

Marco Panesi

List of Publications by Year in descending order

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126
papers

2,470
citations

201674

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all docs

128
docs citations

128
times ranked

634
citing authors

#	ARTICLE	IF	CITATIONS
1	Importance of Exchange Processes in Earth and Mars Atmospheric Kinetics: Application to HCN System. , 2022, , .		1
2	Quantification of Uncertainty in Extrapolation of Charring Ablator Material Performance to Flight. , 2022, , .		0
3	Towards Efficient Simulations of Non-Equilibrium Chemistry in Hypersonic Flows: A Physics-Informed Neural Network Framework. , 2022, , .		7
4	A Multi-Physics Modeling Framework for Inductively Coupled Plasma Wind Tunnels. , 2022, , .		12
5	CHyPS: A High-Order Material Response Solver for Ablative Thermal Protection Systems. , 2022, , .		9
6	Non-equilibrium plasma generation via nano-second multi-mode laser pulses. Journal of Applied Physics, 2022, 131, .	2.5	6
7	Rovibrational-Specific Master Equation Analysis of High-Temperature Air Mixture. , 2022, , .		0
8	Self-consistent magneto-hydrodynamic modeling of ICP discharges. , 2022, , .		12
9	Effects of problem complexity reduction on parameter sensitivity and classification in charring ablator scenarios. Aerospace Science and Technology, 2022, 124, 107522.	4.8	3
10	Three-dimensional unsteady model of arc heater plasma flow. Aerospace Science and Technology, 2022, 123, 107465.	4.8	2
11	Rovibrational-Specific QCT and Master Equation Study on $N_{2}(X^{1}\Sigma_{g}^{+}) + O(^{3}P)$ and $NO(X^{2}\Sigma^{+}) + N_{4}(S)$ Systems in High-Energy Collisions. Journal of Physical Chemistry A, 2022, 126, 3273-3290.	2.5	17
12	Probabilistic Reduction of a Coarse Graining methodology via Polynomial Chaos expansions: Application to Hypersonic Aerothermodynamics. , 2022, , .		0
13	High-fidelity simulation of RF inductively coupled plasma discharges. , 2022, , .		0
14	Influence of Non-Boltzmann Radiation around Titan Atmospheric Entry Vehicles. , 2022, , .		1
15	Self-Consistent Computational Fluid Dynamics of Supersonic Drag Reduction via Upstream-Focused Laser-Energy Deposition. AIAA Journal, 2021, 59, 1214-1224.	2.6	16
16	Numerical study on early-times laser controlled detonative propulsion. , 2021, , .		1
17	Prediction of shock standoff distance with modified rotational relaxation time of air mixture. Physics of Fluids, 2021, 33, .	4.0	8
18	Thermal effects mediating the flow induced by laser-induced optical breakdown. Physical Review Fluids, 2021, 6, .	2.5	2

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19	Carbon Clusters: Thermochemistry and Electronic Structure at High Temperatures. Journal of Physical Chemistry A, 2021, 125, 7038-7051.	2.5	2
20	Laser-induced non-equilibrium plasma kernel dynamics. Journal Physics D: Applied Physics, 2020, 53, 025201.	2.8	48
21	Reduced-Order Modeling for Non-equilibrium Air Flows. , 2020, , .		3
22	State-to-state and direct molecular simulation study of energy transfer and dissociation of nitrogen mixtures. , 2020, , .		0
23	A computational model for nanosecond pulse laser-plasma interactions. Journal of Computational Physics, 2020, 406, 109190.	3.8	55
24	Comparative analysis of reduced-order spectral models and grouping strategies for non-equilibrium radiation. Journal of Quantitative Spectroscopy and Radiative Transfer, 2020, 242, 106752.	2.3	9
25	High-Order Techniques for Multi-Component Turbulent Non-Equilibrium Hypersonic Flows. , 2020, , .		1
26	State-to-State Master Equation and Direct Molecular Simulation Study of Energy Transfer and Dissociation for the $N_2 \leftarrow N$ System. Journal of Physical Chemistry A, 2020, 124, 6986-7000.	2.5	20
27	Data-Inspired and Physics-Driven Model Reduction for Dissociation: Application to the $O_2 + O$ System. Journal of Physical Chemistry A, 2020, 124, 8359-8372.	2.5	33
28	Bayesian Machine Learning Approach to the Quantification of Uncertainties on Ab Initio Potential Energy Surfaces. Journal of Physical Chemistry A, 2020, 124, 5129-5146.	2.5	47
29	Collinear dual-pulse laser optical breakdown and energy deposition. Journal Physics D: Applied Physics, 2020, 53, 205202.	2.8	19
30	Coarse-grained modeling of thermochemical nonequilibrium using the multigroup maximum entropy quadratic formulation. Physical Review E, 2020, 101, 013307.	2.1	26
31	Characterization of non-equilibrium hypersonic flows using maximum entropy linear model. AIP Conference Proceedings, 2019, , .	0.4	2
32	Reduced-order modeling of non-equilibrium kinetics and radiation for CO2 axisymmetric wake flows. AIP Conference Proceedings, 2019, , .	0.4	0
33	Hybrid reduced order model for N2-N interactions for application to dissociation and energy transfer processes. AIP Conference Proceedings, 2019, , .	0.4	0
34	Supersonic and hypersonic non-equilibrium flow control using laser energy deposition. , 2019, , .		5
35	Effects of Ab-Initio Potential Energy Surfaces on O2-O Non-Equilibrium Kinetics. , 2019, , .		5
36	Modeling of Air Breakdown by Single-Mode and Multi-Mode Lasers. , 2019, , .		6

