Mauro Valorani

List of Publications by Year
in descending order

81	1,679	304743 22	302126 39
papers	citations	h-index	g-index

81	81	81	605
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	An automatic procedure for the simplification of chemical kinetic mechanisms based on CSP. Combustion and Flame, 2006, 146, 29-51.	5.2	181
2	CSP analysis of a transient flame-vortex interaction. Combustion and Flame, 2003, 134, 35-53.	5.2	131
3	Explicit Time-Scale Splitting Algorithm for Stiff Problems: Auto-ignition of Gaseous Mixtures behind a Steady Shock. Journal of Computational Physics, 2001, 169, 44-79.	3.8	90
4	Higher order corrections in the approximation of low-dimensional manifolds and the construction of simplified problems with the CSP method. Journal of Computational Physics, 2005, 209, 754-786.	3.8	75
5	An efficient iterative algorithm for the approximation of the fast and slow dynamics of stiff systems. Journal of Computational Physics, 2006, 214, 316-346.	3.8	59
6	Analysis of methaneâ€“air edge flame structure. Combustion Theory and Modelling, 2010, 14, 257-294.	1.9	57
7	Skeletal mechanism generation and analysis for n-heptane with CSP. Proceedings of the Combustion Institute, 2007, 31, 483-490.	3.9	55
8	The G-Scheme: A framework for multi-scale adaptive model reduction. Journal of Computational Physics, 2009, 228, 4665-4701.	3.8	54
9	Structure of n-heptane/air triple flames in partially-premixed mixing layers. Combustion and Flame, 2011, 158, 2128-2144.	5.2	52
10	Reactive and reactive-diffusive time scales in stiff reaction-diffusion systems. Progress in Computational Fluid Dynamics, 2005, 5, 316.	0.2	50
11	Computational characterization of ignition regimes in a syngas/air mixture with temperature fluctuations. Proceedings of the Combustion Institute, 2017, 36, 3705-3716.	3.9	48
12	Skeletal mechanism generation with CSP and validation for premixed n-heptane flames. Proceedings of the Combustion Institute, 2009, 32, 509-517.	3.9	42
13	Dynamical system analysis of ignition phenomena using the Tangential Stretching Rate concept. Combustion and Flame, 2015, 162, 2963-2990.	5.2	39
14	Tangential stretching rate (TSR) analysis of non premixed reactive flows. Proceedings of the Combustion Institute, 2017, 36, 1357-1367.	3.9	36
15	A CSP and tabulation-based adaptive chemistry model. Combustion Theory and Modelling, 2007, 11, 73-102.	1.9	35
16	Classification of ignition regimes in HCCI combustion using computational singular perturbation. Proceedings of the Combustion Institute, 2011, 33, 2991-2999.	3.9	35
17	Chemical model reduction under uncertainty. Combustion and Flame, 2017, 179, 242-252.	5.2	35
18	Investigation of the turbulent flame structure and topology at different Karlovitz numbers using the tangential stretching rate index. Combustion and Flame, 2019, 200, 155-167.	5.2	35

