Academic CV

Capriati Michele
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1 September 2022

Born on 24 June 1991
Nationality: Italian

Education:

2018-2019 Master-after-master (Research Master in Fluid Dynamics) at the von Karman Institute for Fluid Dynamics (Belgium)
Final mark: 86/100

2015-2018 Master's Degree in Mechanical Engineering at Politecnico di Bari (Italy)
Final mark: 110/110

2010-2015 Bachelor's Degree in Mechanical Engineering at Politecnico di Bari (Italy)
Final mark: 100/110

Internships and experience:

2020-Current PhD candidate at Ecole Polytechnique in collaboration with the von Karman Institute under the supervision of Professor Pietro Congedo and Professor Thierry Magin.
Work topic: Robust numerical characterization of entry flow conditions in ground testing facilities.

2019-2020 Research fellow at the von Karman Institute under the supervision of Professor Thierry Magin. Work topic: ablation models in CFD and hypersonic simulations.

2019 One-month visiting researcher at the University of Minnesota (USA) under the supervision of Professor Thomas Schwartzentruber and Professor Graham Candler.
Work topic: finite-rate chemistry models for surface ablation and transport models for gas-phase.

2017 Seven months internship at the von Karman Institute under the supervision of Professor Thierry Magin and Professor Giuseppe Pascazio.
Work topic: radiative transfer properties.

2014-2015 Four months of laboratory work at Politecnico di Bari under the supervision of Professor Sergio Camporeale.
Work topic: thermofluid-dynamics design.

Research reports:

2019 *Modeling of thermal nonequilibrium in gas-surface interaction phenomena for ablative materials*. Research master thesis project, von Karman Institute.

2018 *Extension and verification of a Monte Carlo ray tracing algorithm using the hybrid statistical narrow band model*. Master thesis project, Politecnico di Bari and von Karman Institute.

2015 *Study of a combined cycle with solar integration*. Bachelor's thesis project, Politecnico di Bari.

Collaboration in Project reports:

2022 *PLASMUT – Nonequilibrium Gas-Surface Interactions at High Temperature*. AFOSR Award number FA9550-18-1-0209.

Supervising activities:

Co-supervised 2 students in the Research Master Program at von Karman Institute (G. Kale, C. Vigh) and 4 internets (M. Geratz, S. Centorame, G. Baraton, D. Grottola).

Teaching activities:

2020-2022 Teaching assistant: Physico-Chemical Models for Atmospheric Entry flow, Aeronautics and Aerospace Department, VKI

Journal publications:

CAPRIATI, M, CORTESI, A., MAGIN, T., CONGEDO, P. *Stagnation point heat flux characterization under numerical error and boundary conditions uncertainty*. European Journal of Mechanics / B Fluids, 2022.

Proceedings:

CAPRIATI, M., BELLAS-CHATZIGEORGIS, G., TURCHI, A., HELBER, B., MAGIN, T. *Thermal non-equilibrium modeling for ablative gas-surface interaction*, HiSST, 2022, Bruges, Belgium.

CAPRIATI, M., TURCHI, A., CONGEDO, P., MAGIN, T. *Heat flux characterization of an under-expanded/supersonic plasma jet over a catalytic probe*, EUCASS, 2022, Lille, France.

GERATZ, M., CAPRIATI, M, GROSSIR, G., MAGIN, T. *Influence of Physical Models on the Numerical Modeling of Hypersonic Nozzle Flow Expansion*, EUCASS, 2022, Lille, France.

BASKAYA, A.O., CAPRIATI, M., NINNI, D., BONELLI, F., PASCAZIO, G., TURCHI, A., MAGIN, T., HICKEL, S., *Verification and Validation of Immersed Boundary Solvers for Hypersonic Flows with Gas-Surface Interactions,* AIAA AVIATION, 2022, Chicago, IL & Virtual.

GARBACZ, C., MORGADO, F., FOSSATI, M., SCOGGINS, J., MAGIN, T., CAPRIATI, M. *Influence of Thermochemical Modelling of CO2-N2 Mixtures on the Shock Interaction Patterns at Hypersonic Regimes,* AIAA AVIATION, 2021, Virtual.

CAPRIATI, M., PRATA, K., SCHWARTZENTRUBER, T., CANDLER, G., MAGIN, T. *Development of a nitridation gas-surface boundary condition for high-fidelity hypersonic simulations*, ECCOMAS, 2021, Virtual.

Poster:
CAPRIATI, M., TURCHI, A., CONGEDO, P., MAGIN, T. *Multi-Fidelity characterization of an under-expanded/supersonic high-enthalpy jet under uncertainty.* Ablation workshop, 2022, Lexington.

Skills:

Languages:	Italian (native), English (fluent), Spanish (fluent), and French (basic)
Operating systems:	Linux, Windows
Programming:	Fortran, C, C++, python, and MATLAB
Others:	Git, Latex, PowerPoint, Ansys ICEM, academic CFD solvers, and UQ tools