japan, Sept. 11–14, 2006. Published by (Y. Kaneda, ed.) pp. 3–10, Springer

49. "Recent results from the direct simulation of turbulent flows", *Work. in honor of P. Lax and L. Nirenberg, on Recent Advance in Nonlinear PDEs and applications*, Toledo, SP, June 7–10, 2006. Published by L.L. Bonilla, A. Carpio, J.M. Vega, S. Venakides, eds. as *Procs. of Symposia in App. Maths.* **65**, 119–130. Am. Math. Soc., 2007

50. "The numerical computation of turbulence", Canberra (Australia), Jan 16-18, 2006. Published in *Turbulence and Coherent Structures in Fluids, Plasmas and Nonlinear Media*, (eds. M. Shats & H. Punzmann) World Scientific. pp. 271–307 (2006).

51. "What are we learning from simulating wall turbulence?" *Workshop Turbulence and Coherent Structures*, Canberra (Australia), Jan 10-13, 2006.

52. "E-science in Engineering" J. Jiménez, *1st Spanish Workshop on e-science*, Santiago (Spain), July 6-8, 2005.

53. "Results from computational turbulent channels at experimental Reynolds numbers", J. Jiménez, *15th Australasian Fluid Mech. Conf.*, Sydney (Australia), Dec. 13-17, 2004.

54. "The near-wall structures of turbulent wall flows", J. Jiménez, G. Kawahara, M.P. Simens & J.C. del Álamo, *IUTAM Symp. on Elementary Vortices and Coherent Structures: Significance in Turbulence Dynamics*. Kyoto (Japan). Oct. 26-28. (S. Kida, ed.) pp. 53–70. Springer. 2004.

55. "The structure turbulence near walls" J. Jiménez, *Symp. in honour of Prof. A Liñán.* Granada (Spain). Sep. 16-18. 2004 (eds. F.J. Higuera, J. Jiménez & J.M. Vega), 141–154. CIMNE.

56. "Recent results from computational turbulent channels up to $Re_\tau = 2000$", J. Jiménezand J.C. del Álamo, *Special program on wall-bounded and free-surface turbulence and its computation*, Nat. Univ. Singapore, Aug. 1–5. 2004.

57. "What would it take for DNS to substitute experiments in turbulence" J. Jiménez, *Parallel Computational Fluid Dynamics, Proc. Parallel CFD 2004 Conf.* Gran Canaria (Spain). May 24-27. 2004 (eds. G. Winter et al.) 1–8, Elsevier.

58. "The near-wall structure of the turbulent boundary layer" J. Jiménez& G. Kawahara, *IUTAM Symp. on One hundred of boundary layer research.* Gottingen (Germany). Aug. 12-15. 2004. (eds. G.E.A. Meier, K.R. Sreenivasan, H.J. Heinemann), 209–220, Springer.

59. "Las contribuciones de A.N. Kolmogorov a la teoría de la turbulencia" J. Jiménez, *Conmemoración del centenario de Kolmogorov*, Real Acad. Esp. de Ciencias, Madrid, Feb. 4, 2004. Published in *Arbor* **178** (704), 589–606.

60. "Turbulent flow in the near-wall and logarithmic layers: What is wrong with self-similarity?", J. Jiménez and J.C. del Álamo, *One hundred years of aviation and centenary of Prof. C. Ferrari.* Politecnico di Torino (IT). Oct. 8. 2003. (M. Onorato, editor).

61. "The structure of wall-bounded turbulence", J. Jiménez, J.C. del Álamo and O. Flores, *Int. Symposium on Dynamics of coherent structures in turbulence.* Tokyo (Japan), Oct. 21-23. 2002. (S. Kida, editor), 37–48.