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37	Refitting of Ro-Vibrational Specific CO2 Radiation Database to Vibrationally Specific. , 2019, , .		2
38	A Machine Learning Framework for the Quantification of the Uncertainties Associated with Ab-Initio Based Modeling of Non-Equilibrium Flows. , 2019, , .		7
39	Application of ab-initio based grouped rates for modeling non-equilibrium flow physics. , 2019, , .		0
40	Novel Approach for Modeling CO2Non-equilibrium Radiation: Application to Wake Flows. , 2019, , .		0
41	Calibration and Uncertainty Quantification of VISTA Ablator Material Database Using Bayesian Inference. Journal of Thermophysics and Heat Transfer, 2019, 33, 356-369.	1.6	11
42	Flow-radiation coupling in CO_2 wakes using reduced-order non-Boltzmann models. Physical Review Fluids, 2019, 4, .	2.5	38
43	Construction of a coarse-grain quasi-classical trajectory method. I. Theory and application to N_2 system. Journal of Chemical Physics, 2018, 148, 054309.	3.0	71
44	Construction of a coarse-grain quasi-classical trajectory method. II. Comparison against the direct molecular simulation method. Journal of Chemical Physics, 2018, 148, 054310.	3.0	59
45	Extension of Multiband Opacity-Binning to Molecular, Non-Boltzmann Shock Layer Radiation. Journal of Thermophysics and Heat Transfer, 2018, 32, 816-821.	1.6	9
46	Modeling of Laser-Induced Breakdown Phenomena in Non-Equilibrium Plasmas. , 2018, , .		15
47	State-to-State and Direct Molecular Simulation Study of energy transfer and dissociation in nitrogen mixtures. , 2018, , .		5
48	Coarse Grain Model for Energy Transfer and Dissociation. , 2018, , .		0
49	Investigating CO Dissociation by means of Coarse Grained Ab-Initio Rate Constants. , 2018, , .		4
50	Comparison of Potential Energy Surface and Computed Rate Coefficients for N_2 Dissociation. Journal of Thermophysics and Heat Transfer, 2018, 32, 869-881.	1.6	33
51	Refitting of detailed CO2 IR databases to vibrationally specific databases tailored for aerothermodynamic flows. , 2018, , .		2
52	Calculation of Thermochemical Properties of Carbon-cluster Ablation Species. , 2018, , .		1
53	One-dimensional modeling methodology for shock tubes: Application to the EAST facility. , 2018, , .		3
54	Impact of state-specific flowfield modeling on atomic nitrogen radiation. Physical Review Fluids, 2018, 3, .	2.5	17

