Lorenzo Pareschi

List of Publications by Year
in descending order

150 papers	4,953 citations	87843 38 h-index	110317 64 g-index
155 all docs	155 docs citations	155 times ranked	1373 citing authors

#	Article	IF	Citations
1	Implicitâ€“Explicit Rungeâ€“Kutta Schemes and Applications to Hyperbolic Systems with Relaxation. Journal of Scientific Computing, 2005, 25, 129-155.	1.1	369
2	Numerical methods for kinetic equations. Acta Numerica, 2014, 23, 369-520.	6.3	253
3	On a Kinetic Model for a Simple Market Economy. Journal of Statistical Physics, 2005, 120, 253-277.	0.5	172
4	Vehicular traffic, crowds, and swarms: From kinetic theory and multiscale methods to applications and research perspectives. Mathematical Models and Methods in Applied Sciences, 2019, 29, 1901-2005.	1.7	170
5	Uniformly Accurate Diffusive Relaxation Schemes for Multiscale Transport Equations. SIAM Journal on Numerical Analysis, 2000, 38, 913-936.	1.1	152
6	Numerical Solution of the Boltzmann Equation I: Spectrally Accurate Approximation of the Collision Operator. SIAM Journal on Numerical Analysis, 2000, 37, 1217-1245.	1.1	148
7	Diffusive Relaxation Schemes for Multiscale Discrete-Velocity Kinetic Equations. SIAM Journal on Numerical Analysis, 1998, 35, 2405-2439.	1.1	140
8	Numerical Schemes for Hyperbolic Systems of Conservation Laws with Stiff Diffusive Relaxation. SIAM Journal on Numerical Analysis, 2000, 37, 1246-1270.	1.1	133
9	Fast algorithms for computing the Boltzmann collision operator. Mathematics of Computation, 2006, 75, 1833-1852.	1.1	128
10	Implicit-Explicit Runge--Kutta Schemes for Hyperbolic Systems and Kinetic Equations in the Diffusion Limit. SIAM Journal of Scientific Computing, 2013, 35, A22-A51.	1.3	113
11	A Fourier spectral method for homogeneous boltzmann equations. Transport Theory and Statistical Physics, 1996, 25, 369-382.	0.4	98
12	Relaxation Schemes for Nonlinear Kinetic Equations. SIAM Journal on Numerical Analysis, 1997, 34, 2168-2194.	1.1	90
13	A Numerical Method for the Accurate Solution of the Fokkerâ€“Planckâ€“Landau Equation in the Nonhomogeneous Case. Journal of Computational Physics, 2002, 179, 1-26.	1.9	88
14	Mathematical Modeling of Collective Behavior in Socio-Economic and Life Sciences. Modeling and Simulation in Science, Engineering and Technology, 2010, , .	0.4	87
15	Asymptotic Preserving Implicit-Explicit Runge--Kutta Methods for Nonlinear Kinetic Equations. SIAM Journal on Numerical Analysis, 2013, 51, 1064-1087.	1.1	84
16	Fast Spectral Methods for the Fokkerâ€“Planckâ€“Landau Collision Operator. Journal of Computational Physics, 2000, 165, 216-236.	1.9	82
17	Solving the Boltzmann Equation in N log2N. SIAM Journal of Scientific Computing, 2006, 28, 1029-1053.	1.3	82
18	Exponential Rungeâ€“Kutta Methods for Stiff Kinetic Equations. SIAM Journal on Numerical Analysis, 2011, 49, 2057-2077.	1.1	80

