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Decreto Rettore Università di Roma "La Sapienza" n 192/2020 del 17/01/2020

SERGIO PIROZZOLI Curriculum Vitae

Part I – General Information

Full Name	Sergio Pirozzoli

Part II – Education

Type	Year	Institution	Notes (Degree, Experience,...)
University graduation	1996	Sapienza University of Rome	Aeronautical Engineering
Post-graduate studies			
PhD	2000	Sapienza University of Rome	Aerospace Engineering
Specialty			
Pre-doctorate training			
Licensure 01			
Licensure 02			

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
2000	2001	California Institute of Technology	Research visitor
2001	2003	Sapienza University of Rome	Research assistant (Assegno di Ricerca)
2004	2011	Sapienza University of Rome	Assistant Professor (Ricercatore)
2011		Sapienza University of Rome	Associate Professor
2013		Italian Ministry of Research	Abilitation to Full Professorship (Abilitazione Scientifica Nazionale)



SC 09/A1 3/2/2014 - 2/2/2023

IIIB – Other Appointments

Start	End	Institution	Position
2019		Computers and Fluids	Associate Editor
2015		Theoretical and Computational Fluid Dynamics	Associate Editor
2016		ASME Journal of Fluids Engineering	Associate Editor
2009		Notes on Numerical Fluid Mechanics and Multidisciplinary Design	Associate Editor
2015	2015	European Journal of Mechanics B/Fluids	Guest Editor
2008	2012	ECCOMAS	Member of Steering Committee
2013		European Union	Reviewer for PRACE supercomputing initiative
2015		University of California, Los Angeles	Member of panel for distinguished professorship
2004	2011	Department of Mechanical and Aerospace Engineering, Sapienza University of Rome	Member of management board (Giunta di Dipartimento)
2012		Civil and Industrial Engineering option (Latina), Sapienza University of Rome	Member of management board (Giunta del CAD)
2012		PhD program in Aerospace Engineering	Panel member
1996		Italian Air Force	Certificate of Weather Forecast Officer

Part IV – Teaching experience

Year	Institution	Lecture/Course
2004-2005	Sapienza University of Rome	Aerodynamics (module of), 3CFU, BSc in Aerospace Engineering
2005-date	Sapienza University of Rome	Aero-thermodynamics of atmospheric reentry, Master in Space Transportation Systems
2012-date	Sapienza University of Rome	Applied Fluid Dynamics, 9CFU, Master Degree in Mechanical Engineering
2011-2013	Sapienza University of Rome	Fluid Mechanics, 9CFU, BSc in Civil and Industrial Engineering
2005-2018	Sapienza University of Rome	Computational Gas Dynamics, 6CFU, Master Degree in Aeronautical Engineering
2019-date	Sapienza University of Rome	Aeroacoustics, 6CFU, Master Degree in Aeronautical Engineering

The applicant has supervised and co-supervised a number of Doctoral students. A list of former and current students follows.

Year	Name	Current employment
2008-2010	Matteo Bernardini	Associate professor, Sapienza University of Rome
2014-2016	Davide Modesti	Assistant Professor, Delft University of Technology
2015-2017	Antonio Memmolo	Consultant, CINECA HPC division
2017-date	Simone Di Giorgio	Sapienza University of Rome
2017-2018	Zhao Guoyen	NUDT, Changsha, China
2017-2018	Zuo Feng-yuan	Assistant Professor, Xi'an Jiaotong University, China
2019	Yu Ming	Tsinghua University, China
2019-2020	Hao Jiang	NUDT, Changsha, China
2019-2020	Yang Rui	NUDT, Changsha, China

The applicant has served as member of final PhD examination panels in several Italian and foreign institutions, including University of Southampton, Université de Rouen, Conservatoire National des Arts et Metiers (Paris), University of Naples "Federico II", University of Melbourne, Berlin Technical University, Milan Polytechnic University.