62. "Computing high-Reynolds number flows: Will DNS ever substitute experiments?", J. Jiménez, *5th. Int. Symp. Engng. Turbulence Modelling and Measurement* Mallorca (Spain), Sept. 16-18, 2002. in *Engineering Turbulence Modelling and Experiments* **5** (W. Rodi and N. Fueyo, editors) Elsevier, 17–28.

63. "The largest scales of turbulent wall flows", J. Jiménez and J.C. del Álamo, *Symp. in honour of A. Roshko at 14th USNCTAM*, Blaksburg (Virginia Tech., USA), June 23-28, 2002. (Eds. R.C. Batra and E.G. Henneke), 320.

64. "Very large anisotropic scales in turbulent wall-bounded flows", J. Jiménez and J.C. del Álamo, *Statistical theories and computational approaches to turbulence*, Nagoya, Japan, Oct. 10-13, 2001. (Y. Kaneda and T. Gotoh, editors) Springer, 105–112.

65. "Coherent dynamics in wall turbulence", in *Tubes, sheets and singularities in fluid dynamics*, IUTAM at Zakopane, Poland, Sept. 2001. (K. Bajer & H.K Moffatt, editors), Kluwer. 229–240

66. "The structures of wall-bounded turbulent flows", J. Jiménez and J.C. del Álamo, *Conference and book in honour of Pierre Perrier*, Paris, Nov. 2000. in *Fluid Dynamics and Aeronautics: New Challenges* (eds. J. Periaux, M. Champio, J-J., Gagnepain, O. Pironneau, B. Stoufflet & P. Thomas). CIMNE (2003) pp. 278–296.

67. "Some open computational problems in wall-bounded turbulence", *8th. European Turbulence Conf.*, Barcelona, Spain. July 2000, published as *Advances in Turbulence VIII* (ed. C. Dopazo), CIMNE (2000) pp. 637–646.

68. "The largest structures in turbulent flows: The mechanics of the logarithmic layer", *Euroconf. on Coherent Structures in Classical Systems.* Sitges. Spain. June 2000, published as *Coherent Structures in Complex Systems* (eds. D. Reguera, L.L. Bonilla, J.M. Rubí). Springer (2001) 39–57.

69. "Self-similarity and coherence in the turbulent cascade". *IUTAM Symp. on Geometry and Statistics of Turbulence.* Hayama, Japan, Nov. 1999. (eds. T. Kambe, T. Nakano and T. Miyauchi), Kluwer (2001) pp. 57–66.

70. "Scaling and structure in isotropic turbulence", by J. Jiménez, F. Moisy, P. Tabeling & H. Willaime. *Newton Institute Symp. on Intermittency.* Cambridge, UK, June 1999. Published in *Intermittency in Turbulent Flows* (J.C. Vassilicos, ed.), Cambridge U. Press (2000) 193–212.

71. "Limits and performance of eddy-viscosity sub-grid models". *Newton Institute Symp. on LES/DNS.* Cambridge, UK, May 1999. Published in *Direct and Large-Eddy Simulation, III* (P.R. Voke, N.D. Sandham & L. Kleiser, eds.), Kluwer (1999) 75-86.

72. "Wall Turbulence". *FISES99*, Santander, Spain. May 1999.

73. "The dynamics of near-wall turbulence". J. Jiménez and A. Pinelli, *13th. Australasian Fluid Dyn. Conf.*, Melbourne, Australia. Dec. 1998. Published in Proceedings, 345-352.

74. "The physics of wall turbulence", *Statphys 20.* Paris, July 1998, published in *Physica A* **263**, 252–262.

75. "The dynamics of wall turbulence", *US Nat. Conf. in Applied Mech.* Gainsville FL. June 1998.

76. "Summary and appraisal of self-sustained mechanisms in wall turbulence", *29th AIAA Fluid Dynamics Conf.*, Alburquerque NM (USA), June 1998. (AIAA Paper 98-3001)

77. "LES: where are we and what can we expect", *29th AIAA Fluid Dynamics Conf.*, Alburquerque NM (USA), June 1998. Published as J. Jiménez and R.D. Moser, *AIAA Paper 98-2891.*

78. "Intermittent cascades: vortices, turbulence and pendulums", Saffman Symp., Pasadena CA (USA), June 1998.