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55	Novel Approach for CO ₂ State-To-State Modeling and Application to Multidimensional Entry Flows. , 2017, , .		8
56	On the development of a new nonequilibrium chemistry model for Mars entry. , 2017, , .		7
57	Advanced Modeling of Non-equilibrium Flows using a Maximum Entropy "Quadratic" Formulation. , 2017, , .		0
58	FEM Simulation of Laser-Induced Plasma Breakdown Experiments for Combustion Applications. , 2017, , .		11
59	Assessment of predictive capabilities for aerodynamic heating in hypersonic flow. Progress in Aerospace Sciences, 2017, 90, 39-53.	12.1	65
60	Ab initio based rovibrational grouping model for N ₂ (¹ Σ ⁺ + ¹ Σ ⁺) dissociation. , 2017, , .		5
61	Multi-Group Maximum Entropy Model for Translational Non-Equilibrium. , 2017, , .		0
62	A Reduced-order NLTE Kinetic Model for Radiating Plasmas of Outer Envelopes of Stellar Atmospheres. Astrophysical Journal, 2017, 838, 126.	4.5	27
63	Modeling of high pressure arc-discharge with a fully-implicit Navier-Stokes stabilized finite element flow solver. Plasma Sources Science and Technology, 2017, 26, 055012.	3.1	12
64	Adaptive coarse graining method for energy transfer and dissociation kinetics of polyatomic species. Journal of Chemical Physics, 2017, 147, 054107.	3.0	74
65	Analysis of non-equilibrium phenomena in inductively coupled plasma generators. Physics of Plasmas, 2016, 23, .	1.9	24
66	Plasma-graphene interaction and its effects on nanoscale patterning. Physical Review B, 2016, 93, .	3.2	28
67	A Reduced Order Maximum Entropy Model for Chemical and Thermal Non-equilibrium in High Temperature CO ₂ Gas. , 2016, , .		4
68	Rovibrational grouping for N ₂ (1 ¹ Σ ⁺ + g)-N ₂ (1 ¹ Σ ⁺ + g) energy transfer using state-to-state model. , 2016, , .		4
69	Improved Non-Boltzmann Modeling for Nitrogen Atoms. , 2016, , .		10
70	Electron-vibration relaxation in oxygen plasmas. Chemical Physics, 2016, 472, 44-49.	1.9	15
71	Comparison of quantum mechanical and empirical potential energy surfaces and computed rate coefficients for N ₂ dissociation. , 2016, , .		12
72	State-to-State and reduced-order models for recombination and energy transfer in aerothermal environments. , 2016, , .		1

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73	Nonequilibrium radiation and dissociation of CO molecules in shock-heated flows. Physical Review Fluids, 2016, 1, .	2.5	27
74	Modeling of dissociation and energy transfer in shock-heated nitrogen flows. Physics of Fluids, 2015, 27, .	4.0	56
75	A tightly coupled non-equilibrium model for inductively coupled radio-frequency plasmas. Journal of Applied Physics, 2015, 118, .	2.5	21
76	First Principles Calculation of Heavy Particle Rate Coefficients. , 2015, , 103-158.		25
77	Electron-Impact Excitation Cross Sections for Modeling Non-Equilibrium Gas. , 2015, , .		12
78	Dissociation and Energy transfer study of N ₂ -N and N ₂ -N ₂ interactions by using rovibrational and coarse-grained state-to-state models. , 2015, , .		4
79	State-to-State Modeling of CO for Mars Entry Applications. , 2015, , .		0
80	NLTE Magneto-Hydrodynamic Model for an Inductively Coupled Plasma Facility. , 2015, , .		0
81	State Specific Modeling of Energy Transfer under Shock Conditions in Nitrogen using High Fidelity Models. , 2015, , .		0
82	Communication: Surface-to-bulk diffusion of isolated versus interacting C atoms in Ni(111) and Cu(111) substrates: A first principle investigation. Journal of Chemical Physics, 2015, 142, 061101.	3.0	13
83	General multi-group macroscopic modeling for thermo-chemical non-equilibrium gas mixtures. Journal of Chemical Physics, 2015, 142, 134109.	3.0	76
84	Systematic validation of non-equilibrium thermochemical models using Bayesian inference. Journal of Computational Physics, 2015, 298, 125-144.	3.8	6
85	Computational challenges for simulations related to the NASA electric arc shock tube (EAST) experiments. Journal of Computational Physics, 2014, 269, 215-233.	3.8	33
86	Energy transfer models in nitrogen plasmas: Analysis of $\mathbf{m N_2(X,^1\Sigma_g^+)} T_j$ ETQq0 0 0 rgBT /Overlock 10 Tf 50 227 Td ($_g^+$). Physics, 2014, 141, 184302.	3.0	28
87	General Multi-Group Macroscopic Modeling for Thermo-Chemical Non-Equilibrium Gas Mixtures. , 2014, , .		1
88	Nonequilibrium shock-heated nitrogen flows using a rovibrational state-to-state method. Physical Review E, 2014, 90, 013009.	2.1	139
89	Modeling of Non-equilibrium Plasmas in an Inductively Coupled Plasma Facility. , 2014, , .		0
90	Boltzmann rovibrational collisional coarse-grained model for internal energy excitation and dissociation in hypersonic flows. Physical Review E, 2014, 89, 023001.	2.1	89

