



Alessandro Montanari

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Gender: Male **Date of birth**: 16/05/1997 **Nationality**: Italian

WORK EXPERIENCE

[11/2023 – Current]

PhD Student in Aeronautical and Space Engineering

Department of Mechanical and Aerospace Engineering (DIMA) - Sapienza University of Rome

City: Rome

Country: Italy

Topic: Reduced models for combustion instabilities in space propulsion

[05/2022 – 09/2023]

Postgraduate Fellowship

Centre of Aerospace Research of Sapienza (CRAS) - Sapienza University of Rome

City: Rome

Country: Italy

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

EDUCATION AND TRAINING

[09/2019 – 03/2022]

Master's Degree in Space and Astronautical Engineering

Sapienza University of Rome

City: Rome

Country: Italy

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

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

[09/2016 – 12/2019]

Bachelor's Degree in Aerospace Engineering

Sapienza University of Rome

City: Rome

Country: Italy

Final grade: 110/110 cum Laude **Level in EQF**: EQF level 6

Thesis: Numerical Simulation of Ground Effect

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

[2011 – 2016]

High School Diploma

Liceo Scientifico Morgagni

City: Rome

Country: Italy

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 | MA TLAB

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Spanish

LISTENING B1 READING B1 WRITING B1

SPOKEN PRODUCTION B1 SPOKEN INTERACTION 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 Awarding institution: 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," *10th European Conference for Aeronautics and Aerospace Sciences (EUCASS)*, Lausanne, Switzerland, 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.