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19	Analysis of n-heptane auto-ignition characteristics using computational singular perturbation. Proceedings of the Combustion Institute, 2013, 34, 1125-1133.	3.9	32
20	The origin of CEMA and its relation to CSP. Combustion and Flame, 2021, 227, 396-401.	5.2	31
21	CSP-based chemical kinetics mechanisms simplification strategy for non-premixed combustion: An application to hybrid rocket propulsion. Combustion and Flame, 2017, 186, 83-93.	5.2	29
22	Enhancements of the G-Scheme Framework. Flow, Turbulence and Combustion, 2018, 101, 1023-1033.	2.6	25
23	Optimization methods for non-smooth or noisy objective functions in fluid design problems. , 1995, , .		24
24	Stretching-based diagnostics and reduction of chemical kinetic models with diffusion. Journal of Computational Physics, 2007, 225, 1442-1471.	3.8	22
25	Detached-Eddy Simulation of Shock Unsteadiness in an Overexpanded Planar Nozzle. AIAA Journal, 2017, 55, 2016-2028.	2.6	22
26	Automated chemical kinetic mechanism simplification with minimal user expertise. Combustion and Flame, 2018, 197, 439-448.	5.2	20
27	Characterization of jet-in-hot-coflow flames using tangential stretching rate. Combustion and Flame, 2019, 208, 281-298.	5.2	18
28	Multi-stage heat release in lean combustion: Insights from coupled tangential stretching rate (TSR) and computational singular perturbation (CSP) analysis. Combustion and Flame, 2020, 219, 242-257.	5.2	18
29	Entropy production and timescales. Combustion Theory and Modelling, 2017, 21, 137-157.	1.9	17
30	Sensitivity Analysis Methods to Design Optimal Ship Hulls. Optimization and Engineering, 2003, 4, 337-364.	2.4	16
31	Natural tangent dynamics with recurrent biorthonormalizations: A geometric computational approach to dynamical systems exhibiting slow manifolds and periodic/chaotic limit sets. Physica D: Nonlinear Phenomena, 2006, 213, 121-146.	2.8	16
32	Explosion limits and runaway criteria: A stretching-based approach. Chemical Engineering Science, 2007, 62, 1171-1183.	3.8	16
33	Characterization of Unsteadiness in an Overexpanded Planar Nozzle. AIAA Journal, 2019, 57, 239-251.	2.6	16
34	Performance prediction for oblique detonation wave engines (odwe). Acta Astronautica, 2001, 48, 211-228.	3.2	15
35	Optimal supersonic intake design for air collection engines (ACE). Acta Astronautica, 1999, 45, 729-745.	3.2	14
36	Enforcing positivity in intrusive PC-UQ methods for reactive ODE systems. Journal of Computational Physics, 2014, 270, 544-569.	3.8	14

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37	Smoothed Sensitivity Equation Method for Fluid Dynamic Design Problems. AIAA Journal, 2000, 38, 418-426.	2.6	13
38	Computational singular perturbation with non-parametric tabulation of slow manifolds for time integration of stiff chemical kinetics. Combustion Theory and Modelling, 2012, 16, 173-198.	1.9	13
39	Sensitivity analysis and mechanism simplification using the G-Scheme framework. Combustion and Flame, 2018, 189, 275-287.	5.2	11
40	Numerical analysis of laser-pulse transient ignition of oxygen/methane mixtures in rocket-like combustion chamber. Acta Astronautica, 2019, 159, 136-155.	3.2	11
41	Slow Manifold Structure in Explosive Kinetics. 1. Bifurcations of Points-at-Infinity in Prototypical Models. Journal of Physical Chemistry A, 2006, 110, 13447-13462.	2.5	10
42	Numerical Investigation of High Pressure CO₂-Diluted Combustion Using a Flamelet-based Approach. Combustion Science and Technology, 2020, 192, 2028-2049.	2.3	10
43	Analysis of Hydrogen/Air Turbulent Premixed Flames at Different Karlovitz Numbers Using Computational Singular Perturbation. , 2018, , .		9
44	An adaptive time-integration scheme for stiff chemistry based on computational singular perturbation and artificial neural networks. Journal of Computational Physics, 2022, 451, 110875.	3.8	9
45	Nonequilibrium hypersonic inviscid steady flows. AIAA Journal, 1992, 30, 86-93.	2.6	8
46	On the numerical integration of multi-dimensional, initial boundary value problems for the Euler equations in quasi-linear form. Numerical Methods for Partial Differential Equations, 1998, 14, 781-814.	3.6	8
47	Analysis of Wallâ€“flame Interaction in Laminar Non-premixed Combustion. Combustion Science and Technology, 2022, 194, 337-350.	2.3	8
48	Inertial manifolds with CSP. , 2003, , 1951-1954.		7
49	The structure of slow invariant manifolds and their bifurcational routes in chemical kinetic models. Computers and Chemical Engineering, 2007, 31, 1456-1474.	3.8	6
50	Explicit time integration of the stiff chemical Langevin equations using computational singular perturbation. Journal of Chemical Physics, 2019, 150, 194101.	3.0	6
51	Large Eddy Simulation on the Effects of Pressure on Syngas/Air Turbulent Nonpremixed Jet Flames. Combustion Science and Technology, 2020, 192, 1963-1996.	2.3	6
52	Computational Singular Perturbation Method and Tangential Stretching Rate Analysis of Large Scale Simulations of Reactive Flows: Feature Tracking, Time Scale Characterization, and Cause/Effect Identification. Part 1, Basic Concepts. , 2020, , 43-64.		6
53	Assessment of subgrid dispersion models for large-eddy simulations of turbulent jet flows with dilute spray droplets. Physics of Fluids, 2022, 34, .	4.0	6
54	On the simplification of kinetic reaction mechanisms of airâ€“ethanol under high pressure conditions. Fuel, 2013, 104, 488-499.	6.4	5

