

Manuel Torrilhon

List of Publications by Citations

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

97 papers	2,406 citations	24 h-index	47 g-index
112 ext. papers	2,761 ext. citations	3.1 avg, IF	5.78 L-index

#	Paper	IF	Citations
97	Regularization of Grad's 13 moment equations: Derivation and linear analysis. <i>Physics of Fluids</i> , 2003 , 15, 2668-2680	4.4	308
96	Heliostat field optimization: A new computationally efficient model and biomimetic layout. <i>Solar Energy</i> , 2012 , 86, 792-803	6.8	201
95	Regularized 13-moment equations: shock structure calculations and comparison to Burnett models. <i>Journal of Fluid Mechanics</i> , 2004 , 513, 171-198	3.7	167
94	Boundary conditions for regularized 13-moment-equations for micro-channel-flows. <i>Journal of Computational Physics</i> , 2008 , 227, 1982-2011	4.1	117
93	Modeling Nonequilibrium Gas Flow Based on Moment Equations. <i>Annual Review of Fluid Mechanics</i> , 2016 , 48, 429-458	2.2	102
92	Compact third-order limiter functions for finite volume methods. <i>Journal of Computational Physics</i> , 2009 , 228, 4118-4145	4.1	95
91	Couette and Poiseuille microflows: Analytical solutions for regularized 13-moment equations. <i>Physics of Fluids</i> , 2009 , 21, 017102	4.4	80
90	A solution algorithm for the fluid dynamic equations based on a stochastic model for molecular motion. <i>Journal of Computational Physics</i> , 2010 , 229, 1077-1098	4.1	80
89	Fokker-Planck model for computational studies of monatomic rarefied gas flows. <i>Journal of Fluid Mechanics</i> , 2011 , 680, 574-601	3.7	78
88	H theorem, regularization, and boundary conditions for linearized 13 moment equations. <i>Physical Review Letters</i> , 2007 , 99, 014502	7.4	73
87	A robust numerical method for the R13 equations of rarefied gas dynamics: Application to lid driven cavity. <i>Journal of Computational Physics</i> , 2013 , 236, 169-186	4.1	64
86	Higher-order effects in rarefied channel flows. <i>Physical Review E</i> , 2008 , 78, 046301	2.4	55
85	Affordable robust moment closures for CFD based on the maximum-entropy hierarchy. <i>Journal of Computational Physics</i> , 2013 , 251, 500-523	4.1	48
84	Two-Dimensional Bulk Microflow Simulations Based on Regularized Grad's 13-Moment Equations. <i>Multiscale Modeling and Simulation</i> , 2006 , 5, 695-728	1.8	47
83	Uniqueness conditions for Riemann problems of ideal magnetohydrodynamics. <i>Journal of Plasma Physics</i> , 2003 , 69, 253-276	2.7	39
82	Application of time reverse modeling on ultrasonic non-destructive testing of concrete. <i>Applied Mathematical Modelling</i> , 2011 , 35, 807-816	4.5	38
81	Hyperbolic Moment Equations in Kinetic Gas Theory Based on Multi-variate Pearson-IV-distributions. <i>Communications in Computational Physics</i> , 2010 , 7, 639-673	2.4	36

