

## Alessandro Bottaro

### Education

- Ph.D.** 1986-1988  
Rutgers University, Dept. of Mechanical and Aerospace Eng.,  
New Brunswick, New Jersey, U.S.A.
- Master of Science** 1984-1986  
Rutgers University, Dept. of Mechanical and Aerospace Eng.
- Laurea** 1977-1982  
Università di Genova, Dipt. Ingegneria Meccanica, Genova, Italy

### Professional experience

- March 2004 – present *Professor*  
*Appointed for “Clear Renown” in the frame of an Italian program aimed at counteracting “brain drain”*  
Department of Civil, Environmental and Architectural Engineering  
University of Genova, Italy
- Sept. 1997 – March 2004 *Professor (Professeur première classe)*  
Institut de Mécanique des Fluides de Toulouse  
Université Paul Sabatier, Toulouse, France
- Nov. 1992 - Sept 1997 *Lecturer*  
IMHEF (Institut de Machines Hydrauliques et de Mécanique des Fluides), Ecole Polytechnique Fédérale de Lausanne, Switzerland
- Nov. 1988 - Nov. 1992 *Research Scientist*  
IMHEF, EPFL, Switzerland
- Sept. 1984 - Oct. 1988 *Fulbright Fellow*  
Rutgers University, New Jersey, U.S.A.
- Summer 1985 *Consultant*  
AT&T Bell Laboratories, Murray Hill, NJ, U.S.A.
- Sept. 1982 - Mai 1983 *Junior engineer*  
ANSALDO-NIRA S.P.A., Genova, Italy

### Present research activities

Flow receptivity and control, instability and transition, compliant walls, coherent structures, flapping wings aerodynamics, biomimetics

### Reviewing activity

Science, Nature Communications, Physical Review Letters, Journal of Fluid Mechanics, Physics of Fluids, Physical Review E, European Journal of Mechanics.B/Fluids, ASME Journal of Heat Transfer, ASME Journal of Fluids Engineering, ASME Applied Mechanics Review, Flow, Turbulence and Combustion, Journal of Applied Math. and Physics, ZAMP, International Journal

of Numerical Methods for Heat and Fluid Flow, Chemical Engineering Communications, Experimental Thermal and Fluid Science, Journal of Enhanced Heat Transfer, Experiments in Fluids, Physica D, Applied Numerical Mathematics, C.R. Mécanique, Meccanica, Acta Mechanica

The Israel Science Foundation  
TFR – Swedish Research Council for Engineering Sciences  
MURST – Ministero dell'Università e della Ricerca Scientifica (Italy)  
John Simon Guggenheim Memorial Foundation (U.S.A.)  
The Canada Council for the Arts  
ANR and AERES (French Research Agencies)  
European Commission (5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> Framework programmes)  
ERC (European Research Council)  
Natural Sciences and Engineering Research Council of Canada (NSERC)

**Associate Editor:** Meccanica  
**Member:** IUTAM General Assembly  
Scientific Committee, Aerospace Foundation, RTRA AE (Toulouse)  
Scientific and Technical Committee, Ligurian District of Sea Technologies, DLTM (La Spezia)

#### **Journal publications (last ten years)**

Zuccher S., Bottaro A. & Luchini P., "Algebraic growth in a Blasius boundary layer: Nonlinear optimal disturbances", *Eur. J. Mech. B/Fluids*, Vol. 25, 2006, pp. 1-17

Bottaro A., Soueid H. & Galletti B., "Formation of secondary vortices in turbulent square-duct flow", *AIAA Journal*, Vol. 44, no. 4, 2006, pp. 803-811

Galletti B., Bottaro A., Bruneau C.-H. & Iollo A., "Accurate model reduction of transient and forced wakes", *Eur. J. Mech. B/Fluids*, Vol. 26, no. 3, 2007, pp. 354-366

Guaus A. & Bottaro A., "Effect of wall compliance on curved channel flow instabilities", *Proc. Royal Soc. A*, Vol. 463, 2007, pp. 2201-2222

Nouar C., Bottaro A. & Brancher J.P., "Delaying transition to turbulence in channel flow: revisiting the stability of shear thinning fluids", *J. Fluid Mech.*, Vol. 592, 2007, pp. 177-194

Biau D., Soueid H. & Bottaro A., "Transition to turbulence in duct flow", *J. Fluid Mech.*, Vol. 596, 2008, pp.133-142

Wedin H., Biau D., Bottaro A. & Nagata M., "Coherent flow states in a square duct", *Phys. Fluids*, Vol. 20, 2008, 094105

Dauplain A., Favier J. & Bottaro A., "Hydrodynamics of ciliary propulsion", *J. Fluids and Structures*, Vol. 24, 2008, pp. 1156-1165

Soueid H., Guglielmini L., Airiau C. & Bottaro A., "Optimization of the motion of a flapping airfoil using sensitivity functions", *Computers and Fluids*, Vol. 38, 2009, pp. 861-874

