europass Curriculum vitae

PERSONAL INFORMATION **Andrea Palumbo**

WORK EXPERIENCE

November 2020 – Present — Post-doctoral research fellow

Name and address of employer	Sapienza University of Rome – Department of Mechanical and Aerospace Engineering, V. Eudossiana, 18, 00184, Roma, Italia
Work sector	Fluid-dynamic research, SSD: ING-IND/06
Main activities and responsibilities	Research title: "High-fidelity numerical simulation of hypersonic three-dimensional shock/boundary layer interactions". Main subjects: numerical simulation of supersonic/hypersonic turbulent boundary layers; simulations of three-dimensional shock-wave/turbulent boundary layer interaction.

April 2020 – September 2020 — Post-doctoral research fellow

Name and address of employer	University of Naples "Federico II" – Department of Industrial Engineering, P.le Tecchio, 80, 80125, Napoli, Italia
Work sector	Fluid-dynamic research, SSD: ING-IND/06
Main activities and responsibilities	Research title: "Numerical simulations of plasma synthetic jets in crossflow conditions". Main subjects: fluid-dynamic stability, boundary layer control, simulation of wall-bounded flows. Teaching assistant for the "Fluid dynamic stability" course for the Master's degree in Aerospace Engineering. Advisor of Master degree thesis in Aerospace Engineering.

EDUCATION AND TRAINING

February 2017 – January 2020 — PhD in Industrial Engineering (Doctor Europaeus) — EQF 8

Name and type of organisation providing education and training	University of Naples "Federico II" – Department of Industrial Engineering, P.le Tecchio, 80, 80125, Napoli, Italia
Principal subjects/occupational skills covered	Thesis title: "Combined numerical and experimental investigation on the interaction of synthetic jets and crossflow". Supervisor: prof. Luigi de Luca; advisor: dr. Matteo Chiatto. Main research subjects: active flow control techniques, numerical simulation of turbulent flows, CFD solver performance evaluation, fluid-dynamic stability. Teaching assistant for "Thermo-fluid-dynamics" and "Fluid dynamic stability" courses. Advisor for Bachelor/Master degree theses in Aerospace Engineering. Tutor for "Calculus I" courses for the Deparment of Industrial Engineering and the Department of Chemical, Material and Production Engineering.

October 2018 – July 2019 — Visiting PhD Student

Name and type of organisation providing education and training	Arts et Métiers ParisTech – Laboratoire de Dynamique des Fluides, 151 Boulevard de l'Hôpital, 75013 Paris, France
Principal subjects/occupational skills covered	Direct numerical simulation and stability analysis of the interaction between continuous/pulsed jets and a boundary layer flow. Supervisor: prof. Jean-Christophe Robinet.

December 2013 – October 2016 — Master's degree in Aerospace Engineering — EQF 7

Final grade	110/110 cum Laude and special mention; weighted averaged mark: 29.7/30
Thesis	Thesis title: "Effect of a Synthetic Jet Actuator on the Continuous Water Spray Behaviour". Supervisors: prof. Luigi de Luca (UNINA), dr. Gerardo Valentino (CNR); advisors: dr. Matteo Chiatto (UNINA), dr. Luca Marchitto (CNR)
Name and type of organisation providing education and training	University of Naples "Federico II" – Department of Industrial Engineering, P.le Tecchio, 80, 80125, Napoli, Italia

July 2016 – October 2016 — Master thesis traineeship

Name and address of employer	Istituto Motori del CNR, Via Guglielmo Marconi, 4, 80125 Napoli NA.

Principal subjects/occupational skills covered: Particle Image Velocimetry (PIV) analysis of the control of a liquid spray by means of synthetic jets; post-processing of PIV data.

October 2010 – December 2013

Bachelor's degree in Aerospace Engineering

EQF 6

Final grade: 110/110 cum Laude and special mention; weighted averaged mark: 29.6/30

Thesis: Thesis title: "Effects of non-linear damping in resonant cavities". Supervisor: prof. Luigi de Luca; advisor: dr. Michele Girfoglio.

Name and type of organisation providing education and training: University of Naples "Federico II" – Department of Industrial Engineering, P.le Tecchio, 80, 80125, Napoli, Italia

September 2005 – July 2010

High-school Diploma

EQF 4

Final Grade: 100/100

Name and type of organisation providing education and training: Liceo Scientifico "G. Mercalli", Via Andrea D'Isernia, 34, 80122, Napoli

FELLOWSHIPS

2020 Winner of a post-doctoral fellowship at the Department of Mechanical and Aerospace Engineering of the University of Rome "La Sapienza".

2020 Winner of a post-doctoral fellowship at the Department of Industrial Engineering of the University of Naples "Federico II".

2018 Award by STAR Program (University of Naples Federico II) for a visiting position at Arts et Métiers ParisTech. (`http://www.coinor.unina.it/programmastar`)

2016 Winner of a fellowship for the Doctorate School in Industrial Engineering at the University of Naples "Federico II".

