Henning Struchtrup

List of Publications by Citations

114 papers	3,350 citations	29 h-index	54 g-index
129 ext. papers	3,759 ext. citations	3.5 avg, IF	5.92 L-index

#	Paper	IF	Citations
114	Regularization of Grad's 13 moment equations: Derivation and linear analysis. *Physics of Fluids*, **2003**, 15, 2668-2680	4.4	308
113	Macroscopic Transport Equations for Rarefied Gas Flows. *Interaction of Mechanics and Mathematics*, **2005**,	9	281
112	Heat pulse experiments revisited. *Continuum Mechanics and Thermodynamics*, **1993**, 5, 3-50	3.5	248
111	Regularized 13-moment equations: shock structure calculations and comparison to Burnett models. *Journal of Fluid Mechanics*, **2004**, 513, 171-198	3.7	167
110	Hybrid membrane/cryogenic separation of oxygen from air for use in the oxy-fuel process. *Energy*, **2010**, 35, 1884-1897	7.9	128
109	Mean evaporation and condensation coefficients based on energy dependent condensation probability. *Physical Review E*, **2004**, 70, 061605	2.4	120
108	Boundary conditions for regularized 13-moment-equations for micro-channel-flows. *Journal of Computational Physics*, **2008**, 227, 1982-2011	4.1	117
107	Stable transport equations for rarefied gases at high orders in the Knudsen number. *Physics of Fluids*, **2004**, 16, 3921-3934	4.4	82
106	Couette and Poiseuille microflows: Analytical solutions for regularized 13-moment equations. *Physics of Fluids*, **2009**, 21, 017102	4.4	80
105	Numerical comparison of Bhatnagar-Gross-Krook models with proper Prandtl number. *Physics of Fluids*, **2004**, 16, 2797-2813	4.4	79
104	H theorem, regularization, and boundary conditions for linearized 13 moment equations. *Physical Review Letters*, **2007**, 99, 014502	7.4	73
103	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
102	Transport Phenomena in Polymer Electrolyte Membranes. *Journal of the Electrochemical Society*, **2005**, 152, A1804	3.9	63
101	Macroscopic transport models for rarefied gas flows: a brief review. *IMA Journal of Applied Mathematics*, **2011**, 76, 672-697	1	55
100	Higher-order effects in rarefied channel flows. *Physical Review E*, **2008**, 78, 046301	2.4	55
99	Maximum of the Local Entropy Production Becomes Minimal in Stationary Processes. *Physical Review Letters*, **1998**, 80, 5048-5051	7.4	49
98	Thermal and second-law analysis of a micro- or nanocavity using direct-simulation Monte Carlo. *Physical Review E*, **2012**, 85, 056310	2.4	48