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19	Time Relaxed Monte Carlo Methods for the Boltzmann Equation. SIAM Journal of Scientific Computing, 2001, 23, 1253-1273.	1.3	74
20	Boltzmann-type control of opinion consensus through leaders. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2014, 372, 20140138.	1.6	74
21	Kinetic description of optimal control problems and applications to opinion consensus. Communications in Mathematical Sciences, 2015, 13, 1407-1429.	0.5	66
22	An introduction to Monte Carlo method for the Boltzmann equation. ESAIM: Proceedings and Surveys, 2001, 10, 35-75.	0.4	65
23	An Implicit Monte Carlo Method for Rarefied Gas Dynamics. Journal of Computational Physics, 1999, 154, 90-116.	1.9	58
24	Binary Interaction Algorithms for the Simulation of Flocking and Swarming Dynamics. Multiscale Modeling and Simulation, 2013, 11, 1-29.	0.6	58
25	The momentâ€guided Monte Carlo method. International Journal for Numerical Methods in Fluids, 2011, 67, 189-213.	0.9	57
26	Kinetic models for socio-economic dynamics of speculative markets. Physica A: Statistical Mechanics and Its Applications, 2012, 391, 715-730.	1.2	55
27	Structure Preserving Schemes for Nonlinear Fokkerâ€"Planck Equations and Applications. Journal of Scientific Computing, 2018, 74, 1575-1600.	1.1	53
28	Self-Similarity and Power-Like Tails in Nonconservative Kinetic Models. Journal of Statistical Physics, 2006, 124, 747-779.	0.5	51
29	Wealth distribution and collective knowledge: a Boltzmann approach. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2014, 372, 20130396.	1.6	50
30	Hybrid Multiscale Methods II. Kinetic Equations. Multiscale Modeling and Simulation, 2008, 6, 1169-1197.	0.6	49
31	Opinion dynamics over complex networks: Kinetic modelling and numerical methods. Kinetic and Related Models, 2017, 10, 1-32.	0.5	47
32	Modeling of self-organized systems interacting with a few individuals: From microscopic to macroscopic dynamics. Applied Mathematics Letters, 2013, 26, 397-401.	1.5	45
33	Discretization of the Multiscale Semiconductor Boltzmann Equation by Diffusive Relaxation Schemes. Journal of Computational Physics, 2000, 161, 312-330.	1.9	44
34	Numerical schemes for kinetic equations in diffusive regimes. Applied Mathematics Letters, 1998, 11, 29-35.	1.5	42
35	Mesoscopic Modelling of Financial Markets. Journal of Statistical Physics, 2009, 134, 161-184.	0.5	42
36	Wealth distribution under the spread of infectious diseases. Physical Review E, 2020, 102, 022303.	0.8	42

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37	Uncertainty Quantification in Control Problems for Flocking Models. Mathematical Problems in Engineering, 2015, 2015, 1-14.	0.6	40
38	Asymptotic preserving Monte Carlo methods for the Boltzmann equation. Transport Theory and Statistical Physics, 2000, 29, 415-430.	0.4	38
39	High order pressure-based semi-implicit IMEX schemes for the 3D Navier-Stokes equations at all Mach numbers. Journal of Computational Physics, 2021, 434, 110206.	1.9	37
40	Central Differencing Based Numerical Schemes for Hyperbolic Conservation Laws with Relaxation Terms. SIAM Journal on Numerical Analysis, 2001, 39, 1395-1417.	1.1	36
41	Fluid Solver Independent Hybrid Methods for Multiscale Kinetic Equations. SIAM Journal of Scientific Computing, 2010, 32, 603-634.	1.3	36
42	Numerical solution of the Boltzmann equation by time relaxed Monte Carlo (TRMC) methods. International Journal for Numerical Methods in Fluids, 2005, 48, 947-983.	0.9	35
43	A Unified IMEX Runge--Kutta Approach for Hyperbolic Systems with Multiscale Relaxation. SIAM Journal on Numerical Analysis, 2017, 55, 2085-2109.	1.1	35
44	Fokker-Planck asymptotics for traffic flow models. Kinetic and Related Models, 2010, 3, 165-179.	0.5	32
45	Control with uncertain data of socially structured compartmental epidemic models. Journal of Mathematical Biology, 2021, 82, 63.	0.8	31
46	Particle Based gPC Methods for Mean-Field Models of Swarming with Uncertainty. Communications in Computational Physics, 2019, 25, .	0.7	31
47	Exponential Rungeâ€“Kutta for the inhomogeneous Boltzmann equations with high order of accuracy. Journal of Computational Physics, 2014, 259, 402-420.	1.9	30
48	Kinetic models for optimal control of wealth inequalities. European Physical Journal B, 2018, 91, 1.	0.6	30
49	On the stability of spectral methods for the homogeneous Boltzmann equation. Transport Theory and Statistical Physics, 2000, 29, 431-447.	0.4	29
50	Kinetic models of collective decision-making in the presence of equality bias. Physica A: Statistical Mechanics and Its Applications, 2017, 467, 201-217.	1.2	29
51	Spectral methods for the non cut-off Boltzmann equation and numerical grazing collision limit. Numerische Mathematik, 2003, 93, 527-548.	0.9	28
52	Hyperbolic models for the spread of epidemics on networks: kinetic description and numerical methods. ESAIM: Mathematical Modelling and Numerical Analysis, 2021, 55, 381-407.	0.8	28
53	Consensus-based optimization on hypersurfaces: Well-posedness and mean-field limit. Mathematical Models and Methods in Applied Sciences, 2020, 30, 2725-2751.	1.7	28
54	Implicit-explicit runge-kutta schemes and applications to hyperbolic systems with relaxation. Journal of Scientific Computing, 2005, 25, 129-155.	1.1	27

