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Marco Grossi

Nationality: Italian

ABOUT ME

PhD student in Aerospace Engineering with research work focused on solid rocket propulsion. Involved in teaching activities and contractual tasks with high-profile international agencies and industrial companies.

WORK EXPERIENCE

Research Contractor
DIMA, Sapienza University of Rome [02/2021 – Current]

City: Rome
Country: Italy

Technical Support Activities for VEGA-C, VEGA-E, and P120C, financed by ESA ESRIN
- Investigation of ballistic performance and unsteady behavior during the static firing tests of VEGA-C second stage Z40.
- CFD analysis of the internal ballistics of Vega Z9A motor to assess multiphase effects on the nozzle performances.

Research Contractor
DIMA, Sapienza University of Rome [01/2020 – 07/2020]

City: Rome
Country: Italy

Technical Support to P120C QM2 Static Firing Test, financed by ESA Headquarters
- Cross-check analysis and risk assessment regarding ignition transient and quasi-steady-state pressure oscillations phenomena in the frame of P120C solid rocket motor firing tests.

Research Contractor
DIMA, Sapienza University of Rome [07/2018 – 12/2018]

City: Rome
Country: Italy

Technical Support Activities for VEGA-C, VEGA-E and P120C, financed by ESA ESRIN
- Analysis of ballistic performance, unsteady behaviour and extrapolation to flight unit of the first static firing test of VEGA-C second stage Z40.

Graduate Research Fellow
DIMA, Sapienza University of Rome [06/2018 – 11/2018]

City: Rome
Country: Italy

Numerical and theoretical study of acoustics phenomena in aft-finocyl solid rocket motors by means of Q1D modelling.

EDUCATION AND TRAINING

Ph.D. Course in Aeronautics and Space Engineering

Sapienza University of Rome [11/2018 – Current]

Address: Rome (Italy)

Research activity is mainly focused on pressure oscillations occurring in solid rocket motors. Both CFD and Q1D approaches are employed, exploiting fully reagent multi-phase modelling in order to take care of flow-field phenomenology.Other solid propulsion topics as ignition transient, internal ballistic flow and performance evaluations are addressed in the research work.

Master Degree in Space and Astronautical Engineering

Sapienza University of Rome [10/2014 – 01/2018]

Address: Rome (Italy)

Final grade : 110/110 cum laude

Thesis: Numerical Simulation of SRMs Internal Ballistic Flow by means of an Immersed Boundary Method

Fundamental Teachings: Solid and Liquid Propulsion, Gasdynamics, Space Flight Mechanics, Aerospace Structures, Control Systems
Awards: Excellent Graduate Student

Bachelor Degree in Aerospace Engineering

Sapienza University of Rome [10/2011 – 11/2014]

Address: Rome (Italy)

LANGUAGE SKILLS

Mother tongue(s): **Italian**

Other language(s):

English

LISTENING B2 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

DIGITAL SKILLS

Programming

UNIX Shell script / Fortran (professional experience)

Development Environment

MATLAB&Simulink / Intel VTune Profiler / GIT (GitHub)

Scientific Applications

ParaView / FreeCAD / TecPlot360 (Optimal Knowledge) / GMSH

Office Applications

MS office/Latex; (Full proficiency, daily use)

TEACHING EXPERIENCE

Master Degree in Space and Astronautical Engineering at Sapienza University of Rome

[2020 – Current]

- Solid Rocket Motors Ignition System

Master in Space Transportation System at Sapienza University of Rome

[2018 – Current]

- Solid Rocket Motor Ignition Transient
- Pressure and Thrust Oscillations in Solid Rocket Motors

PUBLICATIONS

Aerothermoacoustics Q1D Modeling for Solid Rocket Motors Instabilities

[2022]

Grossi, M., Bianchi, D., Favini, B., AIAA Scitech Forum

Numerical Simulation of Thermoacoustic Phenomena in Aft-Finocyl Solid Rocket Motors

[2021]

Grossi, M., Bianchi, D., Favini, B., AIAA Propulsion and Energy 2021 Forum

Thermoacoustics Q1D Modeling in Solid Rocket Motors

[2021]

Grossi, M., Bianchi, D., Favini, B., AIAA Propulsion and Energy 2021 Forum

Analysis and Reconstruction of Zefiro 40 Solid Rocket Motor Static Firing Tests and Extrapolation to Flight

[2021]

Bianchi, D., Grossi, M., Favini, B. et al., AIAA Propulsion and Energy 2021 Forum

Modeling Multiphase Effects on Pressure Oscillations in Solid Propulsion

[2020]

Grossi, M., Bianchi, D., Favini, B., AIAA Propulsion and Energy 2020 Forum

Static Firing Ballistic Reconstruction Modelling and Performance Extrapolation to Flight in SRMs

[2020]

Bianchi, D., Grossi, M., Favini, B. et al., AIAA Propulsion and Energy 2020 Forum

Quasi-one Dimensional Model of Pressure Oscillations in Aft-Finocyl Solid Rocket Motors: a Critical Evaluation of Alternative Closure Sub-Models and Calibrations

[2019]

Grossi, M., Laureti, M., Favini, B., AIAA Propulsion and Energy 2019 Forum

Aerodynamically Generated Acoustic Resonance Model Revisited and Refurbished

[2019]

Grossi, M., Laureti, M., Favini, B., EUCASS 2019

Immersed Boundary Method and Centered Scheme for the Study of Aero-Acoustic Field in SRMs
[2018]

Laureti, M., Grossi, M., Rossi, G., Favini, B., Space Propulsion 2018