Ke-Qing Xia

List of Publications by Citations

122 papers	4,803 citations	39 h-index	64 g-index
130 ext. papers	5,362 ext. citations	4.3 avg, IF	5.94 L-index

#	Paper	IF	Citations
122	Small-Scale Properties of Turbulent Rayleigh-Bénard Convection. *Annual Review of Fluid Mechanics*, **2010**, 42, 335-364	22	554
121	From laminar plumes to organized flows: the onset of large-scale circulation in turbulent thermal convection. *Journal of Fluid Mechanics*, **2004**, 503, 47-56	3.7	152
120	Flow reversals in thermally driven turbulence. *Physical Review Letters*, **2010**, 105, 034503	7.4	128
119	Incorporation of a differential refractometer into a laser light-scattering spectrometer. *Review of Scientific Instruments*, **1994**, 65, 587-590	1.7	109
118	Heat-flux measurement in high-Prandtl-number turbulent Rayleigh-Bénard convection. *Physical Review Letters*, **2002**, 88, 064501	7.4	106
117	Measured local heat transport in turbulent Rayleigh-Bénard convection. *Physical Review Letters*, **2003**, 90, 074501	7.4	104
116	Particle image velocimetry measurement of the velocity field in turbulent thermal convection. *Physical Review E*, **2003**, 68, 066303	2.4	99
115	Three-dimensional flow structures and dynamics of turbulent thermal convection in a cylindrical cell. *Physical Review E*, **2005**, 72, 026302	2.4	95
114	Origin of the temperature oscillation in turbulent thermal convection. *Physical Review Letters*, **2009**, 102, 044503	7.4	94
113	Current trends and future directions in turbulent thermal convection. *Theoretical and Applied Mechanics Letters*, **2013**, 3, 052001	1.8	93
112	Spatial structure of the thermal boundary layer in turbulent convection. *Physical Review E*, **1998**, 57, 5494-5503	2.4	88
111	Turbulent convection over rough surfaces. *Physical Review Letters*, **1996**, 76, 908-911	7.4	86
110	Flow mode transitions in turbulent thermal convection. *Physics of Fluids*, **2008**, 20, 055104	4.4	85
109	Heat transport by turbulent Rayleigh-Bénard convection in 1 m diameter cylindrical cells of widely varying aspect ratio. *Journal of Fluid Mechanics*, **2005**, 542, 165	3.7	82
108	Azimuthal symmetry, flow dynamics, and heat transport in turbulent thermal convection in a cylinder with an aspect ratio of 0.5. *Physical Review Letters*, **2005**, 95, 074502	7.4	82
107	Morphological evolution of thermal plumes in turbulent Rayleigh-Bénard convection. *Physical Review Letters*, **2007**, 98, 074501	7.4	77
106	Experimental studies of the viscous boundary layer properties in turbulent Rayleigh-Bénard convection. *Journal of Fluid Mechanics*, **2008**, 605, 79-113	3.7	76