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55	Central Runge--Kutta Schemes for Conservation Laws. SIAM Journal of Scientific Computing, 2005, 26, 979-999.	1.3	27
56	High order asymptotic-preserving schemes for the Boltzmann equation. Comptes Rendus Mathematique, 2012, 350, 481-486.	0.1	27
57	On the asymptotic properties of IMEX Rungeâ€"Kutta schemes for hyperbolic balance laws. Journal of Computational and Applied Mathematics, 2017, 316, 60-73.	1.1	27
58	Implicit-Explicit Linear Multistep Methods for Stiff Kinetic Equations. SIAM Journal on Numerical Analysis, 2017, 55, 664-690.	1.1	25
59	A Relaxation Scheme for Solving the Boltzmann Equation Based on the Chapman-Enskog Expansion. Acta Mathematicae Applicatae Sinica, 2002, 18, 37-62.	0.4	23
60	Mean--field control and Riccati equations. Networks and Heterogeneous Media, 2015, 10, 699-715.	0.5	23
61	Hyperbolic compartmental models for epidemic spread on networks with uncertain data: Application to the emergence of COVID-19 in Italy. Mathematical Models and Methods in Applied Sciences, 2021, 31, 2495-2531.	1.7	23
62	From particle swarm optimization to consensus based optimization: Stochastic modeling and mean-field limit. Mathematical Models and Methods in Applied Sciences, 2021, 31, 1625-1657.	1.7	22
63	Recent Advances in Opinion Modeling: Control and Social Influence. Modeling and Simulation in Science, Engineering and Technology, 2017, , 49-98.	0.4	21
64	Convolutive decomposition and fast summation methods for discrete-velocity approximations of the Boltzmann equation. ESAIM: Mathematical Modelling and Numerical Analysis, 2013, 47, 1515-1531.	0.8	20
65	Multi-scale control variate methods for uncertainty quantification in kinetic equations. Journal of Computational Physics, 2019, 388, 63-89.	1.9	20
66	Numerical methods for plasma physics in collisional regimes. Journal of Plasma Physics, 2015, 81, .	0.7	19
67	On steady-state preserving spectral methods for homogeneous Boltzmann equations. Comptes Rendus Mathematique, 2015, 353, 309-314.	0.1	18
68	Asymptotic-Preserving Monte Carlo Methods for Transport Equations in the Diffusive Limit. SIAM Journal of Scientific Computing, 2018, 40, A504-A528.	1.3	18
69	Spatial spread of COVID-19 outbreak in Italy using multiscale kinetic transport equations with uncertainty. Mathematical Biosciences and Engineering, 2021, 18, 7028-7059.	1.0	18
70	Modeling and simulating the spatial spread of an epidemic through multiscale kinetic transport equations. Mathematical Models and Methods in Applied Sciences, 2021, 31, 1059-1097.	1.7	18
71	Fast conservative and entropic numerical methods for the Boson Boltzmann equation. Numerische Mathematik, 2005, 99, 509-532.	0.9	17
72	Efficient Stochastic Asymptotic-Preserving Implicit-Explicit Methods for Transport Equations with Diffusive Scalings and Random Inputs. SIAM Journal of Scientific Computing, 2018, 40, A671-A696.	1.3	17