80	Locally Divergence-preserving Upwind Finite Volume Schemes for Magnetohydrodynamic Equations. <i>SIAM Journal of Scientific Computing</i> , 2005 , 26, 1166-1191	2.6	35
79	The shock tube study in extended thermodynamics. <i>Physics of Fluids</i> , 2001 , 13, 2423-2432	4.4	33
78	Constraint-Preserving Upwind Methods for Multidimensional Advection Equations. <i>SIAM Journal on Numerical Analysis</i> , 2004 , 42, 1694-1728	2.4	32
77	Macroscopic description of steady and unsteady rarefaction effects in boundary value problems of gas dynamics. <i>Continuum Mechanics and Thermodynamics</i> , 2009 , 21, 423-443	3.5	31
76	Non-uniform convergence of finite volume schemes for Riemann problems of ideal magnetohydrodynamics. <i>Journal of Computational Physics</i> , 2003 , 192, 73-94	4.1	31
75	Characteristic waves and dissipation in the 13-moment-case. <i>Continuum Mechanics and Thermodynamics</i> , 2000 , 12, 289-301	3.5	30
74	Slow gas microflow past a sphere: Analytical solution based on moment equations. <i>Physics of Fluids</i> , 2010 , 22, 072001	4.4	25
73	Essentially optimal explicit Runge-Kutta methods with application to hyperbolic-parabolic equations. <i>Numerische Mathematik</i> , 2007 , 106, 303-334	2.2	24
72	Model Reduction of Kinetic Equations by Operator Projection. <i>Journal of Statistical Physics</i> , 2016 , 162, 457-486	1.5	23
71	Regularized 13 moment equations for hard sphere molecules: Linear bulk equations. <i>Physics of Fluids</i> , 2013 , 25, 052001	4.4	23
70	Convergence Study of Moment Approximations for Boundary Value Problems of the Boltzmann-BGK Equation. <i>Communications in Computational Physics</i> , 2015 , 18, 529-557	2.4	22
69	A framework for hyperbolic approximation of kinetic equations using quadrature-based projection methods. <i>Kinetic and Related Models</i> , 2014 , 7, 531-549	2.4	22
68	Explicit fluxes and productions for large systems of the moment method based on extended thermodynamics. <i>Continuum Mechanics and Thermodynamics</i> , 2003 , 15, 97-111	3.5	20
67	On curl-preserving finite volume discretizations for shallow water equations. <i>BIT Numerical Mathematics</i> , 2006 , 46, 35-53	1.7	18
66	Hierarchical Boltzmann simulations and model error estimation. <i>Journal of Computational Physics</i> , 2017 , 342, 66-84	4.1	17
65	High order WENO schemes: investigations on non-uniform convergence for MHD Riemann problems. <i>Journal of Computational Physics</i> , 2004 , 201, 586-600	4.1	17
64	Higher order moment equations for rarefied gas mixtures. <i>Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences</i> , 2015 , 471, 20140754	2.4	16
63	Numerical Simulation of Microflows Using Moment Methods with Linearized Collision Operator. <i>Journal of Scientific Computing</i> , 2018 , 74, 336-374	2.3	14

62	H-Theorem for nonlinear regularized 13-moment equations in kinetic gas theory. <i>Kinetic and Related Models</i> , 2012 , 5, 185-201	2.4	14
61	On Singular Closures for the 5-Moment System in Kinetic Gas Theory. <i>Communications in Computational Physics</i> , 2015 , 17, 371-400	2.4	13
60	Relations Between WENO3 and Third-Order Limiting in Finite Volume Methods. <i>Journal of Scientific Computing</i> , 2016 , 68, 624-652	2.3	13
59	Numerical Study of Partially Conservative Moment Equations in Kinetic Theory. <i>Communications in Computational Physics</i> , 2017 , 21, 981-1011	2.4	13
58	Automated Boltzmann collision integrals for moment equations 2012 ,		13
57	Regularized moment equations for binary gas mixtures: Derivation and linear analysis. <i>Physics of Fluids</i> , 2016 , 28, 042003	4.4	13
56	Comment on "Thermodynamically admissible 13 moment equations from the Boltzmann equation". <i>Physical Review Letters</i> , 2010 , 105, 128901; author reply 128902	7.4	12
55	Krylov--Riemann Solver for Large Hyperbolic Systems of Conservation Laws. <i>SIAM Journal of Scientific Computing</i> , 2012 , 34, A2072-A2091	2.6	12
54	Increasing the accuracy in locally divergence-preserving finite volume schemes for MHD. <i>Journal of Computational Physics</i> , 2008 , 227, 3405-3427	4.1	12
53	Approximation of the linearized Boltzmann collision operator for hard-sphere and inverse-power-law models. <i>Journal of Computational Physics</i> , 2015 , 295, 617-643	4.1	11
52	Comparison of relaxation phenomena in binary gas-mixtures of Maxwell molecules and hard spheres. <i>Computers and Mathematics With Applications</i> , 2015 , 70, 73-88	2.7	11
51	On Stable Wall Boundary Conditions for the Hermite Discretization of the Linearised Boltzmann Equation. <i>Journal of Statistical Physics</i> , 2018 , 170, 101-126	1.5	11
50	The 35-Moment System with the Maximum-Entropy Closure for Rarefied Gas Flows. <i>European Journal of Mechanics, B/Fluids</i> , 2017 , 64, 30-40	2.4	9
49	Efficient algorithms and implementations of entropy-based moment closures for rarefied gases. <i>Journal of Computational Physics</i> , 2017 , 340, 138-159	4.1	9
48	Formulation of moment equations for rarefied gases within two frameworks of non-equilibrium thermodynamics: RET and GENERIC. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2020 , 378, 20190174	3	9
47	Hyperbolic moment equations using quadrature-based projection methods 2014 ,		9
46	Modeling Micro Mass and Heat Transfer for Gases Using Extended Continuum Equations. <i>Journal of Heat Transfer</i> , 2009 , 131,	1.8	9
45	On the Holway-Weiss debate: Convergence of the Grad-moment-expansion in kinetic gas theory. <i>Physics of Fluids</i> , 2019 , 31, 126105	4.4	9

