![europass logo] Curriculum vitae

PERSONAL INFORMATION Alessio Sereno

ACADEMIC AND WORK EXPERIENCE

November 2023 – present

PhD student

DIMA – Department of Mechanical and Aerospace Engineering – University of Rome "La Sapienza"
Via Eudossiana 18, Rome

Research topics:

– Computational fluid dynamics analysis of the internal ballistics and performance of hybrid rocket engines
– RANS turbulence modeling for swirling reactive flows

June 2024 – September 2024

Project-based consulting

CRAS – Centro di Ricerca Aerospaziale Sapienza - Center for Aerospace Research Sapienza
Via Eudossiana 18, Rome

Research and technological development on hybrid propulsion based on paraffin propellants.

March 2024 – June 2024

Project-based consulting

DIMA – Department of Mechanical and Aerospace Engineering – University of Rome "La Sapienza"
Via Eudossiana 18, Rome

Support activities for the design of supersonic nozzle profiles and related performance analysis through numerical simulations.

August 2023 – October 2023

Project-based consulting

CRAS – Centro di Ricerca Aerospaziale Sapienza - Center for Aerospace Research Sapienza
Via Eudossiana 18, Rome

Support activities for heat exchange analysis of flow-wall interaction in cooling channels of liquid-propellant space propulsion system thrusters (using CFD software and/or EcosimPro).

June 2022 – October 2023

Research fellowship

DIMA – University of Rome "La Sapienza"
Via Eudossiana 18, Rome

Main activities and research topics:

– Computational fluid dynamics modeling of supercritical cryogenic flows
– Conjugate heat transfer analysis in regenerative cooling systems for liquid rocket engines
– Multiphase and reactive flows simulation in solid rocket motors
– Design and optimization of cooling systems for liquid rocket engines

Sector Rocket propulsion

EDUCATION AND TRAINING

September 2019 – May 2022

Master's Degree in Space Engineering

University of Rome "La Sapienza", Rome, Via Eudossiana 18

Main subjects: Fluid Dynamics and Computational Fluid Dynamics, Solid Rocket Motors, Liquid Rocket Engines, Orbital Mechanics, Space Systems.

Thesis title: "Numerical Analysis of Solid Rocket Nozzle Performance with Two-Phase Flow Effects"

Mark: 110/110

September 2015 – September 2019   Bachelor's Degree in Aerospace Engineering

Politecnico di Milano, Milan, Via La Masa 37/B12

Main subjects: mathematics, physics and chemistry; solid mechanics, aerodynamics; orbital and flight mechanics, space missions analysis, propulsion systems.

Mark: 102/110

PERSONAL SKILLS

Mother tongue   Italian

Other languages

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
English
C1	C1	B2	B2	C1

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

Communication skills   Team work: I have worked in various types of teams, both for projects during the degree course and for research purposes. I am used to learn from others, and to share my knowledge/expertise.

Personal traits   I am passionate about my field of study and research, the space propulsion technology. I am a curious, enthusiastic person who likes to take on new challenges and learn.

COMPUTER SKILLS

Programming languages
– Fortran: proficient use, I have experience in developing and maintaining complex applications, both with recent and legacy standards.
– Matlab/Python: working knowledge, use for specific applications.
– C: basic knowledge.

Application software
– **CFD** Commercial software: CFD++/Ansys Fluent. For research purposes, I am used to work with/develop in-house finite volume solvers.
– **Meshing** Commercial software: Pointwise. Open-source software: GMSH. For research purposes, I am used to work with/develop *ad-hoc* meshing codes.
– **Post-processing** Commercial software: Tecplot 360.
– **CAD** Commercial software: Solidworks, Inventor, Solid Edge.

Operating systems
– Windows
– Linux (Ubuntu/SUSE)

Word processors
– Microsoft Office
– LaTeX

PUBLICATIONS

[1] Marco Grossi, Alessio Sereno, Daniele Bianchi, and Bernardo Favini. "Numerical Simulation of Multiphase Flows in Solid Rocket Motors Nozzles." In: *AIAA 2022-3270. AIAA AVIATION 2022 Forum.* (2022).

[2] Marco Grossi, Alessio Sereno, Daniele Bianchi, and Bernardo Favini. "Role of Finite-Rate Kinetics on the Performance Predictions of Solid Rocket Motor Nozzles." In: *AIAA SciTech 2023 Forum* (2023).

[3] Marco Grossi, Alessio Sereno, Daniele Bianchi, and Bernardo Favini. "Multiphase Effects on Solid Rocket Nozzle Performance". In: *Journal of Propulsion and Power* (2023), pp. 1–13.

[4] Matteo Fiore, Alessio Sereno, Daniele Bianchi, and Francesco Nasuti. "Cooling system design for an upper-stage aerospike". In: *International Symposium on Space Technology and Science, 3-9 June 2023 Kurume, Japan* (2023).

[5]   Alessio Sereno, Matteo Fiore, Daniele Bianchi, and Francesco Nasuti. "Cooling system analysis of a clustered module aerospike for upper-stage applications". In: *Aerospace Europe Conference 2023 – 10th EUCASS – 9th CEAS, Lausanne* (2023).

[6]   Francesco Nasuti, Daniele Bianchi, Mario Tindaro Migliorino, Marco Grossi, Matteo Fiore, Marco Rotondi, Paolo Maria Zolla, Beatrice Latini, Marco Fabiani, Gianluca Cocirla, Alessio Sereno, Alessandro Montanari, and Vincenzo Barbato. "T(H)RUST: applied research activities on liquid rocket propulsion at Sapienza University of Rome". In: *International Astronautical Conference 2023, Baku* (2023).

[7]   Vincenzo Barbato, Matteo Fiore, Alessio Sereno, and Francesco Nasuti. "Module performance and heat transfer analysis of a clustered annular aerospike nozzle". In: *Space Propulsion Conference 2024, Glasgow* (2024).

[8]   Mario Tindaro Migliorino, Marco Grossi, Marco Fabiani, Beatrice Latini, Matteo Fiore, Alessio Sereno, Daniele Bianchi, and Francesco Nasuti. "Conjugate heat transfer numerical simulations of a methane-oxygen liquid rocket engine". In: *Space Propulsion Conference 2024, Glasgow* (2024).

[9]   Alessio Sereno, Marco Fabiani, Mario Tindaro Migliorino, Daniele Bianchi, and Francesco Nasuti. "Numerical Modeling of Scale Effects in Paraffin-Hydrogen Peroxide Hybrid Rockets with Swirl Injection". In: *International Astronautical Conference 2024, Milan* (2024).

[10] Francesco Nasuti, Daniele Bianchi, Mario Tindaro Migliorino, Marco Grossi, Matteo Fiore, Paolo Maria Zolla, Beatrice Latini, Marco Fabiani, Gianluca Cocirla, Alessio Sereno, Alessandro Montanari, and Vincenzo Barbato. "Progresses in Applied Research on Liquid Rocket Propulsion by T(H)RUST Research Team at Sapienza University of Rome". In: *International Astronautical Conference 2024, Milan* (2024).