105	Azimuthal motion of the mean wind in turbulent thermal convection. *Physical Review E*, **2006**, 73, 056312	2.4	74
104	Cascades of velocity and temperature fluctuations in buoyancy-driven thermal turbulence. *Physical Review Letters*, **2006**, 97, 144504	7.4	67
103	Prandtl number dependence of the viscous boundary layer and the Reynolds numbers in Rayleigh-Bénard convection. *Physical Review E*, **2002**, 65, 066306	2.4	67
102	Velocity oscillations in turbulent Rayleigh-Bénard convection. *Physics of Fluids*, **2004**, 16, 412-423	4.4	65
101	Measured instantaneous viscous boundary layer in turbulent Rayleigh-Bénard convection. *Physical Review Letters*, **2010**, 104, 104301	7.4	64
100	Measured Velocity Boundary Layers in Turbulent Convection. *Physical Review Letters*, **1996**, 77, 1266-1269	7.4	62
99	Cessations and reversals of the large-scale circulation in turbulent thermal convection. *Physical Review E*, **2007**, 75, 066307	2.4	60
98	Confinement-induced heat-transport enhancement in turbulent thermal convection. *Physical Review Letters*, **2013**, 111, 104501	7.4	59
97	Oscillations of the large-scale circulation in turbulent Rayleigh-Bénard convection: the sloshing mode and its relationship with the torsional mode. *Journal of Fluid Mechanics*, **2009**, 630, 367-390	3.7	58
96	Effect of Additives on Self-Assembling Behavior of Nafion in Aqueous Media. *Macromolecules*, **2001**, 34, 7783-7788	5.5	58
95	Scaling of the velocity power spectra in turbulent thermal convection. *Physical Review E*, **2001**, 64, 065301	2.4	55
94	Turbulent flow in the bulk of Rayleigh-Bénard convection: small-scale properties in a cubic cell. *Journal of Fluid Mechanics*, **2013**, 722, 596-617	3.7	54
93	Viscous boundary layers at the sidewall of a convection cell. *Physical Review E*, **1998**, 58, 486-491	2.4	52
92	Measurements of the local convective heat flux in turbulent Rayleigh-Bénard convection. *Physical Review E*, **2004**, 70, 026308	2.4	51
91	Plume statistics in thermal turbulence: mixing of an active scalar. *Physical Review Letters*, **2002**, 89, 184502	7.4	51
90	Prandtl-Blasius temperature and velocity boundary-layer profiles in turbulent Rayleigh-Bénard convection. *Journal of Fluid Mechanics*, **2010**, 664, 297-312	3.7	50
89	Scaling properties of the temperature field in convective turbulence. *Physical Review Letters*, **2001**, 87, 064501	7.4	49
88	Scaling of the local convective heat flux in turbulent Rayleigh-Bénard convection. *Physical Review Letters*, **2008**, 100, 244503	7.4	44

87	Heat transport properties of plates with smooth and rough surfaces in turbulent thermal convection. *Journal of Fluid Mechanics*, **2014**, 740, 28-46	3.7	43
86	Azimuthal motion, reorientation, cessation, and reversal of the large-scale circulation in turbulent thermal convection: a comparative study in aspect ratio one and one-half geometries. *Physical Review E*, **2008**, 78, 036326	2.4	43
85	Lagrangian acceleration measurements in convective thermal turbulence. *Journal of Fluid Mechanics*, **2012**, 692, 395-419	3.7	42
84	Thermal boundary layer structure in turbulent Rayleigh–Bénard convection in a rectangular cell. *Journal of Fluid Mechanics*, **2013**, 721, 199-224	3.7	39
83	Turbulent Thermal Convection with an Obstructed Sidewall. *Physical Review Letters*, **1997**, 79, 5006-5009	7.4	39
82	Boundary layer length scales in convective turbulence. *Physical Review E*, **1997**, 56, 3010-3015	2.4	39
81	Confined Rayleigh-Bénard, Rotating Rayleigh-Bénard, and Double Diffusive Convection: A Unifying View on Turbulent Transport Enhancement through Coherent Structure Manipulation. *Physical Review Letters*, **2017**, 119, 064501	7.4	38
80	Experimental study of velocity boundary layer near a rough conducting surface in turbulent natural convection. *Journal of Turbulence*, **2005**, 6, N30	2.1	38
79	Turbulent thermal convection over rough plates with varying roughness geometries. *Journal of Fluid Mechanics*, **2017**, 825, 573-599	3.7	37
78	Extraction of plumes in turbulent thermal convection. *Physical Review Letters*, **2004**, 93, 124501	7.4	37
77	Reversals of the large-scale circulation in quasi-2D Rayleigh–Bénard convection. *Journal of Fluid Mechanics*, **2015**, 778,	3.7	36
76	Experimental investigation of homogeneity, isotropy, and circulation of the velocity field in buoyancy-driven turbulence. *Journal of Fluid Mechanics*, **2008**, 598, 361-372	3.7	36
75	Scaling of the Reynolds number in turbulent thermal convection. *Physical Review E*, **2005**, 72, 067302	2.4	36
74	Experimental Study of the Spectral Distribution of the Light Scattered from Flexible Macromolecules in Very Dilute Solution. *Macromolecules*, **1995**, 28, 1032-1037	5.5	36
73	Condensation of Coherent Structures in Turbulent Flows. *Physical Review Letters*, **2015**, 115, 264503	7.4	35
72	Physical and geometrical properties of thermal plumes in turbulent Rayleigh–Bénard convection. *New Journal of Physics*, **2010**, 12, 075006	2.9	35
71	Interfacial tensions of phase-separated polymer solutions. *Journal of Chemical Physics*, **1992**, 97, 1446-1454	3.9	35
70	Thermal boundary layer profiles in turbulent Rayleigh-Bénard convection in a cylindrical sample. *Physical Review E*, **2012**, 85, 027301	2.4	34

