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Jacopo Liberatori

EDUCATION AND TRAINING

PhD in Aeronautics and Space Engineering

Università degli Studi di Roma "La Sapienza" [2020 – Current]

Level in EQF : EQF level 8

National classification : Third Cycle

Conference Papers and Journal Publications:

- Liberatori J. et al., *"Uncertainty Quantification Analysis of Spray Swirling Jets Undergoing Vortex Breakdown"*, International Journal of Spray and Combustion Dynamics, accepted for publication (2023)
- Liberatori J. et al., *"Direct numerical simulation of Vortex Breakdown in Evaporating Dilute Sprays"*, Flow Turbulence and Combustion, accepted for publication (2023)
- Liberatori J. et al., *"CSP-Driven Optimization of a 16-Species Skeletal Mechanism for Methane Ignition at High Pressure"*, AIAA SCITECH 2023 Forum, AIAA 2023-1101, National Harbor MD & ONLINE (2023)
- Cavalieri, D., Liberatori J. et al., *"Unsteady RANS Simulation with Uncertainty Quantification of a Spray Combustor Under Liquid Rocket Engine Conditions"*, AIAA SCITECH 2023 Forum, AIAA 2023-2148, National Harbor MD & ONLINE (2023)
- Liberatori J. et al., *"Uncertainty Quantification Analysis of Spray Swirling Jets Undergoing Vortex Breakdown"*, 12th Mediterranean Combustion Symposium, Luxor, Egypt (2023)
- Liberatori J. et al., *"A Family of Skeletal Reaction Mechanisms for Methane Oxygen Mixtures at High Pressure"*, Journal of Propulsion and Power, submitted for publication (2023)
- Liberatori J. et al., *"A Family of Skeletal Mechanisms for Methane Oxidation at High Pressure"*, 44th Meeting of the Italian Section of the Combustion Institute, Naples, Italy (2022)
- Angelilli, L., Liberatori J. et al., *"An improved dispersion model for LES of highly dispersed spray jet"*, ILASS-Americas 32nd Annual Conference on Liquid Atomization and Spray Systems, Madison, Wisconsin, USA (2022)
- Liberatori J. et al., *"Uncertainty quantification in RANS of LOX-CH4 pintle injector"*, 13th Asia-Pacific Conference on Combustion 2021, Abu Dhabi, UAE (2021)
- Liberatori J. et al., *"Uncertainty Quantification Analysis of RANS of Spray Swirling Jets"*, Eighteenth International Conference on Flow Dynamics, VIRTUAL EVENT (2021)
- Liberatori J. et al., *"Uncertainty quantification in RANS of LOX-CH4 pintle injector"*, 43rd Meeting of the Italian Section of the Combustion Institute, Ischia, Italy (2021)
- Liberatori J. et al., *"Uncertainty quantification in RANS prediction of LOX cross-flow injection in methane"*, AIAA Propulsion and Energy 2021 Forum, AIAA 2021-3570, VIRTUAL EVENT (2021)

Work Experience:

- November 2022 - now
  Baker Hughes – Università di Pisa – Università degli Studi di Roma La Sapienza
  Chemical kinetics of ammonia-hydrogen blends
  PIs : Prof. C. Galletti, Prof. P.P. Ciottoli
- June 2022 - now
  Vertue V2K-pf project, Finis Terrae S.R.L.
  Combustion and Injector
  PIs : Prof. F. Nasuti, Prof. D. Bianchi, Prof. P.P. Ciottoli
- January 2022 - now
  EVACPRO – URome, European Space Agency (ESA)
  Chemical Modelling of Reactions and Processes in Propellant Systems
  PIs : Prof. F. Nasuti, Prof. D. Bianchi, Prof. P.P. Ciottoli
- October 2020 - now
  Development of CFD combustion models within the OpenFOAM toolbox, AVIO S.p.A
  LOX/CH4 combustion characterization of a pintle-injector liquid rocket engine thrust chamber under subcritical conditions
  PI : Prof. M. Valorani

Teaching:

- February 2022 - now
  Tutor in Motori Aeronautici
  Course in Master's Degree in Aeronautical Engineering
- February 2022 - now
  Teaching assistant in Laboratorio di Propulsione Aeronautica
  Laboratory Course in Bachelor's Degree in Aerospace Engineering
- October 2020 - now
  Combustion Thesis Co-Supervisor
  Master's Degree in Aeronautical Engineering
- October 2020 - now
  Combustion Thesis Co-Supervisor
  Bachelor's Degree in Aerospace Engineering

Training Courses:

- November 2020 – December 2020
  Fundamentals of Turbulent Combustion
  Referent Teachers : Dr. Thierry Poinsot, Dr. D. Veynante

Master's Degree in Mechanical Engineering

Università degli Studi di Roma "La Sapienza" [2018 – 2020]

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

National classification : Second Cycle

Thesis : Numerical analysis of a double swirl burner under isothermal conditions
Advisor : Prof. P.P. Ciottoli

Bachelor's Degree in Mechanical Engineering

Università degli Studi di Roma "La Sapienza" [2015 – 2018]

Final grade : 110/110 - **Level in EQF :** EQF level 6

National classification : First Cycle

Thesis : Metodi di raccolta e analisi di dati per la gestione degli impianti a fonti rinnovabili
Advisor : Prof. A. Corsini

High School Diploma (scientific studies)

Collegio San Giuseppe - Istituto De Merode [2010 – 2015]

Final grade : 100/100 cum Laude

LANGUAGE SKILLS

Mother tongue(s):

Italian

English

LISTENING: C1 **READING:** C1 **WRITING:** C1

SPOKEN PRODUCTION: C1

SPOKEN INTERACTION: C1

Spanish

LISTENING: B2 **READING:** B2 **WRITING:** B1

SPOKEN PRODUCTION: B1 **SPOKEN INTERACTION:** B1

Romanian

LISTENING: B2 **READING:** B2 **WRITING:** B1

SPOKEN PRODUCTION: B1 **SPOKEN INTERACTION:** B1

DIGITAL SKILLS

Working knowledge with the following OS: Mac, Windows, Unix-based / Programming skills in: Python, MATLAB, Julia, C++, Wolfram Mathematica / Working knowledge with the following CFD softwares: OpenFOAM, Ansys FLUENT / Working knowledge with the following CAD softwares: SolidEdge, SolidWorks, Autodesk Fusion360 / Working knowledge with the following CFD post-processing softwares: Tecplot, ParaView / Working knowledge with the multidisciplinary design optimization platform modeFRONTIER / Working knowledge with the chemical kinetics software Cantera

Roma, 20/05/2023