79. "A survey of LES techniques in turbulent flows", *Symp. in turbulent combustion.* Sandia Nat. Lab. Livermore CA (USA), Aug. 1997.

80. "Subgrid scale models for reacting flows", *ERCOFTAC Meeting DNS and LES of reacting flows*, Twente, Holland, July 1997.

81. "Wall turbulence: how it works and how to damp it", *AIAA Shear flow control Conf.*, J. Jiménez and A. Pinelli, Snowmass, CO. USA, July 1997. *AIAA Paper 97-2112.*

82. "Small scale vortices and intermittency in turbulence", *EUROMECH Symp. Dynamics and statistics of concentrated vortices in turbulence*, Marseille, France, June 1997. Published in *Europ. J. Mech: B* (1998)

83. "Dynamics of the structures of near-wall turbulence", J. Jiménez and A. Pinelli, *IUTAM Symp.*, Lyngby, Denmark, May 1997, published in *Simulation and Identification of Organised Structures* (editors J.N. Sorensen, E.J. Hopfingen and N. Aubry) Kluwer (1999), 41-50.

84. "A model for turbulence as a dynamical system", *No-lineal 97*, Avila, Spain, April 1997.

85. "Small scale intermittency in turbulence", *2nd. Turbulence Res. Ass. Conference*, Pohang, Korea, April 1995.

86. "La cascada turbulenta: cien años de historia", *VII Conf. David Alcaraz.*, IIMAS, UNAM Mexico, Feb. 1995.

87. "Energy transfer and constrained simulations in isotropic turbulence", Almeria, Jul. 1994, in *Fluid Physics*, (M.G. Velarde and C.I.Christov, eds.), World Scientific, 543-557 (1995)

88. "Small structures in turbulence", *What is Turbulence?*, Monte Veritá, Switzerland, Sept., 1991, (Th. Dracos and A.Tsinober, ed.), Birkhäuser.

89. "Coherent structures in turbulence", *1st. European Fluid Mech. Conference*, Cambridge, U.K., Sept., 1991.

90. "The role of computation in transition research" in *Advances in Turbulence 3*, (A.V.Johansson and P.H.Alfredsson, eds.) Springer. (1991)

91. "On the mixing transition in turbulent shear layers", *Internat. Conf. on organised structures and turbulence in Fluid Mechanics*, Grenoble, France, Sept., 1989.

92. "A day in the life of a Tollmien-Schlichting wave", *Internat. Conf. on organised structures and turbulence in Fluid Mechanics*, Grenoble, France, Sept., 1989.

93. "Transition to turbulence in subcritical flows", *Dynamic Days*, Düseldorf, FRG, June, 1989.

94. "Tracking bifurcations and Turbulence Transition in plane Poiseuille flows", *IBM Europe Institute in Computational Fluid Dynamics*, Oberlech, Austria, August, 1988.

95. "Turbulence mechanisms in two dimensional shear flows", in *New trends in Nonlinear Dynamics and Pattern Forming Phenomena: The geometry of nonequilibrium*, Cargese, Corsica, August, 1988.

96. "Bifurcations and Turbulence in plane Poiseuille flow", *Zaric Memorial Int. Sem. on Wall Turbulence*, Dubrovnic, Yugoslavia, May, 1988, in *Near wall turbulence* (S.J.Klein & N.H.Afgan eds.) Hemisphere, pp. 28-44.

97. "Some computational problems in computer-assisted flow visualisation", *Proc. Int. Symp. Computational Fluid Dyn.*, Tokyo, Sept. 1985, pp.145-156

98. "Synthetic images in man-machine communication", at *Workshop on Informatics in Research for the Humanities*. U.Complutense Madrid, Nov. 1984

99. "Fluid mechanics, a test case for computer imagery", *Symp. on Perspectives in Computing*, Caracas, June 1982.