Part V - Society memberships, Awards and Honors

Year	Title
1997	EU Marie Curie Scholarship, Dassault Aviation, France
2016	Fellow, American Physical Society, Division of Fluid Dynamics
2001-date	Member, American Physical Society, Division of Fluid Dynamics

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Funding body	Program	Grant value
2005-2008	European Union	TFAST (Unsteady effect of shock wave induced separation), coordinator of local unit	250 kEUR
2012-2015	European Union	TFAST (Transition Location Effect on Shock Wave Boundary Layer Interaction),	260 kEUR

		coordinator of local unit	
2009-2011	Italian Space Agency (ASI)	CAST (Configurazioni Aerotermodinamiche innovative per Sistemi di Trasporto Spaziale), coordinator of research unit	120 kEUR
2008-2019	Italian Ministry of Research and Education (MIUR)	PRIN - Development of a high-order computational platform for fluid dynamics and aeroacoustics applications, national coordinator	57 kEUR
2012-2014	Italian Ministry of Research and Education (MIUR)	PRIN - Analysis and control of transitional flows over lifting surfaces, national coordinator	78 kEUR
2008	Airbus UK Ltd	Landing gear novel hardware/system development review, PI	20 kEUR
2006	Aerosekur Srl	Determinazione del flusso termico per una capsula di rientro atmosferico, PI	18 kEUR
2006	Avio SpA	Aeroacoustic analysis of VEGA launcher, I	75 kEUR
2017	Avio SpA	Execution of CFD-DNS simulation on SMSP reticular structures and design support, PI	70 kEUR
2019-2021	US Air Force, European Office	High-fidelity numerical simulation of hypersonic three-dimensional shock/boundary layer interactions, PI	240 k\$
2020-2024	European Union	TEAMAero (Towards Effective Flow Control and Mitigation of Shock Effects in Aeronautical Applications), PI	260 kEUR
2011, 2012, 2013, 2014, 2016, 2017, 2018, 2019, 2020	European Union	PRACE Grants, PI	Over 450M CPU hour, for an equivalent of about 4.5 MEuros

Additional fundings have been obtained through a number of local Sapienza grants (not listed).

Part VII – Research Activities

Keywords	Brief Description
Compressible flows	<p>The applicant has given significant contributions to the study of compressible flows, with special reference to the interaction of shock waves with various kinds of disturbances [9], and with turbulence [9,11,14]. For all these problems he has developed original high-fidelity numerics and methods for theoretical prediction based on physical insight. Many publications on this subject are highly cited. Amongst other distinctions in this field, he was invited to give a series of lectures within the prestigious VKI Lecture Series on Computational Aeroacoustics, Von Karman Institute. In 2011, the applicant was elected Fellow of the American Physical Society – Division of Fluid Dynamics, with the following citation: “For the development of elegant and accurate numerical methods, and for fundamental insights into turbulence and shock-turbulence interactions in high-speed flows”.</p>
Numerical methods	<p>The applicant has a long experience with the development of numerical methods tailored for the study of compressible turbulence, also in the presence of shock waves. Since his early, highly cited study [16] in which hybrid WENO methods were first introduced, he has developed novel strategies to suppress numerical diffusion in DNS of compressible flows, also by introducing the concept of energy-consistent schemes [12, 24, 69], which are now widely used in the compressible flow community. Another subject of extensive research has been the evaluation and synthesis of shock-capturing schemes [31, 84, 89, 95]. In particular, in [13] the candidate developed a simple tool to extract the spectral signature of nonlinear schemes, which is now routinely used to evaluate the performance of shock-capturing schemes. In recognition of the impact of this research, in 2011 the applicant was invited to prepare a review paper on “Numerical Methods for High-Speed Flows” in the Annual Review of Fluid Mechanics [10].</p>
Turbulence	<p>Turbulent flows in general have been a preferred subject of study of the applicant since his early post-doctoral years, in which he carried out the first DNS of a space-developing compressible boundary layer [15], and of a shock/boundary layer interaction [14]. Later studies led to approach different kinds of shock/boundary layer interactions [9,11,19], and high-Reynolds number flows [3,7,8]. In this respect, the applicant developed a range of computer codes suitable for full exploitation of the growing availability of computational resources from massively parallel architectures. Based on his consolidated experience with compressible flows, the interest of the candidate has also shifted to the study of incompressible flows at high Reynolds number, with special reference to canonical internal flows [1, 5, 6], also including passive scalars and buoyancy effects [2, 4]. A number of publications have been</p>

	carried out in this field, which have set an important benchmark for the numerical study of turbulence at high Reynolds number, and which have contributed to shedding light on novel physical phenomena of inner/outer layer interactions, which could not be observed in previous studies at modest Reynolds number.
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The applicant has given contributions to research also by organizing significant events at both the national and international level. A partial list follows.