44	Entropic quadrature for moment approximations of the Boltzmann-BGK equation. <i>Journal of Computational Physics</i> , 2020 , 401, 108992	4.1	9
43	Heat transfer in micro devices packaged in partial vacuum. <i>Journal of Physics: Conference Series</i> , 2012 , 362, 012034	0.3	8
42	Stability and consistency of kinetic upwinding for advection-diffusion equations. <i>IMA Journal of Numerical Analysis</i> , 2006 , 26, 686-722	1.8	8
41	Higher-order moment theories for dilute granular gases of smooth hard spheres. <i>Journal of Fluid Mechanics</i> , 2018 , 836, 451-501	3.7	8
40	Entropy stable Hermite approximation of the linearised Boltzmann equation for inflow and outflow boundaries. <i>Journal of Computational Physics</i> , 2018 , 369, 16-44	4.1	6
39	Convergence Analysis of Grad's Hermite Expansion for Linear Kinetic Equations. <i>SIAM Journal on Numerical Analysis</i> , 2020 , 58, 1164-1194	2.4	6
38	Gaussian Process Regression for Maximum Entropy Distribution. <i>Journal of Computational Physics</i> , 2020 , 418, 109644	4.1	5
37	A deterministic model of electron transport for electron probe microanalysis. <i>IOP Conference Series: Materials Science and Engineering</i> , 2018 , 304, 012004	0.4	5
36	On third-order limiter functions for finite volume methods. <i>Bulletin of the Brazilian Mathematical Society</i> , 2016 , 47, 753-764	1.2	5
35	Two-Dimensional Simulation of Rarefied Gas Flows Using Quadrature-Based Moment Equations. <i>Multiscale Modeling and Simulation</i> , 2018 , 16, 1059-1084	1.8	5
34	Numerical solution of hyperbolic moment models for the Boltzmann equation. <i>European Journal of Mechanics, B/Fluids</i> , 2017 , 64, 41-46	2.4	5
33	Slow rarefied gas flow past a cylinder: Analytical solution in comparison to the sphere 2012 ,		5
32	A Constrained Transport Upwind Scheme for Divergence-free Advection 2003 , 529-538		5
31	Evaporation Boundary Conditions for the Linear R13 Equations Based on the Onsager Theory. <i>Entropy</i> , 2018 , 20,	2.8	5
30	Regularized 13 moment equations for hard spheres 2012 ,		4
29	Scale-Induced Closure for Approximations of Kinetic Equations. <i>Journal of Statistical Physics</i> , 2010 , 141, 848-888	1.5	4
28	Simultaneous-approximation-term based boundary discretization for moment equations of rarefied gas dynamics. <i>Journal of Computational Physics</i> , 2020 , 407, 109243	4.1	3
27	Modeling of electric arcs: A study of the non-convective case with strong coupling. <i>Journal of Plasma Physics</i> , 2013 , 79, 699-713	2.7	3