Biau D. & Bottaro A., "An optimal path to transition in a duct", *Phil. Transact. Royal Soc.*, Vol. 367, 2009, pp. 529-544

Favier J., Dauplain A., Basso D. & Bottaro A., "Passive separation control using a self-adaptive hairy coating", *J. Fluid Mech.*, Vol. 627, 2009, pp. 451-483

- Guaus A., Airiau C., Bottaro A. & Kourta A., "Effect of wall compliance on the linear stability of Taylor-Couette flow", *J. Fluid Mech.*, Vol. 630, 2009, pp. 331-365
- Wedin H., Bottaro A. & Nagata M., "Three-dimensional traveling waves in a square duct", *Phys. Rev. E*, Vol. 79, 2009, 065305(R)
- Nouar C. & Bottaro A., "Stability of the flow of a Bingham fluid in a channel: eigenvalue sensitivity, minimal defects and scaling laws of transition", *J. Fluid Mech.*, Vol. 642, 2010, pp. 349-372
- Hoepffner J., Bottaro A. & Favier J., "Mechanisms of non-modal energy amplification in channel flow between compliant walls", *J. Fluid Mech.*, Vol. 642, 2010, pp. 489-507
- Bottaro A., "A 'receptive' boundary layer", *J. Fluid Mech.*, Vol. 646, 2010, pp. 1-4
- Cherubini S., Robinet J.-C., Bottaro A. & De Palma P., "Optimal wave packets in a boundary layer and initial phases of a turbulent spot", *J. Fluid Mech.*, Vol. 656, 2010, pp. 231-259
- Okino S., Nagata M., Wedin H. & Bottaro A., "A new nonlinear vortex state in square duct flow", *J. Fluid Mech.*, Vol. 657, 2010, pp. 413-429
- Cherubini S., De Palma P., Robinet J.-Ch. & Bottaro A., "Rapid path to transition via nonlinear localized optimal perturbations in a boundary-layer flow", *Phys. Rev. E*, Vol. 82, 2010, 066302
- Monokrousos A., Bottaro A., Brandt L., Di Vita A. & Henningson D.S. , "Non-equilibrium thermodynamics and the optimal path to turbulence in shear flows", *Phys. Rev. Letters*, Vol. 106, 2011, 134502
- Cherubini S., De Palma P., Robinet J.-Ch. & Bottaro A. , "Edge states in a boundary layer", *Phys. Fluids*, Vol. 23, 2011, 051705
- Cherubini S., De Palma P., Robinet J.-Ch. & Bottaro A. , "The *minimal seed* of turbulent transition in the boundary layer", *J. Fluid Mech.*, Vol. 689, 2011, pp. 221-253
- Guerrero J.E., Maestro D. & Bottaro A. , "Biomimetic spiroid winglets for lift and drag control", *C. R. Mécanique*, Vol. 340, 2012, pp. 67-80
- Cherubini S., De Palma P., Robinet J.-Ch. & Bottaro A. , "A purely non-linear route to transition approaching the edge of chaos in a boundary layer", *Fluid Dynamics Research*, Vol. 44, 2012, 031404
- Bottaro A. & Ansaldi T. , "On the infusion of a therapeutic agent into a solid tumor modelled as a poroelastic medium", *ASME J. of Biomechanical Eng.*, Vol. 134, 2012, 084501
- Venkataraman, D. & Bottaro A. , "Numerical modeling of flow control on a symmetric aerofoil via a porous, compliant coating", *Phys. Fluids*, Vol. 24, 2012, 093601
- Bagheri S., Mazzino A. & Bottaro A. , "Spontaneous symmetry breaking of a hinged flapping filament generates lift", *Phys. Rev. Letters*, Vol. 109, 2012, 154502
- Wedin H., Bottaro A., Hanifi A. & Zampogna G., "Unstable flow structures in the Blasius boundary layer", *Eur. Phys. J. E*, Vol. 37, 2014, 34
- Venkataraman D., Bottaro A. & Govindarajan R., "A minimal model for flow control on an aerofoil using a poro-elastic coating", *J. Fluids and Structures*, Vol. 47, 2014, pp. 150-164
- Luchini P. & Bottaro A., "Adjoint equations in stability analysis", *Annual Review of Fluid Mechanics*, vol. 46, 2014, 493-517.

Pluvinage F., Kourta A. & Bottaro A, "Instabilities in the boundary layer over a permeable, compliant wall", *Phys. Fluids*, Vol. 26, 2014, 084103.

Bottaro A., "Superhydrophobic surfaces for drag reduction", *Istituto Lombardo (Rend. Scienze)*, Vol. 148, 2014, 1-30.

Pluvinage F., Kourta A. & Bottaro A., "Instabilities in the asymptotic suction boundary layer over a permeable, compliant wall", *Phys. Fluids*, Vol. 27, 2015, 054104.

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Total number of journal publications: > 60 (more than half in either *PoF* or *JFM*)

H-index: 27

PhD students supervised: 20