

Andrea Ianiro

Visiting Professor

Universidad Carlos III de Madrid
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Experimental Aerodynamics and Propulsion Lab

Born in Campobasso, Italy on August 13th 1985

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■ *Research expertise:*

Experimental research in aerodynamics, fluid mechanics and heat transfer in a wide range of conditions from low speed to hypersonic flows. Most recent interests include synthetic jets and flapping wing aerodynamics. Experimental tools include advanced methods such as IR thermography and Tomographic Particle Image Velocimetry as well as traditional methods such as hot wire and flow visualization.

■ *Education:*

2012	<i>Ph.D.</i>	Aerospace Engineering, Università degli Studi di Napoli Federico II
2008	<i>M.Sc.</i>	Aerospace Engineering, Università degli Studi di Napoli Federico II
2006	<i>B.Sc.</i>	Aerospace Engineering, Università degli Studi di Napoli Federico II

■ *Professional Experience:*

2013-present	<i>Visiting Professor</i> , Universidad Carlos III de Madrid Dept. Bioingeniería e Ingeniería Aeroespacial
2012-2013	<i>Post-Doctoral Research Fellow</i> , Università degli Studi di Napoli Federico II Dipartimento di Ingegneria Aerospaziale
2008-2012	<i>PhD Fellow</i> , Università degli Studi di Napoli Federico II Dipartimento di Ingegneria Aerospaziale
2010-2011	<i>Guest Researcher</i> , TU Delft – Chair of Aerodynamics
2008-2009	<i>Master internship</i> , CIRA (Italian centre for aerospace research)
2006	<i>Internship</i> , Alenia Aeronautica (now Alenia Aermacchi)

■ *Teaching experience*

2014-2015	Aerospace Propulsion, Aerospace Propulsion: complement I, Aerospace Vehicles: complement I, Propulsion Systems, Rocket Motors, <i>Aerospace Engineering Degree</i> , Universidad Carlos III de Madrid
2013-2014	Propulsion Systems, Stability and Integrity of Aerospace Structures, <i>Aerospace Engineering Degree</i> , Universidad Carlos III de Madrid
2009-2012	Gas Dynamics-Exercises, <i>Aerospace Engineering Degree</i> , Italian Air Force Military Academy Teaching assistant of Experimental Fluid Dynamics, Fluid Dynamics and Gas Dynamics, <i>Mechanical Engineering Degree</i> and <i>Aerospace Engineering Degree</i> , University of Naples “Federico II”
2008-present	Daily supervisor of more than 30 bachelor and master thesis projects

■ *PhD Students advising*

Carlo Salvatore Greco (expected to defend in spring 2015) – co-supervised with G. Cardone

Flow field and heat transfer in synthetic impinging jets

Marco Raiola (expected to defend in fall 2016) – co-supervised with S. Discetti

An experimental study on flapping wings aerodynamics for micro uavs

Carlos Sanmiguel Vila (expected to defend in Spring 2018) – co-supervised with S. Discetti

Turbulent boundary layers under pressure gradients

■ *Academic service*

Member, elected, of the University Senate of Universidad Carlos III de Madrid (since 2013)

■ *Research projects*

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| 2009-2010 | CAST project (Configurazioni Aerotermodinamiche innovative per Sistemi di Trasporto spaziale) funded by the Italian Space Agency |
| 2010-2014 | AFDAR (Advanced Flow Diagnostics for Aeronautical Research, FP7/2007-2013, grant agreement No. 265695). http://www.afdar.eu/ |
| 2013-2015 | UNC313-4E-2231 Sistema de medida simultánea de flujos 3D y de transferencia de calor en pared en un túnel hidrodinámico. Funded by Spanish Ministry of Economy and Competitiveness. |
| 2014 | Realización de ensayos en arrays de paneles solares en túnel de viento. For ATOS SPAIN, S.A.U. |
| 2014-2017 | Investigación numérica y experimental de la aerodinámica no estacionaria de alas batientes. Funded by Spanish Ministry of Economy and Competitiveness. |

■ *Current scientific collaborations*

CIRA (Italian Centre for Aerospace Research)

TU Delft – Aerodynamics group

University of Naples Federico II – Aerospace Engineering Section

Collaborating with researchers from KTH (Stockholm), Lomonosov Moscow State University, Los Alamos National Lab, NASA Ames, Onera, University of Minnesota and TU Delft for the writing of the book “Experimental Aerodynamics” to be published by Taylor and Francis (2016).

