Curriculum vitae

Personal information:

Name: Marco Rotondi

Nationality: Italian

Work experiences:

2020 - present	**Ph.D. Student (Aeronautical and Space Engineering)** University of Rome, “La Sapienza”, Italy **Relevant activities:** • Conjugate CFD-material response simulations of ablation and shape change phenomena in HRE and SRM nozzles. • Research on the state-of-art of reduced models for ablation predictions in propulsive applications and subsequent models implementation and validation. • Implementation of reduced models for nozzle ablation in a propulsion system analysis tool (i.e., EcosimPRO-ESPSS).
2019 - 2020	**Research Fellow (Space Propulsion)** University of Rome, “La Sapienza”, Italy Post-graduate fellowship provided by CRAS (Centro Ricerca Aerospaziale Sapienza – Sapienza Aerospace research center) **Relevant activities:** • CFD simulations of ablation and shape change phenomena concerning HRE and SRM nozzles and re-entry vehicles. • Research on the state-of-art of high-temperature materials for propulsive applications (i.e., carbon-based ablatives and UHTCs). • Research on the state of the art of launcher noise reduction using water injection during static firing tests. Collaboration to the development of a quasi-1D model for rocket noise predictions including the effects of water injection. • Development of a quasi-1D model for the preliminary analysis and design of a supersonic scrubber for SRM particulate cleaning. • Collaboration to the feasibility study in the context of the “Aeronautica Militare” project “Air-launcher”.
2013 - 2014	**Swimming instructor** Centro Federale Nuoto, Frosinone, Italy

2011 - 2013	**Pool Lifeguard** Park Club Acquapark, Frosinone, Italy

Education and training:

2016 - 2019	**Master of science degree in Space and Astronautical Engineering (Launcher Curriculum)** University of Rome, "La Sapienza", Italy **Thesis title:** "Computational numerical analysis (CFD) of sublimation and shape change phenomena for atmospheric re-entry capsules" Thesis advisor: Prof. Daniele Bianchi Co-advisor: Dr. Mario Tindaro Migliorino **Grade:** 108/110
2013 - 2016	**Bachelor degree in Aerospace Engineering** University of Rome, "La Sapienza", Italy **Thesis title:** "Project and analysis of a hybrid rocket engine for an atmospheric sounding-rocket" Thesis advisor: Prof. Daniele Bianchi **Grade:** 105/110
2008 - 2013	**High school Diploma, Scientific high school** Liceo Scientifico "G.Sulpicio", Veroli (FR), Italy **Grade:** 100/100
2008 - 2010	**Music conservatory, Piano** Conservatorio di musica "L.Refice", Frosinone, Italy Piano: I and II level courses

Technical skills:

Programming languages known:
Fortran, Bash

Software and programmes:
MATLAB, Tecplot, CEA (Chemical Equilibrium with Applications), EcosimPRO-ESPSS, CFD in-house codes, OpenFOAM, PATO, Paraview, Gnuplot, Latex, Autodesk Fusion 360, Linux, Open Rocket, Microsoft Excel, Microsoft Windows, Power Point, Audacity

Languages:

Mother tongue: Italian

Other languages: English (C1), French (A2)

Certifications: English (EF Standard English Test: (www.efset.org/cert/BqW6gK))

Additional information:

Publications:	1) D. Bianchi, M. T. Migliorino, **M. Rotondi**, L. T. Kamps, and H. Nagata, "Numerical Analysis of Nozzle Heating and Erosion in Hybrid Rockets and Comparison with Experiments", AIAA Propulsion & Energy 2020 Forum, paper AIAA 2020-3767, Aug, 2020 **2) M. Rotondi**, M. T. Migliorino, D. Bianchi, P. Pagani, and A.Turchi, "Numerical and Experimental Analysis of Capsules Ablation and Shape Change including Heating Transient Effects", AIAA Propulsion & Energy 2020 Forum, paper AIAA 2020-3969, Aug, 2020
Projects:	1) **Research Consultant – University of Rome "La Sapienza":** Mono and Bi-propellant Flow Characterization in Generic Propulsion System (EcosimPRO – ESPSS) – in collaboration with ESA, Etamax, EAI Date: Apr 2020 - present 2) **Research Consultant – University of Rome "La Sapienza":** Generazione E project ("Ricerca e sperimentazione di Materiali, sistemi Diagnostici e di Controllo ambientale per i veicoli di trasporto spaziale di generazione Evoluta") Date: Dec 2019 - present
Experiences:	**Math and physics private lessons** for university and high school students Date: Jan 2020 – Jan 2021 **NASA** International **Space Apps** challenge Date: Apr 2016 European **BEST** (Board of European Students of Technology) **Engineering competition** Date: Dec 2015 **Math private lessons** for high school students Date: Sept 2014 – Jun 2015 **Parish summer camp Organizer** Date: Jul 2014 – Sept 2014
Courses/Certifications:	1) **edX course – Hypersonics: from Shock Waves to Scramjets** Provided by The University of Queensland, Australia Date: Aug 2019 – Sept 2019 2) **EF SET Standard English Test** English level: **C1 Advanced** Certificate: www.efset.org/cert/BqW6gK Date: Aug 2019 – present 3) **Certificate PEGASUS** (European Network of Exellence in Aerospace Engineering Education) University of Rome "La Sapienza" Date: Jul 2019 – present

4) **OSNAP course: Autodesk Fusion 360** Autorized Academic Partner
Certificate N° EM040709763594370588
Date: Nov 2018 - Dec 2018

5) **Basic swimming instructor (FIN)** course
Date: Jan 2013 - Mar 2013

6) P and MIP – **International pool and Surf Lifeguard (FIN)** course
Date: Jan 2011 - Mar 2011