69	Test of steady-state fluctuation theorem in turbulent Rayleigh-Bénard convection. *Physical Review E*, **2005**, 72, 015301	2.4	34
68	Dual-beam incoherent cross-correlation spectroscopy. *Journal of the Optical Society of America A: Optics and Image Science, and Vision*, **1995**, 12, 1571	1.8	31
67	Measured coexistence curves of phase-separated polymer solutions. *Journal of Chemical Physics*, **1996**, 105, 6018-6025	3.9	30
66	Spatial structure of the viscous boundary layer in turbulent convection. *Physical Review E*, **1998**, 58, 5816-5820	2.4	29
65	Effect of Prandtl number on heat transport enhancement in Rayleigh-Bénard convection under geometrical confinement. *Physical Review Fluids*, **2018**, 3,	2.8	29
64	Local energy dissipation rate balances local heat flux in the center of turbulent thermal convection. *Physical Review Letters*, **2011**, 107, 174503	7.4	28
63	Energy dependence of impact fragmentation of long glass rods. *Physica A: Statistical Mechanics and Its Applications*, **2000**, 287, 83-90	3.3	28
62	An experimental investigation of turbulent thermal convection in water-based alumina nanofluid. *Physics of Fluids*, **2011**, 23, 022005	4.4	27
61	Effects of geometric confinement in quasi-2-D turbulent Rayleigh–Bénard convection. *Journal of Fluid Mechanics*, **2016**, 794, 639-654	3.7	27
60	Spatial variations of the mean and statistical quantities in the thermal boundary layers of turbulent convection. *European Physical Journal B*, **2003**, 32, 127-136	1.2	26
59	Comparative Experimental Study of Fixed Temperature and Fixed Heat Flux Boundary Conditions in Turbulent Thermal Convection. *Physical Review Letters*, **2015**, 115, 154502	7.4	24
58	Horizontal structures of velocity and temperature boundary layers in two-dimensional numerical turbulent Rayleigh-Bénard convection. *Physics of Fluids*, **2011**, 23, 125104	4.4	24
57	Exploring the severely confined regime in Rayleigh–Bénard convection. *Journal of Fluid Mechanics*, **2016**, 805,	3.7	24
56	Turbulent flow in the bulk of Rayleigh–Bénard convection: aspect-ratio dependence of the small-scale properties. *Journal of Fluid Mechanics*, **2014**, 747, 73-102	3.7	22
55	Measured local-velocity fluctuations in turbulent convection. *Physical Review Letters*, **1995**, 75, 437-440	7.4	22
54	Higher-order flow modes in turbulent Rayleigh–Bénard convection. *Journal of Fluid Mechanics*, **2016**, 805, 31-51	3.7	22
53	Universality of local dissipation scales in buoyancy-driven turbulence. *Physical Review Letters*, **2010**, 104, 124301	7.4	21
52	Density fluctuations in strongly stratified two-dimensional turbulence. *Physical Review Letters*, **2005**, 94, 174503	7.4	21