26	High-Resolution Quantification Across Vertical Interfaces using a Monte Carlo Based Reconstruction Approach. <i>Microscopy and Microanalysis</i> , 2013 , 19, 1296-1297	0.5	3
25	On a hyperbolic conservation law of electron transport in solid materials for electron probe microanalysis. <i>Bulletin of the Brazilian Mathematical Society</i> , 2016 , 47, 575-588	1.2	3
24	Finite element methods for the linear regularized 13-moment equations describing slow rarefied gas flows. <i>Journal of Computational Physics</i> , 2019 , 389, 1-21	4.1	2
23	Reprint of: Comparison of relaxation phenomena in binary gas-mixtures of Maxwell molecules and hard spheres. <i>Computers and Mathematics With Applications</i> , 2016 , 72, 271-287	2.7	2
22	Curvature-induced instability of a Stokes-like problem with non-standard boundary conditions. <i>Applied Numerical Mathematics</i> , 2017 , 121, 96-114	2.5	2
21	A new closure mitigating the sub-shock phenomenon in the continuous shock-structure problem. <i>Proceedings in Applied Mathematics and Mechanics</i> , 2013 , 13, 499-500	0.2	2
20	Flexible Stability Domains for Explicit Runge-Kutta Methods. <i>Series in Contemporary Applied Mathematics</i> , 2007 , 152-180	0	2
19	Entropic Fokker-Planck kinetic model. <i>Journal of Computational Physics</i> , 2021 , 430, 110034	4.1	2
18	A Hybrid Riemann Solver for Large Hyperbolic Systems of Conservation Laws. <i>SIAM Journal of Scientific Computing</i> , 2017 , 39, A2911-A2934	2.6	1
17	Stabilization techniques in finite element discretizations for moment approximations 2014 ,		1
16	Hypersonics simulations based on the Regularized Grad equations for multicomponent plasmas 2011 ,		1
15	Stability of reduced electric arc models. <i>Proceedings in Applied Mathematics and Mechanics</i> , 2007 , 7, 1141301-1141302	1.1	1
14	Compact Third-Order Logarithmic Limiting for Nonlinear Hyperbolic Conservation Laws 2008 , 347-354		1
13	fenicsR13. <i>ACM Transactions on Mathematical Software</i> , 2021 , 47, 1-29	2.3	1
12	Consistent, explicit, and accessible Boltzmann collision operator for polyatomic gases. <i>Physical Review E</i> , 2021 , 104, 025309	2.4	1
11	Solenoidal Discrete Initialization for Magnetohydrodynamics 2005 , 235-253		1
10	Numerical simulation of large hyperbolic moment systems with linear and relaxation production terms 2014 ,		0
9	Third-Order Limiter Functions on Non-equidistant Grids. <i>Lecture Notes in Computational Science and Engineering</i> , 2019 , 899-907	0.3	

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| 8 | Heat Transfer in Binary Gas Mixtures Confined in a Lid-Driven Square Cavity. <i>Procedia Engineering</i> , 2015 , 127, 10-17 | |
| 7 | High-Resolution Mathematical and Numerical Analysis of Involution-Constrained PDEs. <i>Oberwolfach Reports</i> , 2013 , 10, 2691-2747 | 0 |
| 6 | Regularized 13 moment equations for rarefied gas flows 2005 , 247-267 | |
| 5 | The Riemann-Problem in Extended Thermodynamics 2001 , 79-88 | |
| 4 | Simplified Hyperbolic Moment Equations. <i>Springer Proceedings in Mathematics and Statistics</i> , 2018 , 221-232 | |
| 3 | A Novel Reconstruction Method to Increase Spatial Resolution in Electron Probe Microanalysis. <i>Mathematical and Computational Applications</i> , 2021 , 26, 51 | 1 |
| 2 | Moment method for the Boltzmann equation of reactive quaternary gaseous mixture. <i>Physica A: Statistical Mechanics and Its Applications</i> , 2021 , 574, 125874 | 3.3 |
| 1 | A Model for Characteristic X-Ray Emission in Electron Probe Microanalysis Based on the (Filtered) Spherical Harmonic () Method for Electron Transport. <i>Microscopy and Microanalysis</i> , 2022 , 28, 454-468 | 0.5 |