

PUBLICATIONS

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1) Publications

I report here the list of publications on different topics : uncertainty quantification methods, robust optimization methods, numerical simulation of turbulent real-gas flows, in particular for ORC-based cycles and for aerospace/aeronautics applications (atmospheric reentry, helicopter rotor, etc). Note that I work in a group where papers are usually co-authored. In several publications, authors are listed by alphabetical order, following the convention used in the French applied mathematics community. The other publications are mainly with my students. Note that the most part of publications are on high quality journals ($IF > 1.5$) and conferences.

1. Revues internationales/*International journals*

81. Giulio Gori, Olivier Le Maitre, and Pietro M. Congedo, Debaised Multifidelity Approach to Surrogate Modeling in Aerospace Applications. **Journal of Aircraft** 0 0:0, 1-14, 2025.
80. Michele Capriati, Anabel del Val, Thomas E. Schwartzentruber, Timothy K. Minton, Pietro M. Congedo, and Thierry E. Magin, Combining Molecular Beam and Plasmatron Data for Robust Calibration of Nitridation Mechanism. **AIAA Journal** 0 0:0, 1-15, 2025.
79. Omar Kahol, Pietro Marco Congedo, Olivier Le Maitre, Enora Denimal Goy, Efficient treatment of the model error in the calibration of computer codes: the Complete Maximum a Posteriori method. **International Journal for Uncertainty Quantification** Volume 15, pages 57-76, 2025.
78. H. Dornier, O. Le Maitre, P.M. Congedo, I. Salah el Din, J. Marty, S. Bourasseau, Mean mesh adaptation for efficient CFD simulations with operating conditions variability. **Computers & Fluids** Volume 298, 15 August 2025, 106666, 2025.
77. F. Girault, F.T. Herrador, B. Helber, A. Turchi, T. Magin, P.M. Congedo, Stochastic mesoscale characterization of ablative materials for atmospheric entry. **Applied Mathematical Modelling** 135, 745-758, 2024.
76. M. Capriati, A. Turchi, P.M. Congedo, T.E. Magin, Holistic characterization of an under-expanded high-enthalpy jet under uncertainty. **Physics of Fluids** 36 (6), 2024.
75. M. Rivier, N. Razaaly, P.M. Congedo, Non-parametric measure approximations for constrained multi-objective optimisation under uncertainty. **International Journal for Numerical Methods in Engineering** 125 (7), e7403, 2024.
74. P. Novello, G. Poette, D. Lugato, S. Peluchon, P.M. Congedo, Accelerating hypersonic reentry simulations using deep learning-based hybridization (with guarantees). **Journal of Computational Physics** 498, 112700, 2024.
73. M. Gallia, B. Arizmendi Gutierrez, G. Gori, A. Guardone, P.M. Congedo, Robust Optimization of a Thermal Anti-Ice Protection System in Uncertain Cloud Conditions. **Journal of Aircraft** 61 (1), 43-57, 2024.
72. N. Leoni, O. Le Maitre, M.G. Rodio, P.M. Congedo, Bayesian calibration with adaptive model discrepancy. **International Journal for Uncertainty Quantification** 14 (1), 2024.
71. A. del Val, T.E. Magin, P.M. Congedo, Quantification of model-form uncertainties affecting the calibration of a carbon nitridation model by means of Bayesian Model Averaging. **International Journal of Heat and Mass Transfer** 213, 124271, 2023.
70. P. Novello, G. Poette, D. Lugato, P.M. Congedo, Goal-oriented sensitivity analysis of hyperparameters in deep learning. **Journal of Scientific Computing** 94 (3), 45, 2023.
69. E. Solai, H. Beaugendre, U. Bieder, P.M. Congedo, Accuracy assessment of an internal resistance model of Li-ion batteries in immersion cooling configuration. **Applied Thermal Engineering** 220, 119656, 2023.
68. A. del Val, O.P. Le Maitre, P.M. Congedo, T.E. Magin, Stochastic calibration of a carbon nitridation model from plasma wind tunnel experiments using a Bayesian formulation. **Carbon** 200, 199-214, 2022.
67. G. Gori, O. Le Maitre, P.M. Congedo, A confidence-based aerospace design approach robust to structural turbulence closure uncertainty. **Computers & Fluids** 246, 105614, 2022.
66. M. Capriati, A. Cortesi, T.E. Magin, P.M. Congedo, Stagnation point heat flux characterization under numerical error and boundary conditions uncertainty. **European Journal of Mechanics-B/Fluids** 95, 221-230, 2022.
65. E. Solai, M. Guadagnini, H. Beaugendre, R. Daccord, P.M. Congedo, Validation of a data-driven fast numerical model to simulate the immersion cooling of a lithium-ion battery pack. **Energy** 249, 123633, 2022.