2007	Member of organizing committee, 13 th AIAA/CEAS Conference, Rome / Italy
2010	Member of organizing committee, 5 th ECCOMAS CFD Conference Lisbon / Portugal
2014	Member of organizing committee, “Vortical structures and wall turbulence” workshop, Villa Mondragone / Italy
2016	Organizer of advanced course on “Wall-bounded Turbulence”, CISM, Udine / Italy
2018	Organizer of advanced course on “High-performance Computing of Big Data for Turbulence and Combustion”, CISM, Udine / Italy
2019	Co-organizer of course on “Numerical methods for parallel CFD”, Sapienza University
2020	Co-organizer of Euromech Colloquium on "Oberbeck-Boussinesq hypothesis and beyond in stratified turbulence", to be held in Vienna, Austria, July 07-10 2020.

Research dissemination activities by the candidate include the development and maintenance of a repository web page including a DNS database of several incompressible and compressible turbulent flows (<http://newton.dima.uniroma1.it/database/>)

Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	100	Scopus	1997	2020
Papers [national]				
Books [scientific]	3	Scopus	2003	2019
Books [teaching]				

Total Impact factor	147.1 (WOS)
Average Impact factor (**)	2.20 (WOS)
Total Citations	2661 (Scopus)
Average Citations per Product	25.3 (Scopus)
Hirsch (H) index	26 (Scopus)
Normalized H index*	1.3 (Scopus)

*H index divided by the academic seniority.

** The total and average impact factors have been evaluated by disregarding publications made after 2018, for which the IF parameter is not available

In 2011, the applicant was invited to submit a review paper in the Annual Review of Fluid Mechanics on “Numerical Methods for High-Speed Flows” [10], which has become a highly cited reference resource for research in numerical methods.

The applicant serves as reviewer for all the leading journals in the field of fluid mechanics, including Physical Review Letters, Journal of Fluid Mechanics, Journal of Computational Physics, Physical Review Fluids, Physics of Fluids, Physical Review F, Physical Review E, Physica D, International Journal of Heat and Fluid Flow, AIAA Journal, Journal of Scientific Computing, Flow Turbulence and Combustion, Computers and Fluids, Journal of Turbulence.

A list of invited talks/plenary lectures given in international institutions/events follows

- 2000 - California Institute of Technology, Pasadena, USA
- 2002 - MACSINET Open Industrial Days, Institut Leonard de Vinci, Paris, France
- 2003 – 5th ICIAM Congress, Sydney, Australia
- 2004 - International Conference on Control, Partial Differential Equations and Scientific Computing, Beijing, China
- 2004 - PROMUVAL short course on multidisciplinary verification and validation, Barcelona, Spain
- 2006 - VKI Lecture Series on Computational Aeroacoustics, Von Karman Institute, Bruxelles
- 2006 - Delft University of Technology, Belgium
- 2007 - ENEA Casaccia, Rome, Italy
- 2009 - High order Non-Oscillatory Methods for Wave Propagation, Transport and Flow Problems, Trento, Italy
- 2009 – Ecole Centrale de Lyon, France
- 2010 - IUTAM Symposium on Computational Aero-Acoustics for Aircraft Noise Prediction, Southampton, UK
- 2010 - CORIA Rouen, France
- 2011 – Berlin Technical University, Berlin, Germany
- 2013 – Conservatoire National des Arts et Metiers, Paris, France
- 2014 – Progress in Wall Turbulence: Understanding and Modelling, Lille
- 2014 – Indian Institute of Technology, Mumbai, India
- 2015 – Institute de Mechanique des Fluides Toulouse, France
- 2015 – Institute of Aerodynamics, Aachen, Germany
- 2016 – Invited lecture, PRACE Days 16 Conference, Prague
- 2016 – Plenary, 11th European Fluid Mechanics Conference, Sevilla, Spain
- 2016 – International Workshop on High Reynolds Number Turbulence, Lanzhou, China
- 2017 – Plenary, 29th Parallel CFD Conference, Glasgow
- 2019 – Polytechnic University of Milan
- 2019 – Technical University of Wien
- 2019 – National University of Defense Technology, Changsha (China)
- 2019 – Tsinghua University, Beijing (China)

