Maurizio Quadrio
Curriculum vitæ et studiorum

Maurizio Quadrio is Full Professor in the S.S.D. of ING/IND-06 – Fluid Dynamics at Politecnico di Milano. He graduated in Aeronautical Engineering, then obtained a PhD in Aerospace Engineering in 1993 and was subsequently faculty at Politecnico di Milano, formerly (since 1996) as Assistant Professor and later (from 2005 to 2015) as Associate Professor. MQ presently teaches *Fluid Dynamics* to undergraduated students in the Aerospace Engineering program, *Instability and Turbulence* to master students in the Aeronautical Engineering Master program, and a PhD course on *Physics and numerical modelling of turbulent flows* offered to all the PhD programs in PoliMi. Since 1995 MQ has been supervisor of 4 batchelor (laurea triennale) theses, and 73 master (laurea magistrale/specialistica) theses. MQ is a faculty member in the PhD program in Aerospace Engineering since 2004, and has supersvised the PhD studies of Davide Pirrò (2005): "Flow on streamwise-curved surfaces: forced transition and turbulence"; Fulvio Martinelli (2009): "Feedback control of turbulent wall flows"; Luca Galantucci (2011): "Quantistic turbulence in superfluid helium"; Wenxuan Xie (2014): "Turbulence skin-friction reduction by traveling waves: a DNS study"; Jacopo Banchetti: "Spanwise-forcing turbulent drag reduction: towards aeronautical applications".

MQ has a vigorous research activity and is involved in several international collaborations. He serves as referee for many scientific journals of his field, and reviews a large number of papers per year. He has authored or co-authored nearly 150 scientific publications (among which 45 peer-reviewed international journal papers), and holds a patent for an original skin-friction drag reduction device. According to ISI-Web of Science (March 3, 2017), his h-index is 16 with a total citation number of 753 (618 without self-citations). MQ has spent a sabbatical year in 2003 at Univ. Western Ontario, Canada with J.M.Floryan, and in 2010/2011 at the Ecole Polytechnique, Paris, France with P.J.Schmid. Since 2015 he has been appointed *Mercator Fellow* at the Karlsruhe Institute of Technology, where he is spending a research period of one month every year. MQ is frequently invited to give scientific seminars in Italy and abroad, is consulted for the evaluation of national and international scientific projects, and carries out a regular and intense review activity for the most important scientific journals of the field.

MQ directs the Flow Control Laboratory of the Department of Aerospace Science and Technologies, PoliMi. He serves in the Advisory Committee of the International Symposium of Turbulence and Shear Flow Phenomena (TSFP), in the Scientific Advisory Committee for the conference series Engineering Turbulence Modelling and Measurement (ETMM). Since 2011 he also serves in the Technical Committee of the LISA Consortium for Supercomputing in Regione Lombardia. Since 2012 he is part of the Scientific Steering Committee of the Research Consortium Consorzio Ethics.

In 2005, 2011 and 2015 he was invited to teach at the UIT Summer School on Thermo-fluid-dynamics. In 2013 he has been invited to teach at the ERCOFTAC Flow Control Course, held in Cranfield (UK), with academic and industry attendance. MQ gave invited plenary lectures at the EUROMECH Colloquium 332 (1995); at the 31st UIT Heat Transfer Conference (2013); at the workshop HPC enabling of OpenFOAM

for CFD applications (2013); at the 11th ERCOFTAC SIG 33 workshop Progress in Transition Modelling and Control (Jersey, 2015); at the FOR 1779 Symposium on Active Drag Reduction (Aachen, 2015). He has been invited to give lectures and seminars at Imperial College London (UK, 2004), Universit di Napoli Federico II (Italy, 2006), King's College London (UK, 2006 and 2009), Politecnico di Torino (Italy, 2007), Ecole Polytechique (France, 2008), Universit di Bologna a Forl (Italy, 2009), Technische Universitaet Darmstadt (Germany, 2010), University of Tokyo (Japan, 2010), Universit di Roma Tor Vergata (Italy, 2011 and 2015), Universit di Brescia (Italy, 2012), University College Dublin (Ireland, 2013), Warwick University (UK, 2013), Universit di Genova (Italy 2014), Institute for Science and Technology – Austria, Wien (Austria, 2014), NTU Singapore (Singapore, 2015).

In his research activity MQ leverages numerical and experimental techniques to investigate turbulent wall flows, and to develop novel methods for reducing the turbulent skin-friction drag. Early in his career, MQ became a specialist of the Direct Numerical Simulation (DNS) technique for incompressible turbulent flows, and developed, in collaboration with P. Luchini, an innovative mixed-discretization parallel computer code (P. Luchini & M. Quadrio, J. Comp. Phys. 2006). A few years ago, MQ became the leading world expert in the spanwise-forcing techniques for the reduction of turbulent skin-friction drag, by discovering a very promising strategy (M. Quadrio, P. Ricco & C. Viotti, J. Fluid Mech. v.627, 2009), then giving it experimental confirmation (F. Auteri, A. Baron, M. Belan, G. Campanardi & M. Quadrio, Phys. Fluids v.22, 2010) and theoretical interpretation (M. Quadrio & P. Ricco, J. Fluid Mech. v.667 2011), with later research addressing important practical issues related to its deployment in real-world applications. More recently, MQ has broadened his research activity to embrace different fields where flow control technologies can be leveraged. He has a standing relationship with a F1 racing team to support their aerodynamics CFD group, and an ongoing research program with another auto-motive company to develop plasma-based flow control concepts. One promising field is the study of the aerodynamics inside the human nasal cavities, where MQ is developing a computer-assisted procedure for supporting the ear-nose-throat specialists in the surgical treatment of nasal breathing difficulties. Thanks to a research grant obtained by the Ministry of Health (the project was assessed in the top 3% by american NIH reviewers), an experimental work is underway to measure with PIV the full velocity field during the breathing cycle, to make the measurements available to the research community, and to cross-validate the (RANS, LES and DNS) numerical simulations.