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73	Accurate numerical methods for the collisional motion of (heated) granular flows. Journal of Computational Physics, 2005, 202, 216-235.	1.9	16
74	Hydrodynamic Models of Preference Formation in Multi-agent Societies. Journal of Nonlinear Science, 2019, 29, 2761-2796.	1.0	16
75	Spectral methods for one-dimensional kinetic models of granular flows and numerical quasi elastic limit. ESAIM: Mathematical Modelling and Numerical Analysis, 2003, 37, 73-90.	0.8	15
76	Implicit-Explicit Runge--Kutta Schemes for Numerical Discretization of Optimal Control Problems. SIAM Journal on Numerical Analysis, 2013, 51, 1875-1899.	1.1	15
77	Monte Carlo stochastic Galerkin methods for the Boltzmann equation with uncertainties: Space-homogeneous case. Journal of Computational Physics, 2020, 423, 109822.	1.9	15
78	Multiscale Variance Reduction Methods Based on Multiple Control Variates for Kinetic Equations with Uncertainties. Multiscale Modeling and Simulation, 2020, 18, 351-382.	0.6	15
79	Discreteâ€Velocity Models and Relaxation Schemes for Traffic Flows. SIAM Journal of Scientific Computing, 2006, 28, 1582-1596.	1.3	14
80	Residual equilibrium schemes for time dependent partial differential equations. Computers and Fluids, 2017, 156, 329-342.	1.3	14
81	Mathematical Models and Methods for Crowd Dynamics Control. Modeling and Simulation in Science, Engineering and Technology, 2020, , 159-197.	0.4	14
82	Implicit-Explicit Runge-Kutta Schemes for the Boltzmann-Poisson System for Semiconductors. Communications in Computational Physics, 2014, 15, 1291-1319.	0.7	13
83	On a continuous mixed strategies model for evolutionary game theory. Kinetic and Related Models, 2011, 4, 187-213.	0.5	13
84	Enskog-like discrete velocity models for vehicular traffic flow. Networks and Heterogeneous Media, 2007, 2, 481-496.	0.5	13
85	Compressible and incompressible limits for hyperbolic systems with relaxation. Journal of Computational and Applied Mathematics, 2004, 168, 41-52.	1.1	12
86	Uncertainty Quantification for Kinetic Models in Socioâ€“Economic and Life Sciences. SEMA SIMAI Springer Series, 2017, , 151-191.	0.4	12
87	Structure preserving schemes for the continuum Kuramoto model: Phase transitions. Journal of Computational Physics, 2019, 376, 365-389.	1.9	12
88	Implicit-Explicit Multistep Methods for Hyperbolic Systems With Multiscale Relaxation. SIAM Journal of Scientific Computing, 2020, 42, A2402-A2435.	1.3	12
89	Selective model-predictive control for flocking systems. Communications in Applied and Industrial Mathematics, 2018, 9, 4-21.	0.6	12
90	Mean field mutation dynamics and the continuous Luriaâ€“DelbrÃ¼ck distribution. Mathematical Biosciences, 2012, 240, 223-230.	0.9	11