Part IX– Selected Publications

List of publications selected for the evaluation (also provided in a separate list)

1. Pirozzoli, S., Modesti, D., Orlandi, P., Grasso, F. Turbulence and secondary motions in square duct flow (2018) Journal of Fluid Mechanics, 840, pp. 631-655. Cited 17 times. DOI: 10.1017/jfm.2018.66, IF 3.137



2. Pirozzoli, S., Bernardini, M., Verzicco, R., Orlandi, P. Mixed convection in turbulent channels with unstable stratification (2017) *Journal of Fluid Mechanics*, 821, pp. 482-516. Cited 12 times. DOI: 10.1017/jfm.2017.216, IF 2.893
3. Modesti, D., Pirozzoli, S. Reynolds and Mach number effects in compressible turbulent channel flow (2016) *International Journal of Heat and Fluid Flow*, 59, pp. 33-49. Cited 33 times. DOI: 10.1016/j.ijheatfluidflow.2016.01.007, IF 1.873
4. Pirozzoli, S., Bernardini, M., Orlandi, P. Passive scalars in turbulent channel flow at high Reynolds number (2016) *Journal of Fluid Mechanics*, 788, pp. 614-639. Cited 36 times. DOI: 10.1017/jfm.2015.711, IF 2.821
5. Pirozzoli, S., Bernardini, M., Orlandi, P. Turbulence statistics in Couette flow at high Reynolds number (2014) *Journal of Fluid Mechanics*, 758, pp. 327-343. Cited 47 times. DOI: 10.1017/jfm.2014.529, IF 2.383
6. Bernardini, M., Pirozzoli, S., Orlandi, P. Velocity statistics in turbulent channel flow up to $Re_\tau = 4000$ (2014) *Journal of Fluid Mechanics*, 742, pp. 171-191. Cited 88 times. DOI: 10.1017/jfm.2013.674, IF 2.383
7. Pirozzoli, S., Bernardini, M. Probing high-Reynolds-number effects in numerical boundary layers (2013) *Physics of Fluids*, 25 (2), art. no. 021704, . Cited 47 times. DOI: 10.1063/1.4792164, IF 2.040
8. Pirozzoli, S., Bernardini, M. Turbulence in supersonic boundary layers at moderate Reynolds number (2011) *Journal of Fluid Mechanics*, 688, pp. 120-168. Cited 104 times. DOI: 10.1017/jfm.2011.368, IF 2.459
9. Pirozzoli, S., Bernardini, M. Direct numerical simulation database for impinging shock wave/turbulent boundary-layer interaction (2011) *AIAA Journal*, 49 (6), pp. 1307-1312. Cited 59 times. DOI: 10.2514/1.J050901, IF 1.057
10. Pirozzoli, S. Numerical methods for high-speed flows (2011) *Annual Review of Fluid Mechanics*, 43, pp. 163-194. Cited 186 times. DOI: 10.1146/annurev-fluid-122109-160718, IF 12.767
11. Pirozzoli, S., Bernardini, M., Grasso, F. Direct numerical simulation of transonic shock/boundary layer interaction under conditions of incipient separation (2010) *Journal of Fluid Mechanics*, 657, pp. 361-393. Cited 77 times. DOI: 10.1017/S0022112010001710, IF 2.457
12. Pirozzoli, S. Generalized conservative approximations of split convective derivative operators (2010) *Journal of Computational Physics*, 229 (19), pp. 7180-7190. Cited 83 times. DOI: 10.1016/j.jcp.2010.06.006, IF 2.346
13. Pirozzoli, S. On the spectral properties of shock-capturing schemes (2006) *Journal of Computational Physics*, 219 (2), pp. 489-497. Cited 86 times. DOI: 10.1016/j.jcp.2006.07.009, 2.328
14. Pirozzoli, S., Grasso, F. Direct numerical simulation of impinging shock wave/turbulent boundary layer interaction at $M=2.25$ (2006) *Physics of Fluids*, 18 (6), art. no. 065113, . Cited 190 times. DOI: 10.1063/1.2216989, IF 1.697
15. Pirozzoli, S., Grasso, F., Gatski, T.B. Direct numerical simulation and analysis of a spatially evolving supersonic turbulent boundary layer at $M = 2.25$ (2004) *Physics of Fluids*, 16 (3), pp. 530-545. Cited 252 times. DOI: 10.1063/1.1637604, IF 1.761
16. Pirozzoli, S. Conservative hybrid compact-WENO schemes for shock-turbulence interaction (2002) *Journal of Computational Physics*, 178 (1), pp. 81-117. Cited 288 times. DOI: 10.1006/jcph.2002.7021, IF 1.553