97	The BGK-model with velocity-dependent collision frequency. *Continuum Mechanics and Thermodynamics*, **1997**, 9, 23-31	3.5	42
96	Transport Phenomena in Polymer Electrolyte Membranes. *Journal of the Electrochemical Society*, **2005**, 152, A1815	3.9	40
95	Derivation of 13 Moment Equations for Rarefied Gas Flow to Second Order Accuracy for Arbitrary Interaction Potentials. *Multiscale Modeling and Simulation*, **2005**, 3, 221-243	1.8	37
94	A Parallel DSMC Investigation of Monatomic/Diatomic Gas Flows in a Micro/Nano Cavity. *Numerical Heat Transfer; Part A: Applications*, **2013**, 63, 305-325	2.3	36
93	Maxwell boundary condition and velocity dependent accommodation coefficient. *Physics of Fluids*, **2013**, 25, 112001	4.4	32
92	Capturing non-equilibrium phenomena in rarefied polyatomic gases: A high-order macroscopic model. *Physics of Fluids*, **2014**, 26, 052001	4.4	32
91	Failures of the Burnett and super-Burnett equations in steady state processes. *Continuum Mechanics and Thermodynamics*, **2005**, 17, 43-50	3.5	32
90	Ellipsoidal statistical Bhatnagar□Gross□Krook model with velocity-dependent collision frequency. *Physics of Fluids*, **2005**, 17, 127103	4.4	32
89	Inflating a Rubber Balloon. *Mathematics and Mechanics of Solids*, **2002**, 7, 569-577	2.3	32
88	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
87	Inconsistency of a dissipative contribution to the mass flux in hydrodynamics. *Physical Review E*, **2009**, 80, 056303	2.4	31
86	Temperature jump and velocity slip in the moment method. *Continuum Mechanics and Thermodynamics*, **2000**, 12, 1-18	3.5	31
85	Thermodynamically admissible boundary conditions for the regularized 13 moment equations. *Physics of Fluids*, **2016**, 28, 027105	4.4	29
84	Linear kinetic heat transfer: Moment equations, boundary conditions, and Knudsen layers. *Physica A: Statistical Mechanics and Its Applications*, **2008**, 387, 1750-1766	3.3	29
83	An Extended Moment Method in Radiative Transfer: The Matrices of Mean Absorption and Scattering Coefficients. *Annals of Physics*, **1997**, 257, 111-135	2.5	27
82	Heat transfer in the transition regime: solution of boundary value problems for Grad's moment equations via kinetic schemes. *Physical Review E*, **2002**, 65, 041204	2.4	27
81	Assessment and development of the gas kinetic boundary condition for the Boltzmann equation. *Journal of Fluid Mechanics*, **2017**, 823, 511-537	3.7	26
80	A numerical study of the heat transfer through a rarefied gas confined in a microcavity. *Continuum Mechanics and Thermodynamics*, **2015**, 27, 433-446	3.5	25

79	Different variants of R13 moment equations applied to the shock-wave structure. *Physics of Fluids*, **2017**, 29, 037105	4.4	24
78	Regularized 13 moment equations for hard sphere molecules: Linear bulk equations. *Physics of Fluids*, **2013**, 25, 052001	4.4	23
77	Rarefaction effects in thermally-driven microflows. *Physica A: Statistical Mechanics and Its Applications*, **2010**, 389, 3069-3080	3.3	23
76	Switching criteria for hybrid rarefied gas flow solvers. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2009**, 465, 1581-1598	2.4	22
75	On the Number of Moments in Radiative Transfer Problems. *Annals of Physics*, **1998**, 266, 1-26	2.5	22
74	Thermodynamics and Energy Conversion **2014**,		21
73	Macroscopic transport equations for rarefied gas flows. *Interaction of Mechanics and Mathematics*, **2005**, 145-160	9	21
72	Moment model and boundary conditions for energy transport in the phonon gas. *Continuum Mechanics and Thermodynamics*, **2014**, 26, 593-618	3.5	20
71	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
70	An extended macroscopic transport model for rarefied gas flows in long capillaries with circular cross section. *Physics of Fluids*, **2010**, 22, 112004	4.4	19
69	Effects of rarefaction in microflows between coaxial cylinders. *Physical Review E*, **2009**, 80, 066317	2.4	19
68	Thermodynamic considerations on the stability of water in Nafion. *Journal of Membrane Science*, **2007**, 297, 190-198	9.6	19
67	Bulk equations and Knudsen layers for the regularized 13 moment equations. *Continuum Mechanics and Thermodynamics*, **2007**, 19, 177-189	3.5	18
66	Extended moment method for electrons in semiconductors. *Physica A: Statistical Mechanics and Its Applications*, **2000**, 275, 229-255	3.3	18
65	Macroscopic and kinetic modelling of rarefied polyatomic gases. *Journal of Fluid Mechanics*, **2016**, 806, 437-505	3.7	18
64	Kinetic schemes and boundary conditions for moment equations. *Zeitschrift Fur Angewandte Mathematik Und Physik*, **2000**, 51, 346	1.6	17
63	Thermal stress vs. thermal transpiration: A competition in thermally driven cavity flows. *Physics of Fluids*, **2015**, 27, 112001	4.4	16
62	Resonance in rarefied gases. *Continuum Mechanics and Thermodynamics*, **2012**, 24, 361-376	3.5	16