■ *Awards and Fellowships:*

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| 2012 | “Rem Soloukhin Gold Hand Award for Young Scientists”, awarded by the Committee of the XV th International Symposium on Flow Visualization. |
| 2011 | RIS.UM Fellowship from Regione Campania (Italy) funding the period as Guest Researcher in TU Delft (10,000 €). |
| 2008 | PhD fellowship from Italian Government (60,000 €) |
| 2001 | AFS-Intercultura Fellowship for a period of study in France (10,000 €) |

■ *Journal publications:*

1. M. Raiola, S. Discetti, A. Ianiro, On PIV random error minimization with optimal POD-based low order reconstruction, *Experiments in Fluids*, 2015.
2. G. M. Carlomagno, A. Ianiro, Thermo-fluid-dynamics of submerged jets impinging at short nozzle-to-plate distance: a review, *Experimental Thermal and Fluid Science* 58, 15-35, 2014.
3. C.S. Greco, A. Ianiro, G. Cardone, Time and phase average heat transfer in single and twin circular synthetic impinging air jets, *International Journal of Heat and Mass Transfer* 73, 776–788, 2014.
4. G. Cafiero, G. Ceglia, S. Discetti, A. Ianiro, T. Astarita, G. Cardone, On the three-dimensional precessing jet flow past a sudden expansion, *Experiments in Fluids* 55, 1677, 2014.
5. M. Imbriale, A. Ianiro, C. Meola, G. Cardone, Convective heat transfer by a row of jets impinging on a concave surface, *International Journal of Thermal Sciences* 75, 153-163, 2014.
6. G. Ceglia, S. Discetti, A. Ianiro, D. Michaelis, T. Astarita, G. Cardone, Three-dimensional organization of the flow structure in a nonreactive model aero engine lean burn injection system, *Experimental Thermal and Fluid Science* 52, 164-173, 2014.
7. C. S. Greco, A. Ianiro, T. Astarita, G. Cardone, On the near field of single and twin circular synthetic air jets, *International Journal of Heat and Fluid Flow* 44, 41-52, 2013.
8. M. Di Clemente, A. Ianiro, G. Rufolo, G. Cardone, Hypersonic test analysis by means of aerothermal coupling methodology and IR thermography, *AIAA Journal* 51, 1755-1769, 2013.
9. S. Discetti, A. Ianiro, T. Astarita, G. Cardone, On a novel low cost high accuracy experimental setup for tomographic particle image velocimetry, *Measurement Science and Technology* 24, 075302, 2013.
10. M. Novara, A. Ianiro, F. Scarano, Adaptive interrogation for 3D-PIV, *Measurement Science and Technology* 24, 024012, 2013.
11. R. Giordano, A. Ianiro, T. Astarita, G. M. Carlomagno, Flow field and heat transfer on the base surface of a finite circular cylinder in crossflow, *Applied Thermal Engineering* 49, 79-88, 2012.
12. A. Ianiro, G. Cardone, Heat transfer rate and uniformity in multichannel swirling impinging jets, *Applied Thermal Engineering* 49, 89-98, 2012.
13. D. Violato, A. Ianiro, G. Cardone, F. Scarano, Three-dimensional vortex dynamics and convective heat transfer in circular and chevron impinging jets, *International Journal of Heat and Fluid Flow* 37, 22–36, 2012.
14. G. Cardone, A. Ianiro, G. dello Iorio, A. Passaro, Temperature Maps Measurements on 3D Surfaces with Infrared Thermography, *Experiments in Fluids* 52, 375-385, 2012.
15. A. Ianiro, G. Cardone, Measurement of surface temperature and emissivity with stereo dual-wavelength IR thermography, *Journal of Modern Optics*, 57, 1708-1715, 2010.

