europass

Alessandro Montanari

WORK EXPERIENCE

11/2023 – CURRENT Rome, Italy

PHD STUDENT IN AERONAUTICAL AND SPACE ENGINEERING DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING (DIMA) - SAPIENZA UNIVERSITY OF ROME

Topic: Reduced models for combustion instabilities in space propulsion

01/03/2025 – CURRENT Raleigh, United States

VISITING SCHOLAR NORTH CAROLINA STATE UNIVERSITY

Research activity at BEFAST (Braun's Engineering Factory for Advanced Supersonic Technologies) on numerical and experimental analyses of Rotating Detonation Engines (RDEs) for rocket propulsion applications and power extraction when coupled with innovative supersonic bladeless turbines

05/2022 – 09/2023 Rome, Italy

POSTGRADUATE FELLOWSHIP CENTRE OF AEROSPACE RESEARCH OF SAPIENZA (CRAS) - SAPIENZA UNIVERSITY OF ROME

Topic: Models for transient analysis of liquid rocket engines and their feed systems.

EDUCATION AND TRAINING

09/2019 – 03/2022 Rome, Italy

MASTER'S DEGREE IN SPACE AND ASTRONAUTICAL ENGINEERING Sapienza University of Rome

Combustion - Control Systems - Electronics - Gasdynamics - Hypersonics - Liquid Rocket Engines - Space Flight Mechanics - Space Missions and Systems - Space Power Systems - Space Propulsion - Solid Rocket Motors - Space Structures - Turbulence

Final grade 110/110 cum Laude | **Level in EQF** EQF level 7 |

Thesis Analysis of combustion instability in LOX/CH4 liquid rocket engines by a real-fluid low-order model

09/2016 – 12/2019 Rome, Italy

BACHELOR'S DEGREE IN AEROSPACE ENGINEERING Sapienza University of Rome

Aerodynamics - Aerospace Materials - Aerospace Propulsion - Aerospace Structures - Applied Mechanics - Calculus - Chemistry - Continuum Mechanics - Electric Systems - Flight Mechanics - Geometry - Microeconomics - Numerical Analysis - Physics - Space Environment - Telecommunication - Space Systems

Final grade 110/110 cum Laude | **Level in EQF** EQF level 6 | **Thesis** Numerical Simulation of Ground Effect

2011 – 2016 Rome, Italy

HIGH SCHOOL DIPLOMA Liceo Scientifico Morgagni

Final grade 100/100

DIGITAL SKILLS

Programming languages

Fortran | Python

Operating systems

Windows | Linux

Software

Microsoft Office | LaTeX | Simulink | Ansys Fluent | Tecplot 360 | Solid Edge | MATLAB

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C1	C1	C1	C1	C1
SPANISH	B1	B1	B1	B1	B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PROJECTS

03/2020 – 06/2020

L.O.S.T. - Lunar Orbiting Satellites for Telecommunications

Space mission concept developed as a group assignment during the Master's studies. It consisted in a three-satellite lunar constellation for TLC purposes, whose design interested the subsystems of the spacecrafts, as well as the stakeholders, clients and costs analyses.

03/2019 – 06/2019

Sapienza Rocketry Challenge

Rocketry competition organized by Sapienza University of Rome in collaboration with Avio. The final goal was the realization of a mini-rocket, whose development was accompanied by detailed documentation (Preliminary Design Review/Critical Design Review/Post-Flight Analysis).

HONOURS AND AWARDS

Meritorious student – Sapienza University of Rome

Exemption from tuition fees achieved during both Bachelor's and Master's studies by virtue of marks always above 27/30.