PERSONAL SKILLS

Mother tongue: Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2
French	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
Common European Framework of Reference for Languages

Certifications: **PET**– Preliminary English Test (B1) - 2006

Computer skills: Wide use of open-source (OpenFOAM, Nek5000, Gerris, Basilisk) and commercial codes (ANSYS Fluent, ANSYS Icem, Star-CCM+) for computational fluid dynamics and post-processing software (Visit, Tecplot 360, ParaView). Good knowledge of grid generator programs for CFD (Pointwise) and CAD (Catia).
Extensive knowledge of MATLAB and wide use of the SIMULINK toolbox.
Good knowledge of the programming languages C, C++, Fortran, Python.
Advanced knowlegde of LaTeX, Windows, Microsoft Office. Wide use of Linux systems.
Base knowledge of High Performance Computing systems and wide use of supercomputers for numerical analysis.

Supercomputer projects

2022: Principal investigator (PI) of IscraB project DSHOW (DNS of Supersonic/Hypersonic compression corner flOWs) on MARCONI 100 supercomputer (CINECA, Bologna)
2021: Principal Investigator (PI) of IscraC project ENABLING (EfficieNcy Analysis of Boundary-Layer transition-promotING systems), on GALILEO100 and MARCONI100 supercomputer (CINECA, Bologna).
2020: Principal Investigator (PI) of IscraC project NIDI (Numerical Investigation of Dual-jet Interaction), on GALILEO supercomputer (CINECA, Bologna).
2019: Principal Investigator (PI) of IscraC project NISIDA (Numerical Investigation on Synthetic jets Issuing from a Double-orifice Actuator), on MARCONI supercomputer (CINECA, Bologna).

RESEARCH OUTPUT

Research articles:

- A. Palumbo, L. de Luca. "Experimental and CFD Characterization of a Double-Orifice Synthetic Jet Actuator for Flow Control". Actuators. Vol. 10, Issue 12, Article No. 326. 2021. DOI: 10.3390/act10120326. ISSN: 2076-0825.
- A. Palumbo, M. Chiatto, L. de Luca. "The role of the critical layer in the channel flow transition revisited", Meccanica. Vol. 54, Issue 14, pp. 2169-2182. 2019. DOI: 10.1007/s11012-019-01079-z. ISSN: 1572-9648.
- M. Chiatto, A. Palumbo, L. de Luca. "Design approach to predict synthetic jet formation and resonance amplifications". Experimental Thermal and Fluid Science. Vol. 107, pp. 79-87. 2019. DOI: 10.1016/j.expthermflusci.2019.05.013. ISSN: 0894-1777.
- F. Capuano, A. Palumbo, L. de Luca. "Comparative study of spectral-element and finite-volume solvers for direct numerical simulation of synthetic jets". Computers & Fluids. Vol. 179, pp. 228-237. 2019. DOI: 10.1016/j.compfluid.2018.11.002. ISSN: 0045-7930.
- A. Palumbo, M. Chiatto, L. de Luca. "Measurements versus numerical simulations for slotted synthetic jet actuator". Actuators. Vol. 7. Issue 3, Article No. 59. 2018. DOI: 10.3390/act7030059. ISSN: 2076-0825.
- M. Chiatto, A. Palumbo, L. de Luca. "A Calibrated Lumped Element Model for the Prediction of PSJ Actuator Efficiency Performance". Actuators. Vol. 7. Issue 1, Article No. 10. 2018. DOI: 10.3390/act7010010. ISSN: 2076-0825.

Conference proceedings/abstracts:

- A. Palumbo, O. Semeraro, J.-Ch. Robinet, L. de Luca, *Receptivity to synthetic jet actuation in boundary layer flows*, AIAA SciTech 2020, Orlando, 6-10 January 2020.
- A. Palumbo, A. Della Pia, M. Chiatto, L. de Luca, *Numerical study on the flow field generated by a double-orifice synthetic jet device*, XXIV AIMETA Conference, Roma, 15-19 September 2019.
- M. Chiatto, A. Palumbo, G. de Felice, L. de Luca, *Multi-slotted synthetic jet actuator for flow control of separated flows*, 15^{th} International Conference on Fluid Control, Measurements and Visualization, Napoli, 27-30 May 2019.
- A. Palumbo, *Global stability analysis of synthetic jet in crossflow*, Giornata dei dottorandi italiani in ingegneria aerospaziale, Pisa, 29-31 October 2018.
- A. Palumbo, F. Capuano, L. de Luca, *Performances of two open-source codes in the numerical simulation of synthetic jets*, ECCOMAS Conference, Glasgow, 11-15 June 2018.
- M. Chiatto, M. Arena, A. Palumbo, R. Pecora, L. de Luca, *Towards a flow control method based on PSJ actuators: a feasibility study.* Euromech Colloquium 593, Delft, 14-16 March 2018.

- M. Chiatto, A. Palumbo, L. de Luca. *Piezo-driven and Plasma Synthetic Jet Actuators. A comparative investigation.* Global Workshop on Functional Materials and Devices, Singapore, January 11-13, 2018.
- M. Chiatto, A. Palumbo, L. de Luca. *Experimental Characterization of Plasma Synthetic Jet Actuators.* XXIII AIMETA Conference. Salerno, 4-7 September 2017.
- M. Chiatto, A. Palumbo, L. de Luca. *Development of a physical model for plasma synthetic jet actuators*. XXII AIMETA Conference. Genova, 14-17 September 2015.

Rome, May 2022.