Other publications (not included in the above list)

17. Yang, X.I.A., Pirozzoli, S., Abkar, M. Scaling of velocity fluctuations in statistically unstable boundary-layer flows (2020) *Journal of Fluid Mechanics*, 886, art. no. A3 DOI: 10.1017/jfm.2019.1034, IF
18. Yu, M., Xu, C.-X., Pirozzoli, S. Genuine compressibility effects in wall-bounded turbulence (2019) *Physical Review Fluids*, 4 (12), art. no. 123402. DOI: 10.1103/PhysRevFluids.4.123402, IF ?

19. Zuo, F.-Y., Memmolo, A., Huang, G.-P., Pirozzoli, S. Direct numerical simulation of conical shock wave-turbulent boundary layer interaction (2019) *Journal of Fluid Mechanics*, 877, pp. 167-195. DOI: 10.1017/jfm.2019.558, IF ?
20. Fan, Y., Li, W., Pirozzoli, S. Decomposition of the mean friction drag in zero-pressure-gradient turbulent boundary layers (2019) *Physics of Fluids*, 31 (8), art. no. 086105, DOI: 10.1063/1.5111009, IF ?
21. Pirozzoli, S., Di Giorgio, S., Iafrati, A. On algebraic TVD-VOF methods for tracking material interfaces (2019) *Computers and Fluids*, 189, pp. 73-81. DOI: 10.1016/j.compfluid.2019.05.013, IF ?
22. Modesti, D., Pirozzoli, S. Direct numerical simulation of supersonic pipe flow at moderate Reynolds number (2019) *International Journal of Heat and Fluid Flow*, 76, pp. 100-112. Cited 2 times. DOI: 10.1016/j.ijheatfluidflow.2019.02.001, IF ?
23. Modesti, D., Pirozzoli, S., Grasso, F. Direct numerical simulation of developed compressible flow in square ducts (2019) *International Journal of Heat and Fluid Flow*, 76, pp. 130-140. Cited 2 times. DOI: 10.1016/j.ijheatfluidflow.2019.02.002, IF ?
24. Coppola, G., Capuano, F., Pirozzoli, S., de Luca, L. Numerically stable formulations of convective terms for turbulent compressible flows (2019) *Journal of Computational Physics*, 382, pp. 86-104. Cited 3 times. DOI: 10.1016/j.jcp.2019.01.007, IF ?
25. Zhou, A., Klewicki, J., Pirozzoli, S. Properties of the scalar variance transport equation in turbulent channel flow (2019) *Physical Review Fluids*, 4 (2), . Cited 1 time. DOI: 10.1103/PhysRevFluids.4.024606, IF ?
26. Pirozzoli, S. Finite Difference Methods for Incompressible and Compressible Turbulence (2019) *CISM International Centre for Mechanical Sciences, Courses and Lectures*, 592, pp. 55-118. DOI: 10.1007/978-3-030-17012-7_3
27. Pirozzoli, S., Sengupta, T.K. Preface (2019) *CISM International Centre for Mechanical Sciences, Courses and Lectures*, 592, pp. v-vii.
28. Blass, A., Pirozzoli, S., Verzicco, R. Shear/buoyancy interaction in wall bounded turbulent flows (2019) *Springer Proceedings in Physics*, 226, pp. 47-54. DOI: 10.1007/978-3-030-22196-6_8
29. Di Giorgio, S., Pirozzoli, S., Leonardi, S., Orlandi, P. On the relationship between drag modification and vertical velocity fluctuations in flow over riblets (2019) *11th International Symposium on Turbulence and Shear Flow Phenomena, TSFP 2019*.
30. Di Giorgio, S., Quagliarella, D., Pezzella, G., Pirozzoli, S. An aerothermodynamic design optimization framework for hypersonic vehicles (2019) *Aerospace Science and Technology*, 84, pp. 339-347. Cited 6 times. DOI: 10.1016/j.ast.2018.09.042, IF ?
31. Zhao, G., Sun, M., Memmolo, A., Pirozzoli, S. A general framework for the evaluation of shock-capturing schemes (2019) *Journal of Computational Physics*, 376, pp. 924-936. Cited 2 times. DOI: 10.1016/j.jcp.2018.10.013, IF ?
32. Modesti, D., Pirozzoli, S., Orlandi, P., Grasso, F. On the role of secondary motions in turbulent square duct flow (2018) *Journal of Fluid Mechanics*, 847, pp. R11-R111. Cited 8 times. DOI: 10.1017/jfm.2018.391, IF 3.137
33. Pirozzoli, S. On turbulent friction in straight ducts with complex cross-section: the wall law and the hydraulic diameter (2018) *Journal of Fluid Mechanics*, 846, pp. 846R11-846R111. DOI: 10.1017/jfm.2018.303, IF 3.137
34. Orlandi, P., Modesti, D., Pirozzoli, S. DNS of Turbulent Flows in Ducts with Complex Shape (2018) *Flow, Turbulence and Combustion*, 100 (4), pp. 1063-1079. Cited 1 time. DOI: 10.1007/s10494-018-9911-9, IF 2.371
35. Memmolo, A., Bernardini, M., Pirozzoli, S. Scrutiny of buffet mechanisms in transonic flow (2018) *International Journal of Numerical Methods for Heat and Fluid Flow*, 28 (5), pp. 1031-1046. Cited 5 times. DOI: 10.1108/HFF-08-2016-0300, IF 1.958
36. Modesti, D., Pirozzoli, S., Orlandi, P., Grasso, F. Analysis of secondary motions in square duct flow (2018) *Journal of Physics: Conference Series*, 1001 (1), art. no. 012009, DOI: 10.1088/1742-6596/1001/1/012009
37. Modesti, D., Pirozzoli, S. An Efficient Semi-implicit Solver for Direct Numerical Simulation of Compressible Flows at All Speeds (2018) *Journal of Scientific Computing*, 75 (1), pp. 308-331. Cited 6 times. DOI: 10.1007/s10915-017-0534-4, IF 2.370