61	Thermodynamics of pore wetting and swelling in Nafion. *Journal of Membrane Science*, **2008**, 315, 125-132	3.6	16
60	Moment equations for electrons in semiconductors: comparison of spherical harmonics and full moments. *Solid-State Electronics*, **2000**, 44, 95-103	1.7	16
59	The BGK model for an ideal gas with an internal degree of freedom. *Transport Theory and Statistical Physics*, **1999**, 28, 369-385		16
58	DSMC and R13 modeling of the adiabatic surface. *International Journal of Thermal Sciences*, **2016**, 101, 9-23	4.1	15
57	Projected moments in relativistic kinetic theory. *Physica A: Statistical Mechanics and Its Applications*, **1998**, 253, 555-593	3.3	15
56	Evaporation boundary conditions for the R13 equations of rarefied gas dynamics. *Physics of Fluids*, **2017**, 29, 092004	4.4	13
55	Regularized moment equations for binary gas mixtures: Derivation and linear analysis. *Physics of Fluids*, **2016**, 28, 042003	4.4	13
54	Velocity dependent Maxwell boundary conditions in DSMC. *International Journal of Heat and Mass Transfer*, **2015**, 87, 151-160	4.9	12
53	Comment on "Thermodynamically admissible 13 moment equations from the Boltzmann equation". *Physical Review Letters*, **2010**, 105, 128901; author reply 128902	7.4	12
52	Interface model for non-equilibrium evaporation. *Physica A: Statistical Mechanics and Its Applications*, **2011**, 390, 31-42	3.3	12
51	Scaling and Expansion of Moment Equations in Kinetic Theory. *Journal of Statistical Physics*, **2006**, 125, 569-591	1.5	12
50	How much work is lost in an irreversible turbine?. *Exergy an International Journal*, **2002**, 2, 152-158		12
49	Work Storage in States of Apparent Negative Thermodynamic Temperature. *Physical Review Letters* , **2018**, 120, 250602	7.4	11
48	Comparing macroscopic continuum models for rarefied gas dynamics: A new test method. *Journal of Computational Physics*, **2006**, 218, 748-769	4.1	11
47	Burnett equations for the ellipsoidal statistical BGK model. *Continuum Mechanics and Thermodynamics*, **2004**, 16, 97-108	3.5	11
46	Multistage Pressure-Retarded Osmosis. *Journal of Non-Equilibrium Thermodynamics*, **2016**, 41,	3.8	11
45	Modeling of Fuel Cell Cold Start and Dimension Reduction Simplification Method. *Journal of the Electrochemical Society*, **2020**, 167, 044501	3.9	10
44	Grad□ Moment Equations for Microscale Flows. *AIP Conference Proceedings*, **2003**,	0	10

43	Regulation of anti-Fourier heat transfer for non-equilibrium gas flows through micro/nanochannels. *International Journal of Thermal Sciences*, **2017**, 118, 24-39	4.1	9
42	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
41	Poiseuille flow of moderately rarefied gases in annular channels. *International Journal of Heat and Mass Transfer*, **2012**, 55, 1291-1303	4.9	9
40	Modeling Micro Mass and Heat Transfer for Gases Using Extended Continuum Equations. *Journal of Heat Transfer*, **2009**, 131,	1.8	9
39	External losses in high-bypass turbo fan air engines. *International Journal of Exergy*, **2008**, 5, 400	1.2	9
38	Modeling and simulation of the dual stage pressure retarded osmosis systems. *Desalination*, **2019**, 460, 28-40	10.3	8
37	Heat transfer in micro devices packaged in partial vacuum. *Journal of Physics: Conference Series*, **2012**, 362, 012034	0.3	8
36	The Mathematical Procedure of Coarse Graining: From Grad's Ten-Moment Equations to Hydrodynamics. *Multiscale Modeling and Simulation*, **2007**, 6, 53-69	1.8	7
35	Grad's 13 moments approximation for Enskog-Vlasov equation **2019**,		6
34	The analysis of different variants of R13 equations applied to the shock-wave structure **2016**,		6
33	Analysis of temperature difference driven heat and mass transfer in the Phillips–Onsager cell. *International Journal of Heat and Mass Transfer*, **2013**, 58, 521-531	4.9	6
32	Temperature-difference-driven mass transfer through the vapor from a cold to a warm liquid. *Physical Review E*, **2012**, 85, 061201	2.4	6
31	Positivity of Entropy Production Chapman-Enskog Expansion and Phase Density in the. *Journal of Thermophysics and Heat Transfer*, **2001**, 15, 372-373	1.3	6
30	A model for kinetically controlled internal phase segregation during aerosol coagulation. *Journal of Aerosol Science*, **2001**, 32, 1479-1504	4.3	6
29	Boundary conditions for Grad's 13 moment equations. *Progress in Computational Fluid Dynamics*, **2008**, 8, 69	0.7	5
28	Evaporation Boundary Conditions for the Linear R13 Equations Based on the Onsager Theory. *Entropy*, **2018**, 20,	2.8	5
27	Coupled constitutive relations: a second law based higher-order closure for hydrodynamics. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2018**, 474, 20180323	2.4	5
26	Some Remarks on the Equations of Burnett and Grad. *The IMA Volumes in Mathematics and Its Applications*, **2004**, 265-276	0.5	5