■ *Journal publications in preparation:*

1. A. Ianiro, K. P. Lynch, D. Violato, G. Cardone, F. Scarano, On the three-dimensional organization and evolution of vortices in multichannel swirling jets, to be submitted, 2015.

■ *Reviewer of international journals:*

Heat Transfer Engineering
Heat Transfer Research
Infrared Physics & Technology
International Journal of Heat and Mass Transfer
International Journal of Rotating Machinery
International Journal of Thermal Sciences
Journal of Applied Fluid Mechanics
Journal of Modern Optics
Thermal Science

■ *Invited and Keynote presentations:*

1. G. M. Carlomagno, A. Ianiro, Jet impingement heat transfer: historical perspective and recent developments, Academic Session in Memory of Theodore von Kármán held on the 50th Anniversary of his Death 1963-2013, 7th May 2013, Brussels – Belgium.
2. M. Imbriale, A. Ianiro, C. Meola, G. Cardone, Visualization of the Heat transfer on a wing leading edge surface internally impinged by a row of air jets, 15th International Symposium on Flow Visualization, 24-28 June 2012, Minsk – Belarus.
3. A. Ianiro, D. Violato, F. Scarano, G. Cardone, Three dimensional features in swirling impinging jets, 15th International Symposium on Flow Visualization, 24-28 June 2012, Minsk – Belarus.

■ *Conference proceedings:*

1. C.S. Greco, A. Ianiro, G. Cardone, IR Experimental investigation on twin synthetic impinging jets heat transfer behavior, QIRT 2014, 7-11 July 2014, Bordeaux – France.
2. M. Raiola, S. Discetti, A. Ianiro, On the suppression of PIV measurement noise with a POD based filter, 17th International Symposium on Applications of Laser Techniques to Fluid Mechanics, 7-10 July 2014, Lisbon – Portugal.
3. C.S. Greco, A. Ianiro, G. Cardone, Heat transfer in twin circular synthetic impinging air jets, Eurotherm Seminar n° 96 on Convective Heat Transfer Enhancement, 17-19 September 2013, Brussels – Belgium.
4. G. Cafiero, G. Ceglia, S. Discetti, A. Ianiro, T. Astarita, G. Cardone, The three-dimensional swirling flow past a sudden expansion, PIV 2013 Conference, 1-3 July 2013, Delft – The Netherlands.
5. G. Ceglia, S. Discetti, A. Ianiro, D. Michaelis, T. Astarita, G. Cardone, Tomographic PIV measurements of the flow at the exit of an aero engine swirling injector with radial entry, PIV 2013 Conference, 1-3 July 2013, Delft – The Netherlands.
6. G. Cafiero, G. Ceglia, S. Discetti, A. Ianiro, T. Astarita, G. Cardone, The three-dimensional swirling flow past a sudden expansion, 8th World Conference on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics, 16 – 20 June 2013, Lisbon – Portugal.
7. G. Ceglia, S. Discetti, A. Ianiro, D. Michaelis, T. Astarita, G. Cardone, Three-dimensional organization of flow structures at the exit of an aero-engine double swirling injector, 8th World Conference on Experimental Heat Transfer, Fluid Mechanics, and Thermodynamics, 16 – 20 June 2013, Lisbon – Portugal.
8. A. Ianiro, G. Cardone, Simultaneous measurement of temperature and emissivity with stereo dual wavelength thermography, SPIE Optics+Photonics 2012 Infrared Remote Sensing and Instrumentation XX, 12 - 16 August, 2012, San Diego – California.
9. S. Discetti, A. Ianiro, T. Astarita, G. Cardone, On the development of a novel low cost high accuracy experimental setup for Tomographic Particle Image Velocimetry, 16th International Symposium on Applications of Laser Techniques to Fluid Mechanics, 9-12 July 2012, Lisbon – Portugal.
10. C. S. Greco, A. Ianiro, M. Imbriale, T. Astarita, G. Cardone, PIV measurements in twin synthetic jets, 15th International Symposium on Flow Visualization, 24-28 June 2012, Minsk – Belarus.
11. M. Imbriale, A. Ianiro, C. Meola, G. Cardone, Visualization of the Heat transfer on a wing leading edge surface internally impinged by a row of air jets, 15th International Symposium on Flow Visualization, 24-28 June 2012, Minsk – Belarus.
12. A. Ianiro, D. Violato, F. Scarano, G. Cardone, Three dimensional features in swirling impinging jets, 15th International Symposium on Flow Visualization, 24-28 June 2012, Minsk – Belarus.
13. M. Imbriale, A. Ianiro, C. Meola and G. Cardone, IR thermography in heat transfer measurements on a wing leading edge surface internally impinged by a row of air jets, QIRT 2012, 11-14 June 2012, Naples – Italy.
14. A. Ianiro, D. Violato, G. Cardone, F. Scarano, Time-resolved tomographic measurements in swirling jets, DFD11 Meeting of the American Physical Society, 20–22 November 2011 Baltimore – USA.
15. D. Violato, A. Ianiro, G. Cardone, F. Scarano, Investigation on Circular and Chevron Impinging Jets by IR Thermography and Time-Resolved Tomographic PIV, ASME-JSME-KSME Joint