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55	Uncertainty Quantification Analysis of RANS of Spray Jets. , 2020, , .		5
56	Shock detection and discontinuity tracking for unsteady flows. Computers and Fluids, 1989, 17, 61-84.	2.5	4
57	Adaptive chemical model reduction. Journal of Physics: Conference Series, 2005, 16, 101-106.	0.4	4
58	Slow Manifold Structure in Explosive Kinetics. 2. Extension to Higher Dimensional Systems. Journal of Physical Chemistry A, 2006, 110, 13463-13474.	2.5	4
59	Injection of LOX spray in Methane cross-flow RANS modeling uncertainty quantification. , 2021, , .		4
60	Optimal Shape Design of Supersonic, Mixed-Compression, Fixed-Geometry Air Intakes for SSTO Mission Profiles. , 2002, , .		3
61	Biorthogonalization, geometric invariant properties and rate-based estimate of Lyapunov spectra. Physics Letters, Section A: General, Atomic and Solid State Physics, 2005, 342, 421-429.	2.1	3
62	Adaptive chemistry computations of reacting flow. Journal of Physics: Conference Series, 2007, 78, 012054.	0.4	3
63	Numerical simulation of edge flames initiation and propagation using an adaptive wavelet collocation method. Proceedings of the Combustion Institute, 2013, 34, 1077-1084.	3.9	3
64	Fast moving sub-subsonic shocks in closed-end tubes. Journal of Computational Physics, 1990, 88, 409-432.	3.8	2
65	Systematic strategies for thermochemical model reduction in rocket propulsion applications. , 2018, , .		2
66	A method to convert stand-alone OH fluorescence images into OH mole fraction. Proceedings of the Combustion Institute, 2021, 38, 1771-1778.	3.9	2
67	Large eddy simulation with flamelet progress variable approach combined with artificial neural network acceleration. , 2021, , .		2
68	Local and global manifolds in stiff reaction-diffusion systems. , 2003, , 1548-1551.		2
69	Local combustion regime identification using machine learning. Combustion Theory and Modelling, 2022, 26, 135-151.	1.9	2
70	Computational Singular Perturbation Method and Tangential Stretching Rate Analysis of Large Scale Simulations of Reactive Flows: Feature Tracking, Time Scale Characterization, and Cause/Effect Identification. Part 2, Analyses of Ignition Systems, Laminar and Turbulent Flames. , 2020, , 65-88.		2
71	Large eddy simulation of multi-regime burner: a reaction mechanism sensitivity analysis. , 2022, , .		2
72	Efficient strategies to design optimal ship hulls. , 2000, , .		1

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73	A computational facility for reacting flow science. Journal of Physics: Conference Series, 2006, 46, 53-57.	0.4	1
74	Assessment of detached eddy simulation of a separated flow in a planar nozzle. , 2018, , .		1
75	Numerical Simulation of High Speed Reactive Flows with Adaptive Mesh Refinement. , 1993, , 565-577.		1
76	Surrogate Fuel Analysis and Reduction using Computational Singular Perturbation. , 2008, , .		0
77	High-order AMR computations of reacting flow with adaptive reduction of chemical stiffness. Journal of Physics: Conference Series, 2008, 125, 012032.	0.4	0
78	A new OH fluorescence signal-to-OH mole fraction conversion model formulation and calibration. , 2020, , .		0
79	Smoothed sensitivity equation method for fluid dynamic design problems. AIAA Journal, 2000, 38, 418-426.	2.6	0
80	Performance assessment of an adaptive mesh refinement technique for detonation waves. Lecture Notes in Physics, 1993, , 300-304.	0.7	0
81	A compact formalism to design numerical techniques for three dimensional internal flows. , 1995, , 307-313.		0