Manuel Torrilhon

List of Publications by Year in Descending Order

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	A Model for Characteristic X-Ray Emission in Electron Probe Microanalysis Based on the (Filtered) Spherical Harmonic () Method for Electron Transport. *Microscopy and Microanalysis*, **2022**, 28, 454-468	0.5	
96	fenicsR13. *ACM Transactions on Mathematical Software*, **2021**, 47, 1-29	2.3	1
95	Entropic Fokker-Planck kinetic model. *Journal of Computational Physics*, **2021**, 430, 110034	4.1	2
94	A Novel Reconstruction Method to Increase Spatial Resolution in Electron Probe Microanalysis. *Mathematical and Computational Applications*, **2021**, 26, 51	1	
93	Moment method for the Boltzmann equation of reactive quaternary gaseous mixture. *Physica A: Statistical Mechanics and Its Applications*, **2021**, 574, 125874	3.3	
92	Consistent, explicit, and accessible Boltzmann collision operator for polyatomic gases. *Physical Review E*, **2021**, 104, 025309	2.4	1
91	Gaussian Process Regression for Maximum Entropy Distribution. *Journal of Computational Physics*, **2020**, 418, 109644	4.1	5
90	Formulation of moment equations for rarefied gases within two frameworks of non-equilibrium thermodynamics: RET and GENERIC. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2020**, 378, 20190174	3	9
89	Simultaneous-approximation-term based boundary discretization for moment equations of rarefied gas dynamics. *Journal of Computational Physics*, **2020**, 407, 109243	4.1	3
88	Entropic quadrature for moment approximations of the Boltzmann-BGK equation. *Journal of Computational Physics*, **2020**, 401, 108992	4.1	9
87	Convergence Analysis of Grad's Hermite Expansion for Linear Kinetic Equations. *SIAM Journal on Numerical Analysis*, **2020**, 58, 1164-1194	2.4	6
86	Third-Order Limiter Functions on Non-equidistant Grids. *Lecture Notes in Computational Science and Engineering*, **2019**, 899-907	0.3	
85	Finite element methods for the linear regularized 13-moment equations describing slow rarefied gas flows. *Journal of Computational Physics*, **2019**, 389, 1-21	4.1	2
84	On the Holway-Weiss debate: Convergence of the Grad-moment-expansion in kinetic gas theory. *Physics of Fluids*, **2019**, 31, 126105	4.4	9
83	A deterministic model of electron transport for electron probe microanalysis. *IOP Conference Series: Materials Science and Engineering*, **2018**, 304, 012004	0.4	5
82	Numerical Simulation of Microflows Using Moment Methods with Linearized Collision Operator. *Journal of Scientific Computing*, **2018**, 74, 336-374	2.3	14
81	Two-Dimensional Simulation of Rarefied Gas Flows Using Quadrature-Based Moment Equations. *Multiscale Modeling and Simulation*, **2018**, 16, 1059-1084	1.8	5

80	Entropy stable Hermite approximation of the linearised Boltzmann equation for inflow and outflow boundaries. *Journal of Computational Physics*, **2018**, 369, 16-44	4.1	6
79	On Stable Wall Boundary Conditions for the Hermite Discretization of the Linearised Boltzmann Equation. *Journal of Statistical Physics*, **2018**, 170, 101-126	1.5	11
78	Higher-order moment theories for dilute granular gases of smooth hard spheres. *Journal of Fluid Mechanics*, **2018**, 836, 451-501	3.7	8
77	Evaporation Boundary Conditions for the Linear R13 Equations Based on the Onsager Theory. *Entropy*, **2018**, 20,	2.8	5
76	Simplified Hyperbolic Moment Equations. *Springer Proceedings in Mathematics and Statistics*, **2018**, 221-232	0.2	
75	The 35-Moment System with the Maximum-Entropy Closure for Rarefied Gas Flows. *European Journal of Mechanics, B/Fluids*, **2017**, 64, 30-40	2.4	9
74	Efficient algorithms and implementations of entropy-based moment closures for rarefied gases. *Journal of Computational Physics*, **2017**, 340, 138-159	4.1	9
73	Hierarchical Boltzmann simulations and model error estimation. *Journal of Computational Physics*, **2017**, 342, 66-84	4.1	17
72	A Hybrid Riemann Solver for Large Hyperbolic Systems of Conservation Laws. *SIAM Journal of Scientific Computing*, **2017**, 39, A2911-A2934	2.6	1
71	Curvature-induced instability of a Stokes-like problem with non-standard boundary conditions. *Applied Numerical Mathematics*, **2017**, 121, 96-114	2.5	2
70	Numerical solution of hyperbolic moment models for the Boltzmann equation. *European Journal of Mechanics, B/Fluids*, **2017**, 64, 41-46	2.4	5
69	Numerical Study of Partially Conservative Moment Equations in Kinetic Theory. *Communications in Computational Physics*, **2017**, 21, 981-1011	2.4	13
68	On third-order limiter functions for finite volume methods. *Bulletin of the Brazilian Mathematical Society*, **2016**, 47, 753-764	1.2	5
67	Relations Between WENO3 and Third-Order Limiting in Finite Volume Methods. *Journal of Scientific Computing*, **2016**, 68, 624-652	2.3	13
66	Model Reduction of Kinetic Equations by Operator Projection. *Journal of Statistical Physics*, **2016**, 162, 457-486	1.5	23
65	Reprint of: Comparison of relaxation phenomena in binary gas-mixtures of Maxwell molecules and hard spheres. *Computers and Mathematics With Applications*, **2016**, 72, 271-287	2.7	2
64	Modeling Nonequilibrium Gas Flow Based on Moment Equations. *Annual Review of Fluid Mechanics*, **2016**, 48, 429-458	22	102
63	On a hyperbolic conservation law of electron transport in solid materials for electron probe microanalysis. *Bulletin of the Brazilian Mathematical Society*, **2016**, 47, 575-588	1.2	3