38. Coleman, G.N., Pirozzoli, S., Quadrio, M., Spalart, P.R. Direct Numerical Simulation and Theory of a Wall-Bounded Flow with Zero Skin Friction (2017) *Flow, Turbulence and Combustion*, 99 (3-4), pp. 553-564. Cited 7 times. DOI: 10.1007/s10494-017-9834-x, IF 2.207
39. Modesti, D., Pirozzoli, S. A low-dissipative solver for turbulent compressible flows on unstructured meshes, with OpenFOAM implementation (2017) *Computers and Fluids*, 152, pp. 14-23. Cited 6 times. DOI: 10.1016/j.compfluid.2017.04.012, IF 2.221
40. Nichols, J.W., Larsson, J., Bernardini, M., Pirozzoli, S. Stability and modal analysis of shock/boundary layer interactions (2017) *Theoretical and Computational Fluid Dynamics*, 31 (1), pp. 33-50. Cited 28 times. DOI: 10.1007/s00162-016-0397-6, IF 1.397
41. Zhou, A., Pirozzoli, S., Klewicki, J. Mean equation based scaling analysis of fully-developed turbulent channel flow with uniform heat generation (2017) *International Journal of Heat and Mass Transfer*, 115, pp. 50-61. Cited 4 times. DOI: 10.1016/j.ijheatmasstransfer.2017.08.009, IF 3.891
42. Rona, A., Spisso, I., Hall, E., Bernardini, M., Pirozzoli, S. Optimised prefactored compact schemes for linear wave propagation phenomena (2017) *Journal of Computational Physics*, 328, pp. 66-85. Cited 2 times. DOI: 10.1016/j.jcp.2016.10.014, IF 2.864
43. Bernardini, M., Asproulias, I., Larsson, J., Pirozzoli, S., Grasso, F. Heat transfer and wall temperature effects in shock wave turbulent boundary layer interactions (2016) *Physical Review Fluids*, 1 (8), art. no. 084403, . Cited 12 times. DOI: 10.1103/PhysRevFluids.1.084403, IF
44. Orlandi, P., Pirozzoli, S., Bernardini, M., Carnevale, G.F. A minimal flow unit for turbulence, combustion, and astrophysics (2016) *Whither Turbulence and Big Data in the 21st Century?*, pp. 433-450. DOI: 10.1007/978-3-319-41217-7_23
45. Bernardini, M., Modesti, D., Pirozzoli, S. On the suitability of the immersed boundary method for the simulation of high-Reynolds-number separated turbulent flows (2016) *Computers and Fluids*, 130, pp. 84-93. Cited 13 times. DOI: 10.1016/j.compfluid.2016.02.018, IF 2.313
46. Pirozzoli, S. On the size of the eddies in the outer turbulent wall layer: Evidence from velocity spectra (2016) *ERCOFTAC Series*, 23, pp. 3-15. Cited 2 times. DOI: 10.1007/978-3-319-20388-1_1
47. Pirozzoli, S., Leonardi, S. Vortical Structures and Wall Turbulence (2016) *European Journal of Mechanics, B/Fluids*, 55, p. 241. DOI: 10.1016/j.euromechflu.2015.11.010, IF 1.969
48. Pirozzoli, S., Bernardini, M., Marié, S., Grasso, F. Early evolution of the compressible mixing layer issued from two turbulent streams (2015) *Journal of Fluid Mechanics*, 777, pp. 196-218. Cited 9 times. DOI: 10.1017/jfm.2015.363, IF 2.514