100. "Modelos Deterministas de la Capa de Mezcla Turbulenta", Presentation to the Spanish Academy of Sciences. (May 1981)

101. Invited seminars on various aspects of Fluid Mechanics, Applied Mathematics and Digital Image Processing at the Universities of Alcalá, Barcelona, Cáceres, Córdoba, Madrid, Valencia, Zaragoza (Spain), Beijing, Xi'an, Shanghai (China), U.C. Berkeley (California), California Institute of Technology, Pasadena (Ca), Cambridge (UK), Caracas (Venezuela), Houston (Texas), Kyoto, Osaka (Japan), Massachussets Institute of Technology, Boston (Ma), Marseille (FR), Melbourne (Australia), Mexico D.F. (UNAM), Nagoya (Japan), Paris (VI, Ecole Polytechnique, and Ecole Normal Superieur Physique), La Rolla (Missouri), Rutgers (New Jersey), U.C. San Diego and Los Angeles (California), University of Southern California (Los Angeles), Stanford (California), Stockholm (KTH), Tucson (Arizona), among others, besides the Research Centres of IBM at Yorktown Heights (New York) and Palo Alto (California) and the NASA Ames Research Centre at Mountain View (California).

INVITED COURSES

1. "Machine Learning for Fluid Mechanics", Von Kármán Inst., Brussels BE (Feb. 24-28, 2020)

2. "Wall-bounded turbulence". CISM, Udine IT (July 18–22, 2016)

3. "Introducción a la turbulencia". U. Carlos III, Madrid (Feb. 2006)

4. "The numerical computation of turbulence", Canberra (Australia), Jan 16-18, 2006.

5. "Advanced Numerical Methods for Turbulent Flows", Autrans (FR) (August 2003)

6. "Introduction to Turbulence", Master in Fluid Mech., Sardinia (IT) (June 2002, June 2003)

7. "Métodos numéricos en mecánica de Fluidos", U. Bilbao (Jan. 2002)

8. "Métodos numéricos espectrales y de alta resolución", U. Carlos III, Madrid (Feb. 2000, Feb. 2001)

9. "The structure and control of wall turbulence", *RTA/Agard course*, Ecole Polytechnique. Paris, (Dec. 1999)

10. "Interaction of turbulence and oceanic plankton", *MAST course*, Univ. Barcelona. (Sept. 1995)

11. "Una introducción a la turbulencia", *Curso de la Cátedra América en Mecánica de Fluidos*, Univ. Autónoma Nacional México. (Feb. 1995)

12. "Large Eddy Simulation and Turbulent Mixing", *Euroconference on Fundamental Studies in Turbulence: Mixing and Combustion*, Valladolid, Spain. (May 1994)

13. "Direct Numerical Simulation of Turbulence", *Series of Lectures at Postgraduate Course*, CERFACS, Toulouse, France. (April 1989)

14. "Digital Image Processing in Fluid Mechanics", Von Karman Institute, Brussels. (March 1984)

15. "Digital Image Processing of Satellite Imagery", University of Islamabad. Pakistan. (April 1983)

