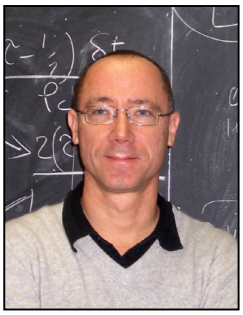
TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA

DIPARTIMENTO DI FISICA



Luca Biferale
Born August 12, 1965, in Imperia (Italy)
Married, two children (born 1996 and 2000)
Nationality: Italian
webpage: http://www.fisica.uniroma2.it/~biferale/
Researcher unique identifier: ResearcherID: L-4535-2013
Dept. Physics. University of Rome *Tor Vergata*, Italy

EDUCATION

Oct. 1992	PhD. U. of Rome *La Sapienza.* Title: Anomalous scaling laws in fully developed turbulence.
Mar. 1989	Master degree in Physics *cum laudem*, U. of Rome *Tor Vergata.* Title: Renormalization group study of XY and Heisenberg models in 2D.

CURRENT POSITION: **Full Professor of Theoretical Physics**, **Mathematical and Numerical Modelling** Dept. Physics and CAST, University of Rome *Tor Vergata* (Italy)

OTHER POSITIONS

Jan. 2019 & Jan. 2020	Visiting Professor at **SUSTech** (Shenzhen, Cina)
Mar. 2016	Visiting Professor at **Johns Hopkins University** (Baltimore, USA)
Dec. 2011	Visiting Professor at **Technische University Eindhoven** (The Netherlands)
June 2011 & July 2012	Visiting Professor at **Observatory of Nice** (France)
July 2008	Visiting Scientist at **University of Chicago** (USA)
June & July 2006	Visiting Professor at **Johns Hopkins University** (Baltimore, USA)
Jan. 2005 - Mar. 2014	Associate Professor. Dept. Physics, **University of Rome** *Tor Vergata* (Italy)
Jan. 1995 - Dec. 2004	Researcher. Dept. of Physics, **University of Rome** *Tor Vergata* (Italy)
Mar. 1989 - Dec. 1989	Fellow **E**uropean **C**entre **S**cientific & **E**ngineering **C**omputing, **ECSEC**-IBM (Italy)

FELLOWSHIPS/HONOURS/AWARDS

2014-2019	**ERC** AdG NewTURB
2010	**Elected Fellow**. **EUROMECH** Society, division of *Fluid Dynamics*
2008	**Elected Fellow**. **APS**, division of *Statistical and Nonlinear Physics*
1986/87/88/89	Distinguished undergraduate student. Awarded by Acc. Nazionale dei Lincei (Italy)

TRAINING OF GRADUATE STUDENTS AND POSTDOC FELLOWS (only those hired by me)

PhD. Total 18. I list ongoing only: F. Guglietta, G. Goedert, L. Agasthya, V. de Toma
PostDoc. Total 16: I. Daumont, B. Devenish, A.S. Lanotte, G. Manzi, E. Foard, G. Sahoo, F. Bonaccorso, S.K. Malapaka, K. Gustafsson, M. Linkmann, M. Buzzicotti, M. De Pietro, P. Clark di Leoni, Q. Ni, R. Scatamacchia, I. Mazzitelli.

SCIENTIFIC ACTIVITY (key words): Complex fluids. Turbulence. Multifractals, Machine-Learning. Reinforcement Learning. Microfluidics and Biofluidic. Lattice Boltzmann equations, Dynamical Systems. Information Theory. Stochastic Processes. Critical Phenomena. Renormalization Group. Monte Carlo methods.

