



## Marco Debiasi

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### EDUCATION

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UNIVERSITY OF CALIFORNIA, Irvine, California

*Ph.D. in Mechanical & Aerospace Engineering, 17/6/2000, GPA: 3.96 (4.00 scale)*

- Recipient of 'UCI Regents' Dissertation Fellowship' (Winter 2000).
- Dissertation: Acoustics of Dual-Stream High-Speed Jets.
- Graduate curriculum: mathematics (2 courses), fluid dynamics (3), computational fluid dynamics (1), turbulence (1), heat transfer (2), combustion (1), control (1), dynamics (1), instrumentation and data acquisition (1), manufacturing processes (1).

*M.S. in Mechanical Engineering, 20/6/1998*

- Master's Thesis: Noise Measurements in Supersonic Jets Treated with the Mach Wave Elimination Method.

UNIVERSITY OF PADUA, Padua, Italy

*B.S. in Mechanical Engineering, 15/6/1995, GPA: 110 cum Laude (110 scale)*

- Thesis: Metodi Pluriparametrici di Costruzione e Conteggio di Storie di Carico (Multi-Parametric Methods for the Construction and Counting of Load Histories).
- Scholarships include: UC Education Abroad Program Scholarship (1991-1992); ATA (Automobile Technical Association, Italy) Scholarship (1995).

### PROFESSIONAL EXPERIENCE

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CRANFIELD UNIVERSITY, United Kingdom

*Research Fellow, Aeromechanical Systems Group, Centre for Defence Engineering (CDE), from 8/1/2018*

- Research activities.
  - Design, supervise the manufacturing, and assemble models and experimental components for aerodynamic testing.
  - Conduct experimental measurements in aerodynamics, aeroacoustics, and flow control, analyze the data, and discuss the results.
  - Present the results of research in leading peer-reviewed journals and conferences.
  - Write proposals to attract research funds.
  - Assist the management of the wind-tunnel laboratories of the CDE.
- Teaching activities (currently attending PGCAP modules).
  - Supervise MSc/PhD students in aerodynamics, aeroacoustics, and flow control.

TEMASEK LABORATORIES, NATIONAL UNIVERSITY OF SINGAPORE, Singapore  
*Senior Research Scientist, Head of the Experimental AeroScience Group (EAG), from 1/1/2009 to 31/12/2017*

*Research Scientist, Aerodynamics Group, from 9/10/2006 to 31/12/2008*

- Directed the EAG ( [http://www.temasek-labs.nus.edu.sg/program/program\\_aeroexperimental.php](http://www.temasek-labs.nus.edu.sg/program/program_aeroexperimental.php) ).
  - Wrote proposals to attract research funds and managed the research funds received.
  - Supervised 12 research scientists, 1 associate scientist, and 2 laboratory technicians of the EAG.
  - Appraised the performance of the EAG members.
  - Reviewed, updated, and approved the SOPs and Risk Assessments of the EAG.
  - Responsible of the selection, procurement, and use of the EAG equipment.
- Research activities.
  - Advancing the design and performance of flapping-wing MAVs.
  - Morphing wings (by active airfoil shaping) for aerodynamic control of aircraft.
  - Improving the aerodynamics of grid-fins for transonic/supersonic aircraft control.
  - Mixing and acoustics of high-speed jets from non-conventional nozzles.
  - Control of flow separation in S-shaped inlets.
  - Wrote articles and papers for internationally recognized journals and conferences.
- Chairman of the Temasek Laboratories Safety Committee (from 12/2007).
  - Guided the implementation of the PI Laboratory Certification scheme for the Temasek Laboratories (2011).
  - Continuously improved the safety procedures of the Temasek Laboratories and the EAG.
  - Updated the Emergency Response Plan of the Temasek Laboratories (2016).
  - Co-prepared the Safety and Health Management System of the Temasek Laboratories (2016).
  - Temasek Laboratories received the 2017 NUS Safety & Health Commitment Award.

THE OHIO STATE UNIVERSITY, Columbus, Ohio

*Post Graduate Researcher, Gas Dynamics and Turbulence Laboratory (GDTL), from 6/8/2001 to 6/10/2006*

- Directed the experimental activities of an interdisciplinary group exploring closed-loop flow control of cavity-flow resonance.
- Design Engineer and Project Manager of the Controlled Air-Supply System for the GDTL (\$750,000 project).
- Mentored various graduate and undergraduate students working at GDTL.
- Responsible for the safety of the GDTL laboratory.

UNIVERSITY OF CALIFORNIA, Irvine, California

*Post Graduate Researcher, UCEI Research – Mixing Enhancement using Axial Flow, 3/7/2000 to 28/7/2001*

- Investigated the mixing enhancement of liquids and gases by the flow instability in a coaxial gaseous flow.