Fluids Engineering Conference 2011 (AJK2011-FED), July 24 - 29, 2011. Hamamatsu – Japan.

16. M. Novara, A. Ianiro, F. Scarano, Adaptive interrogation for 3D-PIV, 9th International Symposium On Particle Image Velocimetry – PIV'11, 21-23 July 2011 Kobe – Japan.
17. A. Ianiro, G. Cardone, G. M. Carlomagno, Convective heat transfer in swirling impinging jets, 5th International Conference on Vortex Flow and Vortex Methods, 8-10 November 2010, Caserta – Italy.
18. A. Ianiro, G. Cardone, M. Di Clemente, G. Rufolo, Comparison between experimental IR measurements and numerical prediction in hypersonic flows, QIRT 2010, 27-30 July 2010, Quebec City – Canada.
19. A. Ianiro, G. Cardone, G. M. Carlomagno, IR wall heat transfer in swirling impinging jets, QIRT 2010, 27-30 July 2010, Quebec City – Canada.
20. A. Ianiro, G. Cardone, Heat transfer measurements in swirling impinging jets, ASME-ATI-UIT Conference on Thermal and Environmental Issues in Energy Systems, 16 – 19 May 2010, Sorrento – Italy.
21. A. Ianiro, T. Astarita, G. M. Carlomagno, Heat transfer on the base surface of a finite circular cylinder in crossflow, ASME-ATI-UIT Conference on Thermal and Environmental Issues in Energy Systems, 16 – 19 May 2010, Sorrento – Italy.
22. M. Di Clemente, G. Rufolo, A. Ianiro, G. Cardone, Aerothermal Coupling Methodology for the Rebuilding of a Plasma Wind Tunnel Test and Comparison with an Advanced Infrared Measurement Technique, 16th AIAA/DLR/DGLR International Space Planes and Hypersonic Systems and Technologies Conference, October 19-22, 2009, Bremen – Germany.
23. A. Ianiro, G. Cardone, Measurement of Surface Temperature and Emissivity with Dual-Colour Stereo Thermography, 10th International Workshop on Advanced Infrared Technology and Applications, September 8 - 11, 2009, Florence – Italy.
24. D. Cannoletta, G. Iazzetta, M. Lagarese, A. Della Rocca, D. Scalvini, A. Ianiro, Fuel tanks explosion protection system flight test and new frontiers, XIX Congresso Nazionale AIDAA, September 17-21, 2007, Forlì – Italy.