49. Orlandi, P., Bernardini, M., Pirozzoli, S. Poiseuille and Couette flows in the transitional and fully turbulent regime (2015) *Journal of Fluid Mechanics*, 770, pp. 424-441. Cited 18 times. DOI: 10.1017/jfm.2015.138, IF 2.514
50. Modesti, D., Bernardini, M., Pirozzoli, S. High-Reynolds-number effects in supersonic turbulent channel flow (2015) *Proceedings of the International Symposium on Turbulence, Heat and Mass Transfer*, 0, pp. 403-406.
51. Alizard, F., Pirozzoli, S., Bernardini, M., Grasso, F. Optimal transient growth in compressible turbulent boundary layers (2015) *Journal of Fluid Mechanics*, 770, pp. 124-155. Cited 5 times. DOI: 10.1017/jfm.2015.142, IF 2.514
52. Pirozzoli, S. Revisiting the mixing-length hypothesis in the outer part of turbulent wall layers: Mean flow and wall friction (2014) *Journal of Fluid Mechanics*, 745, pp. 378-397. Cited 12 times. DOI: 10.1017/jfm.2014.101, IF 2,383
53. Bernardini, M., Pirozzoli, S., Orlandi, P., Lele, S.K. Parameterization of boundary-layer transition induced by isolated roughness elements (2014) *AIAA Journal*, 52 (10), pp. 2261-2269. Cited 25 times. DOI: 10.2514/1.J052842, IF 1.207
54. Orlandi, P., Pirozzoli, S., Bernardini, M., Carnevale, G.F. A minimal flow unit for the study of turbulence with passive scalars (2014) *Journal of Turbulence*, 15 (11), pp. 731-751. Cited 5 times. DOI: 10.1080/14685248.2014.927066, IF 1.560
55. Pirozzoli, S., Colonius, T. Generalized characteristic relaxation boundary conditions for unsteady compressible flow simulations (2013) *Journal of Computational Physics*, 248, pp. 109-126. Cited 16 times. DOI: 10.1016/j.jcp.2013.04.021, IF 2.485
56. Pröbsting, S., Scarano, F., Bernardini, M., Pirozzoli, S. On the estimation of wall pressure coherence using time-resolved tomographic PIV This article is part of the topical collection on application of



- laser techniques to fluid mechanics 2012 (2013) *Experiments in Fluids*, 54 (7), art. no. 1567, . Cited 36 times. DOI: 10.1007/s00348-013-1567-6, IF 1.907
57. Bernardini, M., Pirozzoli, S., Orlandi, P. The effect of large-scale turbulent structures on particle dispersion in wall-bounded flows (2013) *International Journal of Multiphase Flow*, 51, pp. 55-64. Cited 17 times. DOI: 10.1016/j.ijmultiphaseflow.2012.11.007, IF 1.943
 58. Sassun, D., Orlandi, P., Bernardini, M., Pirozzoli, S. Particle dispersion in flows over rough surfaces (2013) *International Symposium on Turbulence and Shear Flow Phenomena, TSFP 2013*, 2.
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