Key numbers (scientific impact, Google Scholar)
Number of published papers: 250+ (2 Phys. Rep.; 1 ARFM; 1 PRX; 27 PRL; 92 JFM/PRE-PRF/PoF/JoT)
Hirsch-index (H): 50
m-index (H/# years after PhD): **1.88**
i10-index (# publications with more than 10 citations): **150+**
Citations (total): 8200+; Citations (2019): 730

Prof. Luca Biferale
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TEACHING EXPERIENCE

***Undergraduate*: Dept. Physics (DP) and Faculty Mech. Engineering (ME) U. Rome Tor Vergata**: Mathematical Methods for Physics (DP); Dynamical Systems (DP); Turbulence and Complex Fluids (ME), Quantum Mechanics (DP), Statistical Mechanics (DP), Computational Physics (DP).
***Postgraduate:* Faculty of Engineering, U. Rome La Sapienza**: Turbulence (short course, 2000); **Royal Institute of Technology Stockholm (SE):** Lagrangian and Eulerian Turbulence (short course, 2012); **Dept. Physics University Hong Kong (CN)**: Modern problems in turbulence (short course, 2003); **SUSTech (CN):** Statistical Turbulence (short course, 2019)

MEMBER STEERING/ORGANISING COMMITTEES (last 10 years only)

- **HPC-LEAP** Conference. Cambridge, UK 2018
- **FSIM-2017**: Fluid and structures: interactions and modeling (COST meeting). Naples, Italy 2017
- HPC applications to Turbulence and Complex Flows (**HPC-LEAP School**). Rome, Italy 2016
- **FlowMat 2015** Flowing Matter Across Scales (ERC & COST meeting). Rome, Italy 2015
- Workshop on **Instantons and Extreme Events in Turbulence** (IMPA). Rio de Janeiro, Brasil 2015
- **9th European Fluid Mechanics Conference** (EFMC9). Rome, Italy 2012
- Program on **New Directions in Turbulence**. Kavli Institute of Theoretical Physics (KITPC). Beijing, Cina 2012
- **Breakup of small aggregates in turbulence** (COST meeting). Rome, Italy 2011
- **Numerical issues in Lagrangian and Eulerian Turbulence** (COST meeting). Rome, Italy 2010
- **Discrete Simulations of Fluid Dynamics** 19th, DSFD2010 Conference. Rome, Italy 2010

INSTITUTIONAL RESPONSIBILITIES (in gray those still active)

2018-2022	Supervisory Board, **European Joint Doctorate** Program STIMULATE
2014-2019	Supervisory Board, **European Joint Doctorate** Program HPC-LEAP
2014-2018	Managing Committee, **COST Action** *Flowing Matter* ESF
2017	Access Committee, **PRACE** (Partnership Advancing Computing in Europe).
2017	Scientific Board, **European Open Science Cloud for Research Pilot Projects** (EOSC).
2017-present	Scientific Board, **Italian Technion Association**
2015-present	**Executive Committee**. Dept. Physics University of *Tor Vergata*, Rome (Italy)
2014-present	**EUROMECH** Fluid Mechanics Prize and Fellow Committee
2013-2019	Director, **CAST** (Inter-department Centre for Applications of Calculus to Science and Technology), Univ. *Tor Vergata,* Rome (Italy)
2013-2017	Physical Science Working Group **(European Space Agency)**
2013-2017	Steering Committee, **European High Performance Infrastructure in Turbulence**. EU
2012-2017	Scientific Committee, High Performance Computing Centre **CINECA**, Bologna (Italy)
2013-present	**Doctoral Studies Committee**, Dept. Physics Univ. *Tor Vergata*, Rome (Italy)
2008-2013	Financial Rapporteur & Managing Committee, **COST Action** *Particles in Turbulence*. ESF
2007-2009	Coordinator **ERASMUS** Project, Dept. Physics Univ. *Tor Vergata,* Rome (Italy)
2004-2009	**Euromech** board, **European Turbulence Conference**
2006-2016	National Coordinator, **Scientific Initiatives** *Particles and Fields in Turbulence* INFN (Italy)

MEMBERSHIPS OF SCIENTIFIC SOCIETIES (only those still active)

INFN (National Institute of Nuclear Physics)**; EUROMECH** (European Mechanics Society); **APS** (American Physical Society); **ICTR** (International Centre for Turbulence Research); **CECAM** (Centre Européen de Calcul Atomique et Moléculaire)

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EDITORIAL AND REVIEWING ACTIVITIES (in gray those still active)

2007-2013 Divisional Associate Editor, **Physical Review Letters** (Fluid Mechanics)
2004-2018 Associate Editor, **Journal of Turbulence**
2011-present Editorial Board, **European Journal of Physics E** (EPJE)
2018-2019 Editorial Board, **Entropy**
2007-2011 Editorial Board, **European Journal of Physics B** (EPJB)

Evaluator for (only major): Italian Ministry of Research (**MIUR**), European Science Foundation (**ESF**), European Research Council (**ERC**), **US-Israel** binational science foundation. Italian Supercomputing Resources Allocations (**ISCRA**); Partnership for advanced computing in Europe (**PRACE**). **Italian-French** University. **ETH** Zurich. **Agence Nationale** de la **Recherche** (France). European Cooperation in Science and Technology (**COST**).