CONFERENCE ORGANISATION

- Chairman or Co-Chairman:
  - "Madrid Summer School on Turbulence", Madrid (Spain) One month, June-July (2013, 2015, 2017, 2019, 2023)
  - "Causality in Turbulence and Transition", Madrid (Spain) May (2022)
  - "ACEEES Environment & Energy Forum", Tenerife (Spain) December (2017)
  - "Euromech Coll. 568 on Coherent Structures in Fully Developed Turbulence", Madrid (Spain) May (2015)
  - "Symp. in honour of Prof. A. Liñán", Granada (Spain) Sept. (2004)
  - "Sharing of large-scale data in turbulence", Madrid, June (2003)
  - Statphys 20, sessions on "Turbulence and dynamical systems", Paris, June (1998)
  - "Two-dimensional Turbulence, Vortices and Geophysical Flows", *EC, HCM* Madrid, April (1995)
  - "Application of Direct and Large Eddy Simulation to Turbulence and Transition", *AGARD* Crete, Greece, May (1994)
  - "Computational and Experimental Assessment of Jets in Cross-flow", *AGARD* Winchester, U.K., May (1993)
  - "The Global Geometry of Turbulence: Impact of Nonlinear Dynamics", *NATO ARW*, Rota, Cádiz, July (1990) Plenum.
  - "The Role of Coherent Structures on the Understanding and Modelling of Turbulence and Mixing", Madrid, June (1980) Springer.

- Program Committee:
  - "Euromech Colloquium 598: Coherent structures in wall-bounded turbulence", London (UK) August (2018)
  - "Euromech Coll. 590 on Turbulent/nonturbulent interfaces ", London (UK) July (2017)
  - "Computational physics and new perspectives in turbulence", *IUTAM*, Nagoya, Japan (2006).
  - "Vortex structures in turbulent flows", *IUTAM*, Kyoto, Japan (2004).
  - "100 years of Boundary Layer Research", *IUTAM*, Goettingen, Germany (2004). s
  - "Tubes, Sheets and Singularities in Fluid Dynamics", *IUTAM*, Zapokane, Poland (2001).
  - "Third AFOSR Intern. Conf. DNS/LES", Lousiana Tech., USA, (2001).
  - "Geometry and Statistics of Turbulence", *IUTAM*, Tokyo, (1999).
  - "3rd European CFD Conference", *ECCOMAS*, Athens, Greece, Sept (1998).
  - "2nd. Int. Conf. on Flow Interaction and Science/Art", Berlin, July (1997).
  - "Dynamics and Statistics of Concentrated Vortices in Turbulent Flows", *Euromech*, Marseille, June (1997).

- "Challenges in Numerical Analysis", *AGARD*, Sevilla, Oct (1995).
- "2nd European CFD Conference", *ECCOMAS*, Stuttgart, Germany, Sept (1994).
- "5th European Turbulence Conference", *EUROMECH*, Siena, Italy, July (1994).
- "1st European CFD Conference", *ECCOMAS*, Brussels, Belgium, Sept (1992).
- "4th European Turbulence Conference", *EUROMECH*, Delft, Holland, July (1992).
- "Vortex Flow Aerodynamics", *AGARD CP-494*, Scheveningen, Holland, October (1990)
- "3th European Turbulence Conference", *EUROMECH*, Stockholm, Sweden, July (1990) Springer.
- "Appraisal of the Suitability of Turbulence Models in Flow Calculations", *AGARD AR-291*, Friedrichshaffen, Germany, April (1990)
- "Data Base Techniques for Pictorial Applications", Florence, June (1979) Springer.

THESES DIRECTED

- Adal Galván Castro (PhD.), ETSI Aeronáuticos, Madrid (In progress) "Detailed momentum balance in turbulent shear flows".
- Carlos Martńez López (PhD.), ETSI Aeronáuticos, Madrid (In progress) "The role of streaks in the sustainment process of wall-bounded flows".
- Miguel Pérez Encinar (PhD.), ETSI Aeronáuticos, Madrid (2020) "Detection of intense events in wall-bounded turbulence".
- A. Vela Martín (PhD.), ETSI Aeronáuticos, Madrid (2019) "Entropy, chaos and irreversibilty in the turbulence energy cascade'.
- S. Dong (PhD.), ETSI Aeronáuticos, Madrid (2016) "Turbulent bursts in homogeneous shear".
- G. Borrell (PhD.), ETSI Aeronáuticos, Madrid (2015) "Entrainment effects in turbulent boundary layers".
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