62	Regularized moment equations for binary gas mixtures: Derivation and linear analysis. *Physics of Fluids*, **2016**, 28, 042003	4.4	13
61	On Singular Closures for the 5-Moment System in Kinetic Gas Theory. *Communications in Computational Physics*, **2015**, 17, 371-400	2.4	13
60	Approximation of the linearized Boltzmann collision operator for hard-sphere and inverse-power-law models. *Journal of Computational Physics*, **2015**, 295, 617-643	4.1	11
59	Comparison of relaxation phenomena in binary gas-mixtures of Maxwell molecules and hard spheres. *Computers and Mathematics With Applications*, **2015**, 70, 73-88	2.7	11
58	Convergence Study of Moment Approximations for Boundary Value Problems of the Boltzmann-BGK Equation. *Communications in Computational Physics*, **2015**, 18, 529-557	2.4	22
57	Heat Transfer in Binary Gas Mixtures Confined in a Lid-Driven Square Cavity. *Procedia Engineering*, **2015**, 127, 10-17		
56	Higher order moment equations for rarefied gas mixtures. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2015**, 471, 20140754	2.4	16
55	Hyperbolic moment equations using quadrature-based projection methods **2014**,		9
54	Stabilization techniques in finite element discretizations for moment approximations **2014**,		1
53	Numerical simulation of large hyperbolic moment systems with linear and relaxation production terms **2014**,		0
52	A framework for hyperbolic approximation of kinetic equations using quadrature-based projection methods. *Kinetic and Related Models*, **2014**, 7, 531-549	2.4	22
51	A robust numerical method for the R13 equations of rarefied gas dynamics: Application to lid driven cavity. *Journal of Computational Physics*, **2013**, 236, 169-186	4.1	64
50	High-Resolution Mathematical and Numerical Analysis of Involution-Constrained PDEs. *Oberwolfach Reports*, **2013**, 10, 2691-2747	0	
49	Affordable robust moment closures for CFD based on the maximum-entropy hierarchy. *Journal of Computational Physics*, **2013**, 251, 500-523	4.1	48
48	Modeling of electric arcs: A study of the non-convective case with strong coupling. *Journal of Plasma Physics*, **2013**, 79, 699-713	2.7	3
47	Regularized 13 moment equations for hard sphere molecules: Linear bulk equations. *Physics of Fluids*, **2013**, 25, 052001	4.4	23
46	A new closure mitigating the sub-shock phenomenon in the continuous shock-structure problem. *Proceedings in Applied Mathematics and Mechanics*, **2013**, 13, 499-500	0.2	2
45	High-Resolution Quantification Across Vertical Interfaces using a Monte Carlo Based Reconstruction Approach. *Microscopy and Microanalysis*, **2013**, 19, 1296-1297	0.5	3

44	Heliostat field optimization: A new computationally efficient model and biomimetic layout. *Solar Energy*, **2012**, 86, 792-803	6.8	201
43	Regularized 13 moment equations for hard spheres **2012**,		4
42	Krylov--Riemann Solver for Large Hyperbolic Systems of Conservation Laws. *SIAM Journal of Scientific Computing*, **2012**, 34, A2072-A2091	2.6	12
41	Heat transfer in micro devices packaged in partial vacuum. *Journal of Physics: Conference Series*, **2012**, 362, 012034	0.3	8
40	Automated Boltzmann collision integrals for moment equations **2012**,		13
39	Slow rarefied gas flow past a cylinder: Analytical solution in comparison to the sphere **2012**,		5
38	H-Theorem for nonlinear regularized 13-moment equations in kinetic gas theory. *Kinetic and Related Models*, **2012**, 5, 185-201	2.4	14
37	Fokker‐Planck model for computational studies of monatomic rarefied gas flows. *Journal of Fluid Mechanics*, **2011**, 680, 574-601	3.7	78
36	Hypersonics simulations based on the Regularized Grad equations for multicomponent plasmas **2011**,		1
35	Application of time reverse modeling on ultrasonic non-destructive testing of concrete. *Applied Mathematical Modelling*, **2011**, 35, 807-816	4.5	38
34	Comment on "Thermodynamically admissible 13 moment equations from the Boltzmann equation". *Physical Review Letters*, **2010**, 105, 128901; author reply 128902	7.4	12
33	Slow gas microflow past a sphere: Analytical solution based on moment equations. *Physics of Fluids*, **2010**, 22, 072001	4.4	25
32	Scale-Induced Closure for Approximations of Kinetic Equations. *Journal of Statistical Physics*, **2010**, 141, 848-888	1.5	4
31	A solution algorithm for the fluid dynamic equations based on a stochastic model for molecular motion. *Journal of Computational Physics*, **2010**, 229, 1077-1098	4.1	80
30	Hyperbolic Moment Equations in Kinetic Gas Theory Based on Multi-variate Pearson-IV-distributions. *Communications in Computational Physics*, **2010**, 7, 639-673	2.4	36
29	Modeling Micro Mass and Heat Transfer for Gases Using Extended Continuum Equations. *Journal of Heat Transfer*, **2009**, 131,	1.8	9
28	Compact third-order limiter functions for finite volume methods. *Journal of Computational Physics*, **2009**, 228, 4118-4145	4.1	95
27	Macroscopic description of steady and unsteady rarefaction effects in boundary value problems of gas dynamics. *Continuum Mechanics and Thermodynamics*, **2009**, 21, 423-443	3.5	31