25	Large scale energy storage using multistage osmotic processes: approaching high efficiency and energy density. *Sustainable Energy and Fuels*, **2017**, 1, 599-614	5.8	4
24	Modeling, simulation and optimization of a pressure retarded osmosis power station. *Applied Mathematics and Computation*, **2019**, 353, 189-207	2.7	4
23	Regularized 13 moment equations for hard spheres **2012**,		4
22	Struchtrup and Weiss Reply:. *Physical Review Letters*, **1998**, 81, 5701-5701	7.4	4
21	PREDICTING CONTINUUM BREAKDOWN OF RAREFIED MICRO/NANO FLOWS USING ENTROPY AND ENTROPY GENERATION ANALYSIS. *International Journal of Modern Physics C*, **2013**, 24, 1350029	1.1	3
20	A linearization of Mieussens's discrete velocity model for kinetic equations. *European Journal of Mechanics, B/Fluids*, **2007**, 26, 182-192	2.4	3
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18	Entropy and the Second Law of Thermodynamics-The Nonequilibrium Perspective. *Entropy*, **2020**, 22,	2.8	3
17	Extended Thermodynamics of Phonons. *Springer Tracts in Natural Philosophy*, **1998**, 343-355		3
16	A moment model for phonon transport at room temperature. *Continuum Mechanics and Thermodynamics*, **2017**, 29, 117-144	3.5	2
15	What does an ideal wall look like?. *Continuum Mechanics and Thermodynamics*, **2008**, 19, 493-498	3.5	2
14	A Hybrid Sectional-moment Model for Coagulation and Phase Segregation in Binary Liquid Nanodroplets. *Journal of Nanoparticle Research*, **2002**, 4, 61-72	2.3	2
13	Extended Thermodynamics of Radiation. *Springer Tracts in Natural Philosophy*, **1998**, 309-341		2
12	R13 moment equations applied to supersonic flow with solid wall interaction **2019**,		1
11	Efficiencies and Work Losses for Cycles Interacting with Reservoirs of Apparent Negative Temperatures. *Entropy*, **2019**, 21,	2.8	1
10	Are waves with negative spatial damping unstable?. *Wave Motion*, **2020**, 97, 102612	1.8	1
9	Evaporation/condensation boundary conditions for the regularized 13 moment equations **2016**,		1
8	Kinetic model and moment method for polyatomic gases **2014**,		1

7	Detailed Investigation of Thermal and Hydrodynamic Flow Behaviour in Micro/Nano Cavity Using DSMC and NSF Equations **2011**,		1
6	Analytical and Numerical Solutions of Boundary Value Problems for the Regularized 13 Moment Equations **2011**,		1
5	Thermodynamically admissible 13-moment equations. *Physics of Fluids*, **2022**, 34, 017105	4.4	1
4	Coupled Proton and Water Transport in Polymer Electrolyte Membranes. *Topics in Applied Physics*, **2009**, 123-155	0.5	1
3	Regularized 13 moment equations for rarefied gas flows **2005**, 247-267		
2	Model Reduction in Kinetic Theory317-341		
1	Thermodynamic loss analysis of a liquid-sorbent direct air carbon capture plant. *Cell Reports Physical Science*, **2022**, 3, 100791	6.1	