64. G. Gori, P.M. Congedo, O. Le Maitre, T. Bellosta, A. Guardone, Modeling in-flight ice accretion under uncertain conditions. **Journal of Aircraft** 59 (3), 799-813, 2022.
63. A. Fracassi, R. De Donno, A. Ghidoni, P.M. Congedo, Shape optimization and uncertainty assessment of a centrifugal pump. **Engineering Optimization** 54 (2), 200-217, 2022.
62. P. Bacigaluppi, J. Carlier, M. Pelanti, P.M. Congedo, R. Abgrall, Assessment of a non-conservative four-equation multiphase system with phase transition. **Journal of Scientific Computing** 90, 1-28, 2022.
61. A. del Val, O.P. Le Maitre, T.E. Magin, O. Chazot, P.M. Congedo, A surrogate-based optimal likelihood function for the Bayesian calibration of catalytic recombination in atmospheric entry protection materials, **Applied Mathematical Modelling** 101, 791-810, 2022.
60. P. Novello, G. Poette, D. Lugato, P.M. Congedo, Leveraging local variation in data: sampling and weighting schemes for supervised deep learning. **Journal of Machine Learning for Modeling and Computing** 3 (1), 2022.
59. M. Rivier, P.M. Congedo, Surrogate-assisted bounding-box approach applied to constrained multi-objective optimisation under uncertainty. **Reliability Engineering & System Safety** 217, 108039, 2022.
58. G. Gori, O.P. Le Maitre, P.M. Congedo, On the sensitivity of structural turbulence uncertainty estimates to time and space resolution. **Computers & Fluids** 229, 105081, 2021.
57. C. Sabater, O. Le Maitre, P.M. Congedo, S. Gortz, A Bayesian approach for quantile optimization problems with high-dimensional uncertainty sources. **Computer Methods in Applied Mechanics and Engineering** 376, 113632, 2021.
56. J.F. Dos Reis, O.P. Le Maitre, P.M. Congedo, P. Mycek, Stochastic Preconditioning of Domain Decomposition Methods for Elliptic Equations with Random Coefficients. **Computer Methods in Applied Mechanics and Engineering** 381, 113845, 2021.
55. F. Fusi, P.M. Congedo, A. Guardone, G. Quaranta, Assessment of robust optimization for design of rotorcraft airfoils in forward flight. **Aerospace Science and Technology** 107, 106355, 2020.
54. N. Razaaly, P.M. Congedo, Extension of AK-MCS for the efficient computation of very small failure probabilities. **Reliability Engineering & System Safety** 203, 107084, 2020.
53. G. Gori, M. Zocca, A. Guardone, O.P. Le Maitre, P.M. Congedo, Bayesian inference of thermodynamic models from vapor flow experiments. **Computers & Fluids** 205, 104550, 2020.
52. N. Razaaly, G. Gori, G. Persico, P.M. Congedo, Quantile-based robust optimization of a supersonic nozzle for Organic Rankine Cycle turbines. **Applied Mathematical Modelling**, 82, 802-824, 2020.
51. N. Razaaly, D. Crommelin, P.M. Congedo, Efficient Estimation of Extreme Quantiles using Adaptive Kriging and Importance Sampling. **International Journal for Numerical Methods in Engineering**, 121 (9), 2086-2105, 2020.
50. A. Cortesi, P. Constantine, T. Magin, P.M. Congedo, Forward and backward uncertainty quantification with active subspaces: Application to hypersonic flows around a cylinder. **Journal of Computational Physics** Vol. 407, 2020, 109079.
49. G. Gori, M. Zocca, G. Cammi, A. Spinelli, P.M. Congedo, A. Guardone, Accuracy assessment of the Non-Ideal Computational Fluid Dynamics model for siloxane MDM from the open-source SU2 suite, **European Journal of Mechanics - B/Fluids**, Volume 79, Pages 109-120, 2020.
48. M Rivier, PM Congedo, Surrogate-assisted Bounding-Box approach for optimization problems with tunable objectives fidelity. **Journal of Global Optimization** 75, 1079-1109, 2019.
47. F. Sanson, O. Le Maitre, P.M. Congedo, Systems of Gaussian process models for directed chains of solvers, **Computer Methods in Applied Mechanics and Engineering**, Volume 352, Pages 32-55, 2019.
46. F. Sanson, C. Bertorello, J.-M. Bouilly, P.M. Congedo, Breakup prediction under uncertainty : application to upper stage controlled reentries from GTO orbit, **Aerospace Science and Technology**, Volume 87, April 2019, Pages 340-356, 2019.
45. A. Romei, G. Persico, P.M. Congedo, Assessment of Deterministic Shape Optimizations within a Stochastic Framework for Supersonic Organic Rankine Cycle Nozzle Cascades. **Journal of Engineering for Gas Turbines and Power**, 141(7): 071019, 2019.