51	Comparative experimental study of local mixing of active and passive scalars in turbulent thermal convection. *Physical Review E*, **2008**, 77, 056312	2.4	20
50	Measured thermal dissipation field in turbulent Rayleigh-Bénard convection. *Physical Review Letters*, **2007**, 98, 144501	7.4	20
49	Dynamic light scattering from binary-liquid gels. *Physical Review A*, **1988**, 37, 3626-3629	2.6	20
48	Flow Topology Transition via Global Bifurcation in Thermally Driven Turbulence. *Physical Review Letters*, **2018**, 120, 214501	7.4	20
47	Light scattering from a binary-liquid entanglement gel. *Physical Review A*, **1987**, 36, 2432-2439	2.6	19
46	Viscous boundary layer properties in turbulent thermal convection in a cylindrical cell: the effect of cell tilting. *Journal of Fluid Mechanics*, **2013**, 720, 140-168	3.7	18
45	Measured oscillations of the velocity and temperature fields in turbulent Rayleigh-Bénard convection in a rectangular cell. *Physical Review E*, **2007**, 76, 036301	2.4	18
44	Emergence of substructures inside the large-scale circulation induces transition in flow reversals in turbulent thermal convection. *Journal of Fluid Mechanics*, **2019**, 877,	3.7	17
43	Enhanced and reduced heat transport in turbulent thermal convection with polymer additives. *Physical Review E*, **2012**, 86, 016325	2.4	17
42	Interactions in mixtures of a microemulsion and a polymer. *Physical Review E*, **1997**, 55, 5792-5795	2.4	17
41	Incoherent cross-correlation spectroscopy. *Journal of Chemical Physics*, **1993**, 98, 9256-9265	3.9	17
40	Dynamics of the large-scale circulation in high-Prandtl-number turbulent thermal convection. *Journal of Fluid Mechanics*, **2013**, 717, 322-346	3.7	16
39	Quasistatic magnetoconvection: heat transport enhancement and boundary layer crossing. *Journal of Fluid Mechanics*, **2019**, 870, 519-542	3.7	15
38	Effects of polymer additives in the bulk of turbulent thermal convection. *Journal of Fluid Mechanics*, **2015**, 784,	3.7	15
37	Thermal convection with mixed thermal boundary conditions: effects of insulating lids at the top. *Journal of Fluid Mechanics*, **2017**, 817,	3.7	14
36	Experimental investigation of pair dispersion with small initial separation in convective turbulent flows. *Physical Review E*, **2013**, 87, 063006	2.4	14
35	An experimental study of kicked thermal turbulence. *Journal of Fluid Mechanics*, **2008**, 606, 133-151	3.7	14
34	Vortices as Brownian particles in turbulent flows. *Science Advances*, **2020**, 6, eaaz1110	14.3	13