COURSES

High performance computing courses at CINECA

Introduction to Parallel Computing with MPI and OpenMP - Julia High Performance

COMMUNICATION AND INTERPERSONAL SKILLS

Personal skills

- Rigorous and critical approach to scientific problems
- Hard-working mentality
- Ability to perform under pressure
- Passionate about rocket propulsion

Organizative and interpersonal skills

- Reliability in meeting deadlines
- Accurate and organized planning of work schedule
- Predisposition to teamwork
- At ease with public speaking

PUBLICATIONS

Low order modeling of combustion instability using a hybrid real/ideal gas mixture model

Zolla, P. M., Montanari, A., D'Alessandro, S., Pizzarelli, M., and Nasuti, F. “Low Order Modeling of Combustion Instability Using a Hybrid Real/Ideal Gas Mixture Model,” *9th European Conference for Aeronautics and Aerospace Sciences (EUCASS)*, Lille, France, 2022.

Sensitivity study on a low order model for the analysis of transverse combustion instability

Montanari, A., Zolla, P. M., D'Alessandro, S., Pizzarelli, M., Nasuti, F., Cavallini, E., and Pellegrini, R. C. “Sensitivity study on a low order model for the analysis of transverse combustion instability,” 10*th European Conference for Aeronautics and Aerospace Sciences (EUCASS)*, Lausanne, Switzerland, 2023.

T(H)RUST: applied research activities on liquid rocket propulsion at Sapienza University of Rome

Nasuti, F., Bianchi, D., Migliorino, M. T., Grossi, M., Fiore, M., Rotondi, M., Zolla, P. M., Latini, B., Fabiani, M., Cocirla, G., Sereno, A., Montanari, A., and Barbato, V. “T(H)RUST: applied research activities on liquid rocket propulsion at Sapienza University of Rome,” *IAC 2023*, Baku, Azerbaijan, 2023.

Low order modeling of combustion instability: a comprehensive analysis of the BKD test case

Zolla, P. M., Montanari, A., Grossi, M., Nasuti, F., Armbruster, W., Börner, M., and Hardi, J. S. “Low order modeling of combustion instability: a comprehensive analysis of the BKD test case,” *2024 AIAA SciTech Forum,* Orlando, Florida, 2024.

Low-order modeling approach for the prediction of transverse combustion instabilities in multi-injector engines

Zolla, P. M., Montanari, A., D’Alessandro, S., Pizzarelli, M., Nasuti, F., Pellegrini, R. C., and Cavallini, E. “Low-order modeling approach for the prediction of transverse combustion instabilities in multi-injector engines,” *CEAS Space Journal*, 2024, 1-23.

Computational Analysis of High-Altitude Test Facilities

Montanari, A., Migliorino, M. T., Nasuti, F., Bianchi, D., Kuzmich, I., and Bellomi, P. “Computational Analysis of High-Altitude Test Facilities,” *Space Propulsion Conference 2024,* Glasgow, Scotland, 2024.

Progresses in Applied Research on Liquid Rocket Propulsion by T(H)RUST Research Team at Sapienza University of Rome

Nasuti, F., Bianchi, D.,Migliorino, M. T., Grossi, M., Fiore, M., Zolla, P. M., Latini, B., Fabiani, M., Cocirla, G., Sereno, A., Montanari, A., Barbato, V. “Progresses in Applied Research on Liquid Rocket Propulsion by T(H)RUST Research Team at Sapienza University of Rome,” *IAC 2024*, Milan, Italy, 2024.

Nasuti, F., Bianchi, D.,Migliorino, M. T., Grossi, M., Fiore, M., Zolla, P. M., Latini, B., Fabiani, M., Cocirla, G., Sereno, A., Montanari, A., Barbato, V.

Comprehensive Analysis of the CVRC Test Case Using Low-Order Modeling of Combustion Instability

Zolla, P. M., Montanari, A., Grossi, M., Nasuti, F. "Comprehensive Analysis of the CVRC Test Case Using Low-Order Modeling of Combustion Instability," *2025 AIAA SciTech Forum,* Orlando, Florida, 2025.

Numerical Approach for Transient and Steady-State Analysis of Second-Throat Ejector-Diffuser Systems

Montanari, A., Migliorino, M. T., Bianchi, D., Nasuti, F. "Numerical Approach for Transient and Steady-State Analysis of Second-Throat Ejector-Diffuser Systems," *2025 AIAA SciTech Forum,* Orlando, Florida, 2025.