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91	Boltzmann Games in Heterogeneous Consensus Dynamics. Journal of Statistical Physics, 2019, 175, 97-125.	0.5	11
92	Modelling lockdown measures in epidemic outbreaks using selective socio-economic containment with uncertainty. Mathematical Biosciences and Engineering, 2021, 18, 7161-7190.	1.0	11
93	Uncertainty quantification of viscoelastic parameters in arterial hemodynamics with the a-FSI blood flow model. Journal of Computational Physics, 2021, 430, 110102.	1.9	11
94	General Kinetic Models for Vehicular Traffic Flows and Monte-Carlo Methods. Computational Methods in Applied Mathematics, 2005, 5, 155-169.	0.4	11
95	Hybrid multiscale methods for hyperbolic problems I. Hyperbolic relaxation problems. Communications in Mathematical Sciences, 2006, 4, 155-177.	0.5	11
96	A recursive Monte Carlo method for the Boltzmann equation in the Maxwellian case. Monte Carlo Methods and Applications, 2001, 7, .	0.3	10
97	Fast methods for the Boltzmann collision integral. Comptes Rendus Mathematique, 2004, 339, 71-76.	0.1	10
98	Dissipative hydrodynamic models for the diffusion of impurities in a gas. Applied Mathematics Letters, 2006, 19, 516-521.	1.5	10
99	A precise computation of stress intensity factor on the front of a convex planar crack. International Journal for Numerical Methods in Engineering, 2002, 54, 241-261.	1.5	9
100	Asymptotic-Preserving Exponential Methods for the Quantum Boltzmann Equation with High-Order Accuracy. Journal of Scientific Computing, 2015, 62, 555-574.	1.1	9
101	Towards a Hybrid Monte Carlo Method for Rarefied Gas Dynamics. The IMA Volumes in Mathematics and Its Applications, 2004, , 57-73.	0.5	9
102	Asymptotic-Preserving (Ap) Schemes for Multiscale Kinetic Equations: a Unified Approach. , 2001, , 573-582.		9
103	Binary Interaction Methods for High Dimensional Global Optimization and Machine Learning. Applied Mathematics and Optimization, 2022, 86, .	0.8	9
104	Uniformly accurate schemes for relaxation approximations to fluid dynamic equations. Applied Mathematics Letters, 2003, 16, 1123-1127.	1.5	8
105	Uncertainty Quantification for the BGK Model of the Boltzmann Equation Using Multilevel Variance Reduced Monte Carlo Methods. SIAM-ASA Journal on Uncertainty Quantification, 2021, 9, 650-680.	1.1	8
106	An Introduction to Uncertainty Quantification for Kinetic Equations and Related Problems. SEMA SIMAI Springer Series, 2021, , 141-181.	0.4	8
107	Spreading of fake news, competence and learning: kinetic modelling and numerical approximation. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2022, 380, 20210159.	1.6	8
108	Hybrid Multiscale Methods for Hyperbolic and Kinetic Problems. ESAIM: Proceedings and Surveys, 2005, 15, 87-120.	0.4	7

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109	High Order Asymptotically Strong-Stability-Preserving Methods for Hyperbolic Systems with Stiff Relaxation. , 2003, , 241-251.		7
110	Plane Couette Flow Computations by TRMC and MFS Methods. AIP Conference Proceedings, 2005, , .	0.3	6
111	On the Optimal Control of Opinion Dynamics on Evolving Networks. IFIP Advances in Information and Communication Technology, 2016, , 58-67.	0.5	6
112	Linear multistep methods for optimal control problems and applications to hyperbolic relaxation systems. Applied Mathematics and Computation, 2019, 354, 460-477.	1.4	6
113	Effects of Vaccination Efficacy on Wealth Distribution in Kinetic Epidemic Models. Entropy, 2022, 24, 216.	1.1	6
114	Bi-fidelity stochastic collocation methods for epidemic transport models with uncertainties. Networks and Heterogeneous Media, 2022, 17, 401.	0.5	6
115	Central schemes for hydrodynamical limits of discrete-velocity kinetic models. Transport Theory and Statistical Physics, 2000, 29, 465-477.	0.4	5
116	Lattice-Boltzmann type relaxation systems and high order relaxation schemes for the incompressible Navier-Stokes equations. Mathematics of Computation, 2007, 77, 943-966.	1.1	5
117	On the stability of equilibrium preserving spectral methods for the homogeneous Boltzmann equation. Applied Mathematics Letters, 2021, 120, 107187.	1.5	5
118	A New Monte Carlo Approach for Conservation Laws and Relaxation Systems. Lecture Notes in Computer Science, 2004, , 276-283.	1.0	5
119	Modelling and numerical methods for the dynamics of impurities in a gas. International Journal for Numerical Methods in Fluids, 2008, 57, 693-713.	0.9	4
120	Adaptive and Recursive Time Relaxed Monte Carlo Methods for Rarefied Gas Dynamics. SIAM Journal of Scientific Computing, 2009, 31, 1379-1398.	1.3	4
121	A High Order Stochastic Asymptotic Preserving Scheme for Chemotaxis Kinetic Models with Random Inputs. Multiscale Modeling and Simulation, 2018, 16, 1884-1915.	0.6	4
122	Structure Preserving Schemes for Mean-Field Equations of Collective Behavior. Springer Proceedings in Mathematics and Statistics, 2018, , 405-421.	0.1	4
123	Numerical Methods for the Optimal Control of Scalar Conservation Laws. International Federation for Information Processing, 2013, , 136-144.	0.4	4
124	ON A BOUNDARY VALUE PROBLEM FOR THE PLANE BROADWELL MODEL: EXACT SOLUTIONS AND NUMERICAL SIMULATION. Mathematical Models and Methods in Applied Sciences, 1995, 05, 253-266.	1.7	3
125	A kinetic approximation of Heleâ€"Shaw flow. Comptes Rendus Mathematique, 2004, 338, 177-182.	0.1	3
126	Microscopic and kinetic models in financial markets. Modeling and Simulation in Science, Engineering and Technology, 2010, , 51-80.	0.4	3