UNIVERSITY OF CALIFORNIA, Irvine, California

*Research Assistant, NASA Research – Mach Wave Elimination in Supersonic Jets, 9/9/1996 to 31/3/2000*

- Investigated the physics and aeroacoustics of high-speed jets and studied novel concepts for controlling jet engine noise.

UNIVERSITY OF PADUA, Padua, Italy

*Researcher, FIAT Auto Research – Advances in Life Prediction of Structures, 3/7/1995 to 28/6/1996*

- Developed and tested innovative concepts for characterizing and testing the structural integrity of automotive components.

AERONAUTICA MILITARE ITALIANA (ITALIAN AIR FORCE), Florence and Padua, Italy  
*Second Lieutenant, Arma Aeronautica – Ruolo Servizi, 3/1/1994 to 31/3/1995*

- Logistic support of several SAM-based air defense groups within the 1<sup>st</sup> Aero-Brigade.

## **TEACHING EXPERIENCE**

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NATIONAL UNIVERSITY OF SINGAPORE, Singapore

*Teaching Associate – Department of Mechanical Engineering, from 1/1/2008 to 31/12/2016*

- Prepared and delivered lectures (class size of 40-50), and prepared and administered exams in ME4231 “Aerodynamics and Propulsion”. Responsible for the high-speed aerodynamics and propulsion parts of the module (from 2008 to 2012).
- Supervised 14 students in ME4105 “Aeronautical Engineering Specialization” (from 2008 to 2012).
- Co-supervised 2 M.S. students (NUS and ETH Zurich) and 1 Ph.D. student (Imperial College) in their thesis work (from 2012 to 2017).
- Supervised 22 students conducting their internship in the EAG (from 2009).

THE OHIO STATE UNIVERSITY, Columbus, Ohio

*Post Graduate Researcher, from 6/8/2001 to 6/10/2006*

- Given class lectures in gas dynamics and flow control.

UNIVERSITY OF CALIFORNIA, Irvine, California

*Teaching Assistant, Courses: Compressible Flow, Aircraft Performance, Thermodynamics, 10/1997 to 6/1999*

- Class sizes of 12 to 60.

## **PROFESSIONAL AFFILIATIONS**

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- American Institute of Aeronautics and Astronautics (AIAA) (from 12/2001)
  - Chair (from 6/2004 to 6/2006), Vice-Chair (from 4/2003 to 6/2004), and Secretary (from 10/2001 to 4/2003) of the AIAA Columbus Section.
  - Editor of the monthly newsletter “AIAA Columbus Section News” (from 1/2002 to 6/2004).
- American Society of Mechanical Engineers (ASME) (to 12/2006)
- American Physical Society (APS) (from 11/2005 to 12/2006)

## **EXPERTISE**

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- Direction of research activities and personnel in experimental aerodynamics laboratories.
- Management of research projects in aerodynamics/mechanical engineering.
- High- and low-speed flow measurements, flow actuation and control, aerodynamic morphing, aeroacoustics, noise characterization and reduction, jet mixing.
- Experimental techniques: flow-velocity measurements, particle image velocimetry, Mie and Rayleigh scattering, shadowgraph and schlieren imaging, aerodynamic-forces measurements, pressure and acoustic measurements, thermal measurements; design, calibration, and testing of experimental instrumentation; flow control with hardware-in-the-loop.
- Equipment: Nd:YAG lasers, optical systems, CCD, CMOS and film cameras, temperature/pressure-sensitive paint, hot-wires/films anemometers, dynamic and static pressure transducers, microphones, loudspeakers, piezoelectric actuators, thermocouples, jet atomizers; National Instruments ADC and DAC converters and acquisition systems; dSPACE DSPs and control systems.
- Design and fabrication of facilities and models for aerodynamic and aeroacoustic research, and of the jigs and fixtures for their construction.

- Manufacturing processes: cutting-tool machining, rapid prototyping, vacuum-bag forming.
- Some experience in implementing different feedforward, feedback, and adaptive control techniques.
- Good experience in using MATLAB, LabVIEW, SolidWorks, LaTeX, HTML, MS Office, MS Windows, Adobe Photoshop; limited experience in using Simulink, dSPACE, Fortran, and ANSYS.

## **ADDITIONAL SKILLS**

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- Bilingual: fluent in English and Italian.
- Organization of social and cultural events: AIAA Columbus Section Distinguished Lectures (5/2002, 3/2003, 2/2004, 4/2004, 3/2005) and Dinner and Lecture Meetings (11/2003, 10/2004, 11/2004).
- Photography ( [www.marcodebiasi.lx.com](http://www.marcodebiasi.lx.com) )
- Website development.

## **OTHERS**

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- Recipient of the AIAA 2002-2003 Communication Award in the Very Small Section Category.
- Manuscript reviewer for: Physics of Fluids, Journal of Fluid Mechanics, Journal of Fluids Engineering, Experiments in Fluids, AIAA Journal, Journal of Aerospace Engineering, Aerospace Science & Technology, The Aeronautical Journal.