

# Curriculum Vitae

## Personal information

Born October 8, 1966, in Rome, Italy

Italian citizenship

URL: [people.uniroma2.it/roberto.verzicco/](http://people.uniroma2.it/roberto.verzicco/)

## Education

Jul. 1991: Degree in Aeronautical Engineering, *University of Rome “La Sapienza”* (“cum Laude”).

May 1994: PhD in Aerospace Engineering at the *University of Rome “La Sapienza”* with Prof. Paolo Orlandi

## Current and Previous Positions

1994 – 1997: Assistant Professor in the Department of Mechanics and Aeronautics *University of Rome “La Sapienza”* (Italy).

1997 – 2003: Associate Professor of Fluid Dynamics in the Department of Mech. Engineering *Politecnico di Bari*

2003 – 2007: Full Professor of Fluid Dynamics in the Department of Mech. Engineering *Politecnico di Bari*

From Nov. 2007 on: Full Professor of Fluid Dynamics in the Department of Industrial Engineering *University of Rome “Tor Vergata”*

From Jan. 2010 on: Part-time Professor of Direct Numerical Simulation of Turbulence in the Physics of Fluids group of *University of Twente* (Prof. Detlef Lohse).

## Fellowships and Awards

- Fellow of the American Physical Society, Division of Fluid Dynamics, since 2013.
- Fellow of EUROMECH since 2012.
- Wim Nieuwpoort Award for Scientific Computing, 2012 (with R. Ostilla-Monico, E. van del Poel and D. Lohse).
- Frenkiel Award from the American Physical Society, 2005.

## Research Interests

- Computational Fluid Dynamics.
- Direct Simulation of Turbulence.
- Experimental Fluid Dynamics.
- Turbulence Modeling and Large-Eddy-Simulation
- Heat Transfer and Wall Turbulence (Turbulent Rayleigh-Bénard and Taylor-Couette Flows)
- Complex-Geometry Industrial Flows
- Biofluidmechanics.

## Teaching Activities

- 1998-2007 Course of ‘Fluid-dynamics’ for Mechanical Engineering of Politecnico di Bari
- 2003-2007 Course of ‘Turbulence’ for Mechanical Engineering of Politecnico di Bari
- 1998-2007 Course of ‘Turbulence Dynamics and Modeling’ for the PhD program of Mechanical Engineering of Politecnico di Bari (graduate)

- 2007–2010 Course of ‘Gasdynamics and Combustion’ for Mechanical Engineering of Università di Roma ‘Tor Vergata’.
- 2009–present Course of ‘Fluid Mechanics’ for Mechanical Engineering and Energy Engineering of Università di Roma ‘Tor Vergata’.
- 2009–present Course of ‘Computational Methods for Mechanical Engineering’ for PhD in Mechanical Engineering at Università di Roma ‘Tor Vergata’.
- 2010–present Course of ‘Turbulence Dynamics and Modelling’ for Mechanical and Energy Engineering at Università di Roma ‘Tor Vergata’.
- 2013–present Course of ‘Mechanics of Biological Systems’ for Medical Engineering at Università di Roma ‘Tor Vergata’.
- 2014 Course of ‘Continuum Mechanics’ for the PhD school GSSI (Gran Sasso Science Institute) of L’Aquila (Italy).

### **Key numbers (from SCOPUS on Sept. 2<sup>nd</sup>, 2014)**

- Number of published refereed papers: 110
- Hirsch-index:  $H = 25$
- m-index =  $H/(\# \text{ of years after PhD}) = 1.25$
- Citations in 2013: 281
- Total citations: 2673
- Average citations/article: 24.3
- Number of (present) PhD students + PostDocs of Verzicco’s group: 8+1
- Number of finished PhD theses supervised: 15
- Total external funding received as PI in last 10 years:  $\approx 2M\text{€}$

**Inspiration for young scientists:** Since the beginning of his career Verzicco has tutored or co-tutored more than 15 PhD students or Postdocs and many of them hold a tenured position in Universities or research centres all over the world. Some examples are G. Iaccarino (Professor at Stanford University), P. Oresta (Assist. Prof. at Politecnico di Bari), M.D. de Tullio (Assoc. Prof. at Politecnico di Bari), A. Sameen (Assoc. Prof. IIT Madras), R. Lakkaraju (Assist. Prof. IIT Madras), G. Stringano (R&D General Electrics), Antonio Cristallo (R&D General Electrics).