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127	Asymptotic preserving time-discretization of optimal control problems for the Goldstein-Taylor model. Numerical Methods for Partial Differential Equations, 2014, 30, 1770-1784.	2.0	3
128	Modelling and numerical methods for granular gases. Modeling and Simulation in Science, Engineering and Technology, 2004, , 259-285.	0.4	3
129	Hyperbolic Relaxation Approximation to Nonlinear Parabolic Problems. , 1999, , 747-756.		3
130	Portfolio optimization and model predictive control: A kinetic approach. Discrete and Continuous Dynamical Systems - Series B, 2019, 24, 6209-6238.	0.5	3
131	A bi-fidelity stochastic collocation method for transport equations with diffusive scaling and multi-dimensional random inputs. Journal of Computational Physics, 2022, 462, 111252.	1.9	3
132	Parallel integration of hydrodynamical approximations of the Boltzmann equation for rarefied gases on a cluster of computers. Journal of Computational Methods in Sciences and Engineering, 2004, 4, 33-41.	0.1	2
133	Domain Decomposition Techniques and Hybrid Multiscale Methods for Kinetic Equations. , 2008, , 457-464.		2
134	IMEX Runge-Kutta Schemes and Hyperbolic Systems of Conservation Laws with Stiff Diffusive Relaxation. , 2009, , .		2
135	An hybrid method for the Boltzmann equation. AIP Conference Proceedings, 2016, , .	0.3	2
136	High Order Semi-implicit Multistep Methods for Time-Dependent Partial Differential Equations. Communications on Applied Mathematics and Computation, 0, , 1.	0.7	2
137	Mean field models for large dataâ€"clustering problems. Networks and Heterogeneous Media, 2020, 15, 463-487.	0.5	2
138	On the Construction of Conservative Semi-Lagrangian IMEX Advection Schemes for Multiscale Time Dependent PDEs. Journal of Scientific Computing, 2022, 90, 1.	1.1	2
139	On stationary solutions to plane Broadwell model. Transport Theory and Statistical Physics, 1995, 24, 289-304.	0.4	1
140	Convergence of a quadrature formula for the approximation of stress intensity factor for planar cracks. Applied Mathematics and Computation, 2004, 158, 597-617.	1.4	1
141	Comparison betweenTime Relaxed Monte Carlo Method and Majorant Frequency Scheme methods for the space homogeneous Boltzmann equation. AIP Conference Proceedings, 2005, , .	0.3	1
142	A Hybrid Method that Interpolates Between DSMC and CFD. , 2006, , .		1
143	Control Strategies for the Dynamics of Large Particle Systems. Modeling and Simulation in Science, Engineering and Technology, 2019, , 149-171.	0.4	1
144	Nonlinear evolution of probability vectors of interest in discrete kinetic theory. Nonlinear Dynamics, 1994, 5, 375-391.	2.7	0

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145	A remark on the finite number of particles effect in Monte Carlo methods for kinetic equations. Proceedings in Applied Mathematics and Mechanics, 2007, 7, 1041003-1041004.	0.2	0
146	Kinetic Equations: Computation. , 2015, , 759-763.		0
147	Reprint of: Residual equilibrium schemes for time dependent partial differential equations. Computers and Fluids, 2018, 169, 141-154.	1.3	0
148	Relaxation approximation of optimal control problems and applications to traffic flow models. AIP Conference Proceedings, 2018, , .	0.3	0
149	Preface to Focused Section on Efficient High-Order Time Discretization Methods for Partial Differential Equations. Communications on Applied Mathematics and Computation, 2021, 3, 605-605.	0.7	0
150	Special issue on mathematical models for collective dynamics. Networks and Heterogeneous Media, 2020, 15, â…°-â…°.	0.5	0