ONGOING AND PREVIOUS FUNDING (only most important > 20 Keuro, as PI or local PI)

2018-2022	MSCA-EU European Joint Doctorate (Stimulate, H2020)	515 Keuro
2014-2019	MSCA-EU European Joint Doctorate (HPC-LEAP, H2020)	515 Keuro
2014-2019	ERC AdG (NewTURB, FP7)	1986 Keuro
2013-2017	European High Performance Infrastructure in Turbulence (EuHIT, FP7)	320 Keuro
2006-2016	National Coordinator Iniziativa Specifica (FieldTURB-INFN)	~100 Keuro
2006	Advanced Project "Non-Newtonian Fluids" (CNISM)	~50 Keuro
2000-2004	Training and Research Network (Nonideal Turbulence, FP5)	200 Keuro

HIGH PERFORMANCE COMPUTING (HPC) (Only major grants <10y): ***Fractal Turbulence*** (22MH, PRACE 2012). ***Monte-Carlo methods for instantons in Turbulence*** (13MH INFN 2012). ***Multiphase systems in porous media*** (10MH PRACE 2013). ***Turbulence under Rotation*** (55MH PRACE 2014). ***Homogeneous and Anisotropic Turbulence*** (27MH PRACE 2015). ***Superfluid Turbulence under counter-flows*** (22MH PRACE 2016). ***Instantons and Intermittency in Hydrodynamic Turbulence: A Lattice Monte Carlo Approach*** (18MH PRACE 2017). **Inverse and direct cascades in rotating turbulent flows** (60MH PRACE 2018).

EDITOR SPECIAL ISSUES (<10 y). *Discrete simulation of fluid dynamics: applications* Phil. Trans. Royal Soc. A **369**, 2384 (2011) and Phil. Trans. Royal Soc. A **369**, 2152 (2011). *Fluids and Structures, multiscale coupling and modeling.* Eur. Phys. J. E. **42**, 3 (2018). *Multi-scale phenomena in Complex Flows and flowing Matter*, Eur. Phys. J. E **39**, 56 (2016).

INVITED: COLLOQUIUM (C), **PLENARY** (P), **LECTURES** (L) **last 10y (>50, see web page. I list the 10 most significant).** **Nudging, Hybrid Monte Carlo, Smart particles: new tools for old problems.** Workshop on *Perspectives in Turbulence* Texas A&M 2018 (L). **Cascades in turbulent flows** (P), COST Conf. *Flowing Matter* Lisbon 2018. **Flow navigation by smart particles via Reinforcement Learning** (L), *Physics-Informed Machine-Learning* Conference, Santa Fe 2018. **Lagrangian power statistics and irreversibility in turbulence** (L), *Geometrical and Statistical Fluid Mechanics* Simons Centre workshop, Stony Brook 2017. **Anomalous scaling in turbulence with direct and/or inverse energy cascades** (L), *Turbulent Dissipation Mixing and Predictability* Workshop IPAM Los Angeles 2017. **Complex particles in complex flows** (L), *Summer School on Complex Fluids*, Twente 2016. **Convection in complex flows and boundary conditions** (L), *International Conference on Rayleigh Bénard convection*, Gottingen 2015. **"Panta rei"** (C), *Multiscale Institute Colloquium*, Eindhoven 2015. **Droplets and Bubbles in Turbulence** (P), *Discrete Simulations of Fluid Dynamics* International Conference, Fargo 2011. **Caustics & Intermittency in inertial particles velocities in turbulence** (L), *International Symposium on Turbulence*, Beijing 2009.

Roma, 05/02/2020

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