26	Couette and Poiseuille microflows: Analytical solutions for regularized 13-moment equations. *Physics of Fluids*, **2009**, 21, 017102	4.4	80
25	Higher-order effects in rarefied channel flows. *Physical Review E*, **2008**, 78, 046301	2.4	55
24	Boundary conditions for regularized 13-moment-equations for micro-channel-flows. *Journal of Computational Physics*, **2008**, 227, 1982-2011	4.1	117
23	Increasing the accuracy in locally divergence-preserving finite volume schemes for MHD. *Journal of Computational Physics*, **2008**, 227, 3405-3427	4.1	12
22	Compact Third-Order Logarithmic Limiting for Nonlinear Hyperbolic Conservation Laws **2008**, 347-354		1
21	Stability of reduced electric arc models. *Proceedings in Applied Mathematics and Mechanics*, **2007**, 7, 1141301-1141302		
20	Essentially optimal explicit Runge–Kutta methods with application to hyperbolic–parabolic equations. *Numerische Mathematik*, **2007**, 106, 303-334	2.2	24
19	H theorem, regularization, and boundary conditions for linearized 13 moment equations. *Physical Review Letters*, **2007**, 99, 014502	7.4	73
18	Flexible Stability Domains for Explicit Runge-Kutta Methods. *Series in Contemporary Applied Mathematics*, **2007**, 152-180	0	2
17	Stability and consistency of kinetic upwinding for advection–diffusion equations. *IMA Journal of Numerical Analysis*, **2006**, 26, 686-722	1.8	8
16	Two-Dimensional Bulk Microflow Simulations Based on Regularized Grad's 13-Moment Equations. *Multiscale Modeling and Simulation*, **2006**, 5, 695-728	1.8	47
15	On curl-preserving finite volume discretizations for shallow water equations. *BIT Numerical Mathematics*, **2006**, 46, 35-53	1.7	18
14	Locally Divergence-preserving Upwind Finite Volume Schemes for Magnetohydrodynamic Equations. *SIAM Journal of Scientific Computing*, **2005**, 26, 1166-1191	2.6	35
13	Regularized 13 moment equations for rarefied gas flows **2005**, 247-267		
12	Solenoidal Discrete Initialization for Magnetohydrodynamics **2005**, 235-253		1
11	High order WENO schemes: investigations on non-uniform convergence for MHD Riemann problems. *Journal of Computational Physics*, **2004**, 201, 586-600	4.1	17
10	Regularized 13-moment equations: shock structure calculations and comparison to Burnett models. *Journal of Fluid Mechanics*, **2004**, 513, 171-198	3.7	167
9	Constraint-Preserving Upwind Methods for Multidimensional Advection Equations. *SIAM Journal on Numerical Analysis*, **2004**, 42, 1694-1728	2.4	32

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8	Uniqueness conditions for Riemann problems of ideal magnetohydrodynamics. *Journal of Plasma Physics*, **2003**, 69, 253-276	2.7	39
7	Explicit fluxes and productions for large systems of the moment method based on extended thermodynamics. *Continuum Mechanics and Thermodynamics*, **2003**, 15, 97-111	3.5	20
6	Non-uniform convergence of finite volume schemes for Riemann problems of ideal magnetohydrodynamics. *Journal of Computational Physics*, **2003**, 192, 73-94	4.1	31
5	Regularization of Grad's 13 moment equations: Derivation and linear analysis. *Physics of Fluids*, **2003**, 15, 2668-2680	4.4	308
4	A Constrained Transport Upwind Scheme for Divergence-free Advection **2003**, 529-538		5
3	The shock tube study in extended thermodynamics. *Physics of Fluids*, **2001**, 13, 2423-2432	4.4	33
2	The Riemann-Problem in Extended Thermodynamics **2001**, 79-88		
1	Characteristic waves and dissipation in the 13-moment-case. *Continuum Mechanics and Thermodynamics*, **2000**, 12, 289-301	3.5	30