44. M Rivier, J Lachaud, PM Congedo, Ablative thermal protection system under uncertainties including pyrolysis gas composition. **Aerospace Science and Technology** 84, 1059-1069, 2019.
43. N. Razaaly, G. Persico, P.M. Congedo, Impact of geometric, operational, and model uncertainties on the non-ideal flow through a supersonic ORC turbine cascade. **Energy** 169, 213-227, 2019.
42. A. Cortesi, G. El Jannoun, P.M. Congedo, Adaptive Kriging-sparse Polynomial Dimensional Decomposition meta-model for expensive computer codes. **Journal of Computational Physics** 380, 212-242, 2019.
41. F. Sanson, F. Panerai, T. Magin, P.M. Congedo, Robust reconstruction of the catalytic properties of thermal protection materials from sparse high-enthalpy facility experimental data. **Experimental Thermal and Fluid Science** Volume 96, September 2018, Pages 482-492.
40. F. Fusi, P.M. Congedo, A. Guardone, G. Quaranta, Shape optimization under uncertainty of morphing airfoils. **Acta Mechanica** 229 (3), 1229-1250, 2018.
39. N. Razaaly, P.M. Congedo, Novel algorithm using Active Metamodel Learning and Importance Sampling: application to multiple failure regions of low probability. **Journal of Computational Physics** Volume 368, 1 September 2018, Pages 92-114.
38. N. Razaaly, G. Persico, P.M. Congedo, Uncertainty Quantification of an ORC turbine blade under a low quantile constraint, **Energy Procedia**, Volume 129, September 2017, Pages 1149-1155.
37. N. Razaaly, P.M. Congedo, Computation of tail probabilities for non-classical gasdynamic phenomena. **Journal of Physics Conference Series**, 2017, Volume 821, Number 1.
36. M.G. Rodio, R. Abgrall, P.M. Congedo, Numerical simulation of cavitating flows under uncertainty. **Journal of Physics Conference Series**, 2017, Volume 821, Number 1.
35. P.M. Congedo, J. Melis, R. Daccord, Numerical characterization under uncertainties of a piston expander for exhaust heat recovery on heavy commercial vehicles. **Journal of Physics Conference Series**, 2017, Volume 821, Number 1.
34. F. Sanson, N. Villedieu, O. Chazot, T. Magin, F. Panerai, P.M. Congedo, Quantification of uncertainty on the catalytic property of reusable thermal protection materials from high enthalpy experiments. **Experimental Thermal and Fluid Science** 82 (2017) 414-423.
33. A. Turchi, P.M. Congedo, T. Magin, Thermochemical ablation modeling forward uncertainty analysis-Part I: Numerical methods and effect of model parameters. **International Journal of Heat and Mass Transfer**, Volume 118, August 2017, Pages 497-509.
32. A. Turchi, P.M. Congedo, T. Magin, Thermochemical ablation modeling forward uncertainty analysis-Part II: Application to plasma wind-tunnel testing. **International Journal of Heat and Mass Transfer**, Volume 118, August 2017, Pages 510-517.
31. K. Tang, P.M. Congedo, R. Abgrall, Adaptive surrogate modeling by ANOVA and sparse polynomial dimensional decomposition for global sensitivity analysis in fluid simulation. **Journal of Computational Physics**, Volume 314, 1 June 2016, Pages 557-589.
30. R. Abgrall, P.M. Congedo, G. Geraci, G. Iaccarino, High-order statistics in global sensitivity analysis: decomposition and model reduction. **Computer Methods in Applied Mechanics and Engineering**, Volume 301, 1 April 2016, Pages 80-115.
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28. R. Abgrall, P.M. Congedo, G. Geraci, Towards a unified multiresolution scheme for treating discontinuities in differential equations with uncertainties. **Mathematics and Computers in Simulation**, 2016, <http://dx.doi.org/10.1016/j.matcom.2016.02.002>.
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25. F. Fusi, P.M. Congedo, A. Guardone, G. Quaranta, Multifidelity Physics-Based Method for Robust Optimization Applied to a Hovering Rotor Airfoil. **AIAA Journal**, 2015, Vol.53: 3448-3465.
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22. K. Tang, P.M. Congedo, R. Abgrall, Sensitivity analysis using anchored ANOVA expansion and high order moments computation. **International Journal for Numerical Methods in Engineering** 2015, Volume 102, Issue 9, June 2015, pages 1554-1584.
21. R. Abgrall, P.M. Congedo, D. De Santis, N. Razaaly, A non-linear residual distribution scheme for real-gas computations. **Computers & Fluids** 2014, 102, pp. 148-169.
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15. P.M. Congedo, G. Geraci, R. Abgrall, V. Pediroda, L. Parussini, 2013, TSI metamodels-based multi-objective robust optimization. **Engineering Computations** 30, 8.
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