**Publications and visibility:** Verzicco published more than 110 papers in refereed scientific journals, including 1 PNAS paper, 2 Physical Review Letters, 45 Journal of Fluid Mechanics/Physics of Fluids, 2 Journal of Computational Physics and 2 Reviews for Applied Mechanics Review (ASME). He has written also the description of the word “*Fluidodinamica*” on the most prestigious Italian Encyclopedia (*Enciclopedia Treccani XXI Secolo, (l’Universo Fisico), (2010), p. 213–222*).

**Characteristics of work:** The main characteristics of Verzicco’s work is the interaction between numerical simulations with experiments and theory performed partially in Verzicco’s laboratory and partially through a network of collaborations all over the world. He is not method-driven, but rather physics-driven or application-driven and often had to acquire the necessary knowledge from some other field to solve some particular problem. This led to various fruitful collaborations with different disciplines, such as physics, mathematics, medicine, biology, and computer science. Most of his research subjects involve fundamental research even if with an “application perspective”.

## **10-Year-Track-Record**

### **Editorial Boards**

- Associate Editor of *Journal of Fluid Mechanics* 2013–present (Cambridge University Press),

- Section Editor of *Applied Mechanics Reviews* (ASME) 2012–present (ASME),
- Advisory Editor of *Flow, Turbulence & Combustion* 2009–present (Springer),
- Member of the Advisory Board of *Acta Mechanica* 2008–present (Springer).
- Member of the Advisory Board of *Computers and Fluids* 2008–present (Elsevier).

### **International Scientific Boards**

- Member (2010–2015) and Chairman (starting 2015) of the EUROMECH “European Fluid Mechanics Conference Committee”.
- Member of the CFD core–committee of ECCOMAS (2014–present).
- Member PRACE prioritization committee for the Engineering Panel (2013 and 2014).

### **National Scientific Boards**

- 2008–2012 Member of the Technical–Scientific committee of the CASPUR supercomputing consortium
- 2009–2013 Member of the Evaluation and Assessment committee of the University of Rome “Tor Vergata”
- 2009–present Chairman of the degree program in Engineering Sciences (taught in English) University of Roma “Tor Vergata”

### **Meeting Organization (most recent)**

- Organization and Chair of the 9<sup>th</sup> European Fluid Mechanics Conference in Rome 9–13 September, 2012.
- Organization (with D. Lohse) of the 480th Euromech-colloquium on “High Rayleigh Number Thermal Convection” in Trieste, (Sep. 4-8, 2006, Trieste)
- Organization and Chair of the International Conference on “Vortical Structures and Wall Turbulence” 19–20 September, 2014.

### **Service to the Community within last 10 years (selection)**

- Referee of research proposals and projects for PRACE (Partnership for Advanced Computing in Europe)
- Referee of research proposals and projects for ERC (European Research Council)
- Referee of research proposals and projects for CERG (Research Grants Council Hong Kong)
- Referee of research proposals and projects for CRG (Competitive Research Grant of KAUST, Saudi Arabia)
- Referee of research proposals and projects for ANR (Agence Nationale de la Recherche, France)
- Referee of research proposals and projects for Italian Research Agencies (Prin, Fibr, POR)
- Member of PhD defense committees in Italy, France, Germany and the Netherlands
- Member of the scientific committee or ETMM Conference series
- Member of the scientific committee or TSFP Conference series
- Member of committees to appoint faculties or to promote tenured staff in Italy, France, The Netherlands, Saudi Arabia and India.
- Reviewer for: Nature, Journal of Fluid Mechanics, Physics of Fluids, European Journal of Mechanics B/Fluids, Computer and Fluids, Journal of Computational Physics, Journal of Sound and Vibration, AIAA Journal, Numerical Linear Algebra with Applications, Physical Review Letters, Physical Review E, Flow Turbulence & Combustion, Journal of Low Temperature Physics, Acta Mechanica, Journal of Fluids Engineering, Environmental Fluid Mechanics, Journal of Engineering Mathematics, International Journal of Heat and Fluid Flows, International Journal of Multiphase Flows, Journal of Biomechanics.