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91	Investigation of Dissociation Phenomena in Nonequilibrium Shock Layers. , 2014, , .		0
92	Modeling of non-equilibrium phenomena in expanding flows by means of a collisional-radiative model. Physics of Plasmas, 2013, 20, .	1.9	56
93	Rovibrational internal energy transfer and dissociation of $\text{m N}_2(^1\Sigma_g^+)-\text{m N}(^4S_u)$ system in hypersonic flows. Journal of Chemical Physics, 2013, 138, 044312.	3.0	208
94	1D and 2D Simulaations Related to the NASA Electric Arc Shock Tube Experiments. , 2013, , .		1
95	Energy transfer study of N2-N2 interactions by using rovibrational state-to-state model. , 2013, , .		7
96	Microscopic Simulation and Macroscopic Modeling for Thermal and Chemical Non-Equilibrium Gases. , 2013, , .		1
97	COOLFluid: an open computational platform for multi-physics simulation and research. , 2013, , .		25
98	Collisional radiative coarse-grain model for ionization in air. Physics of Fluids, 2013, 25, .	4.0	73
99	Conservative Residual Distribution Method for Viscous Double Cone Flows in Thermochemical Nonequilibrium. Communications in Computational Physics, 2013, 13, 479-501.	1.7	27
100	Ionization Phenomena behind Shock Waves. , 2012, , 149-192.		4
101	Corrigendum to "Probabilistic models and uncertainty quantification for the ionization reaction rate of atomic Nitrogen" [JCOMP 231(9) (2012) 3871-3886]. Journal of Computational Physics, 2012, 231, 5216.	3.8	0
102	Estimation of the nitrogen ionization reaction rate using electric arc shock tube data and Bayesian model analysis. Physics of Plasmas, 2012, 19, 023507.	1.9	34
103	QCT-based vibrational collisional models applied to nonequilibrium nozzle flows. European Physical Journal D, 2012, 66, 1.	1.3	58
104	Coarse-grain model for internal energy excitation and dissociation of molecular nitrogen. Chemical Physics, 2012, 398, 90-95.	1.9	87
105	On the assessment of a Bayesian validation methodology for data reduction models relevant to shock tube experiments. Computer Methods in Applied Mechanics and Engineering, 2012, 213-216, 383-398.	6.6	16
106	Probabilistic models and uncertainty quantification for the ionization reaction rate of atomic Nitrogen. Journal of Computational Physics, 2012, 231, 3871-3886.	3.8	29
107	Electronic Excitation of Atoms and Molecules for the FIRE II Flight Experiment. Journal of Thermophysics and Heat Transfer, 2011, 25, 361-374.	1.6	91
108	Mechanism Reduction for Rovibrational Energy Excitation and Dissociation of Molecular Nitrogen in Hypersonic Flows. , 2011, , .		2

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109	Non-equilibrium ionization phenomena behind shock waves. , 2011, , .		3
110	Probabilistic Models and Uncertainty Quantification for the Ionization Reaction Rate of Atomic Nitrogen. , 2011, , .		2
111	Calibration of Rates Parameters for Multi-Temperature models using Bayesian Formulation. , 2011, , .		2
112	Systematic Validation of Non-Equilibrium Thermochemical Models using Bayesian Approach. , 2011, , .		1
113	Nonequilibrium ionization phenomena behind shock waves. , 2011, , .		4
114	On the (In)Validation of a Thermochemical Model with EAST Shock Tube Radiation Measurements. , 2010, , .		11
115	Vibrational State to State Kinetics in Expanding and Compressing Nitrogen Flows. , 2010, , .		6
116	Rovibrational Internal Energy Excitation and Dissociation of Molecular Nitrogen in Hypersonic Flows. , 2010, , .		14
117	Fire II Flight Experiment Analysis by Means of a Collisional-Radiative Model. Journal of Thermophysics and Heat Transfer, 2009, 23, 236-248.	1.6	151
118	Internal Energy Excitation and Dissociation of Molecular Nitrogen in a Compressing Flow. , 2009, , .		13
119	Reduced Kinetic Mechanism for CFD Applications. , 2009, , .		1
120	Modelling of high-enthalpy, high-Mach number flows. Journal Physics D: Applied Physics, 2009, 42, 194004.	2.8	20
121	Analysis of the FIRE II Flight Experiment by Means of a Collisional Radiative Model. , 2008, , .		7
122	Predictions of nonequilibrium radiation: analysis and comparison with EAST experiments. , 2008, , .		9
123	Analysis of Chemical Nonequilibrium and Elemental Demixing in Plasmatron Facility. Journal of Thermophysics and Heat Transfer, 2007, 21, 57-66.	1.6	13
124	Non Equilibrium and Elemental Demixing Analysis of CO2 Flows Inside ICPs. , 2007, , .		0
125	Analysis of Chemical Non-Equilibrium and Elemental Demixing in the VKI Plasmatron. , 2006, , .		0
126	Simulation of Supersonic Flows in Inductively Coupled Plasma Tunnels. , 2006, , 489-494.		0