33	How heat transfer efficiencies in turbulent thermal convection depend on internal flow modes. *Journal of Fluid Mechanics*, **2011**, 676, 1-4	3.7	12
32	Correlation length and amplitude scaling in critical polymer solutions. *Journal of Chemical Physics*, **1999**, 111, 8298-8301	3.9	12
31	Temperature Fluctuation Profiles in Turbulent Thermal Convection: A Logarithmic Dependence versus a Power-Law Dependence. *Physical Review Letters*, **2019**, 122, 014503	7.4	12
30	Turbidity of critical solutions of polymethylmethacrylate in 3-octanone. *Journal of Chemical Physics*, **1997**, 107, 2060-2065	3.9	11
29	Spatially correlated temperature fluctuations in turbulent convection. *Physical Review E*, **2001**, 63, 046308	2.4	11
28	Multi-point local temperature measurements inside the conducting plates in turbulent thermal convection. *Journal of Fluid Mechanics*, **2007**, 570, 479-489	3.7	10
27	Kolmogorov constants for the second-order structure function and the energy spectrum. *Physical Review E*, **2013**, 87, 023002	2.4	9
26	Disentangle plume-induced anisotropy in the velocity field in buoyancy-driven turbulence. *Journal of Fluid Mechanics*, **2011**, 684, 192-203	3.7	8
25	Analysis of the large-scale circulation and the boundary layers in turbulent Rayleigh-Bénard convection. *ERCOFTAC Series*, **2011**, 383-388	0.1	8
24	Velocity and temperature cross-scaling in turbulent thermal convection. *Journal of Turbulence*, **2004**, 5,	2.1	8
23	Turbidity measurements and amplitude scaling of critical solutions of polystyrene in methylcyclohexane. *Journal of Chemical Physics*, **2002**, 117, 4557-4563	3.9	8
22	Temperature power spectra and the viscous boundary layer in thermal turbulence: the role of Prandtl number. *Physica A: Statistical Mechanics and Its Applications*, **2000**, 288, 308-314	3.3	8
21	Turbulent convection with "disconnected" top and bottom boundary layers. *Europhysics Letters*, **1999**, 46, 171-176	1.6	8
20	Statistical characterization of thermal plumes in turbulent thermal convection. *Physical Review Fluids*, **2016**, 1,	2.8	8
19	Universal fluctuations in the bulk of Rayleigh-Bénard turbulence. *Journal of Fluid Mechanics*, **2019**, 878,	3.7	7
18	Multiple-resolution scheme in finite-volume code for active or passive scalar turbulence. *Journal of Computational Physics*, **2018**, 375, 1045-1058	4.1	7
17	The mixing evolution and geometric properties of a passive scalar field in turbulent Rayleigh-Bénard convection. *New Journal of Physics*, **2010**, 12, 083029	2.9	6
16	Two clocks for a single engine in turbulent convection. *Journal of Statistical Mechanics: Theory and Experiment*, **2007**, 2007, N11001-N11001	1.9	6

15	Laboratory simulation of the geothermal heating effects on ocean overturning circulation. *Journal of Geophysical Research: Oceans*, **2016**, 121, 7589-7598	3.3	5
14	Dynamics and flow coupling in two-layer turbulent thermal convection. *Journal of Fluid Mechanics*, **2013**, 728,	3.7	5
13	A holographic relaxation spectrometer with phase-modulated detection. *Review of Scientific Instruments*, **1991**, 62, 27-32	1.7	5
12	Contribution of Surface Thermal Forcing to Mixing in the Ocean. *Journal of Geophysical Research: Oceans*, **2018**, 123, 855-863	3.3	4
11	Radiation pressure induced gratings in colloidal suspensions: Dynamics of formation and decay. *Journal of Chemical Physics*, **1989**, 91, 1351-1356	3.9	4
10	On the effective horizontal buoyancy in turbulent thermal convection generated by cell tilting. *Journal of Fluid Mechanics*, **2021**, 914,	3.7	3
9	Tuning heat transport via boundary layer topographies. *Journal of Fluid Mechanics*, **2019**, 876, 1-4	3.7	2
8	Statistics and Scaling of the Velocity Field in Turbulent Thermal Convection **2005**, 163-170		2
7	Inverse centrifugal effect induced by collective motion of vortices in rotating thermal convection. *Nature Communications*, **2021**, 12, 5585	17.4	2
6	Centrifugal-Force-Induced Flow Bifurcations in Turbulent Thermal Convection.. *Physical Review Letters*, **2021**, 127, 244501	7.4	2
5	Moisture transfer by turbulent natural convection. *Journal of Fluid Mechanics*, **2019**, 874, 1041-1056	3.7	1
4	Lagrangian velocity and acceleration measurements in plume-rich regions of turbulent Rayleigh-B□ard convection. *Physical Review Fluids*, **2021**, 6,	2.8	1
3	Local Dissipation Scales and Integral-Scale Reynolds Number Scalings in Thermally-Driven Turbulence. *Journal of Physics: Conference Series*, **2011**, 318, 042016	0.3	
2	Extended self similarity of passive scalar in Rayleigh-B□ard convection flow based on wavelet transform. *Applied Mathematics and Mechanics (English Edition)*, **2002**, 23, 804-810	3.2	
1	Experimental Studies of Turbulent Rayleigh-B□ard Convection. *Springer Proceedings in Physics*, **2009**, 471-478	0.2	