**Invited and Named Lectures:** Verzicco has given more than 30 invited lectures and seminars in the last 10 years some of them “plenary” at conferences or named lectures. Some highlights:

- Workshop on Classical and Quantized Vortex Rings ICTP 2005,
- Congress on Turbulent Thermal Convection 2005 Bangalore (India),
- ETMM6 2006 (Sardinia Italy),
- European Fluid Mechanics Conference 2008 (Manchester, UK),
- DLES7 2008 (Trieste, Italy),
- Euromech Colloquium 507 on Immersed Boundary Methods: Current Status and Future Research Directions 2009 (Amsterdam, The Netherlands),
- Euromech Colloquium 520 on High Rayleigh number convective turbulence 2010 (Les Houches, France),
- Burgers Lecture 2013, (Enschede, NL),
- Gauss Lecture 2013 (Braunschweig, Germany),
- Marine 2015 (Rome, Italy).
- IUTAM Symposium on Bubbly Flows, 2015 (Oaxaca, Mexico).

**Ten representative publications of the last 10 years** (*not* the ten most cited):

- R. Lakkaraju, R.J.A.M. Stevens, P. Oresta, R. Verzicco, D. Lohse, & A. Prosperetti “Heat transport in bubbling turbulent convection” Proc. Nat. Acad. of Sci., 110(23), 9237, (2013).
- Verzicco, R. “Boundary layer structure in confined turbulent thermal convections” J. Fluid Mech., 706, 14, (2012). (Focus on Fluids)
- Stevens, R.J.A.M., Verzicco, R. & Lohse, D. “Radial boundary layer structure and Nusselt number in Rayleigh-Benard convection” J. of Fluid Mech., 643, 495, (2010).
- Ahlers, G., Bodenschatz, E., Funfschilling, D., Grossmann, S., He, X., Lohse, D., Stevens, R.J.A.M., Verzicco, R. “Logarithmic Temperature Profiles in Turbulent Rayleigh-Benard Convection” Phys. Rev. Lett., 109, 114501, (2012).
- de Tullio, M., Cristallo, A., Balaras, E. & Verzicco, R., “Direct numerical simulation of the pulsatile flow through an aortic bileaflet mechanical heart valve” J. of Fluid Mech., 622, 259, (2009).
- R. Verzicco, “Effects of non perfect thermal sources in turbulent thermal convection” Phys. of Fluids, 16(6), 1965, (2004). (Frenkiel Award Paper).
- de Tullio, M.D., Pascazio, G., Weltert, L. De Paulis, R. & Verzicco, R. “Evaluation of prosthetics-valved devices by means of numerical simulations” Phil. Trans. R. Soc. A, 369(1945), 2502, (2011)
- Biferale, L., Meneveau, C. & Verzicco, R. “Deformation statistics of sub-Kolmogorov-scale ellipsoidal neutrally buoyant drops in isotropic turbulence” J. of Fluid Mech., 754, 184 (2014)
- Ostilla-Monico, R., van der Poel, E., Verzicco, R. Grossmann, S. & Lohse, D. “Boundary layer dynamics at the transition between the classical and the ultimate regime of Taylor Couette flow” Phys. of Fluids , 26, 015114, (2014)
- Pacheco, J.R. & Verzicco, R. “Formation of columnar baroclinic vortices in thermally stratified nonlinear spin-up” J. of Fluid Mech., 702, 265, (2012)