

Viswanathan Kumaran

List of Publications by Year in descending order

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107
papers

2,075
citations

186209

28
h-index

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all docs

108
docs citations

108
times ranked

1077
citing authors

#	ARTICLE	IF	CITATIONS
1	Spontaneous Growth of Fluctuations in the Viscous Flow of a Fluid past a Soft Interface. <i>Physical Review Letters</i> , 2000, 84, 3310-3313.	2.9	77
2	Flow induced instability of the interface between a fluid and a gel at low Reynolds number. <i>Journal De Physique II</i> , 1994, 4, 893-911.	0.9	74
3	Stability of the viscous flow of a fluid through a flexible tube. <i>Journal of Fluid Mechanics</i> , 1995, 294, 259-281.	1.4	71
4	The constitutive relation for the granular flow of rough particles, and its application to the flow down an inclined plane. <i>Journal of Fluid Mechanics</i> , 2006, 561, 1.	1.4	59
5	Structure and rheology of the defect-gel states of pure and particle-dispersed lyotropic lamellar phases. <i>European Physical Journal B</i> , 1999, 12, 269-276.	0.6	55
6	Dense granular flow down an inclined plane: from kinetic theory to granular dynamics. <i>Journal of Fluid Mechanics</i> , 2008, 599, 121-168.	1.4	51
7	Experimental study of the instability of the viscous flow past a flexible surface. <i>Physics of Fluids</i> , 2002, 14, 775-780.	1.6	50
8	A multifold reduction in the transition Reynolds number, and ultra-fast mixing, in a micro-channel due to a dynamical instability induced by a soft wall. <i>Journal of Fluid Mechanics</i> , 2013, 727, 407-455.	1.4	50
9	Stability of wall modes in fluid flow past a flexible surface. <i>Physics of Fluids</i> , 2002, 14, 2324.	1.6	49
10	Constitutive relations and linear stability of a sheared granular flow. <i>Journal of Fluid Mechanics</i> , 2004, 506, 1-43.	1.4	48
11	A dynamical instability due to fluid-wall coupling lowers the transition Reynolds number in the flow through a flexible tube. <i>Journal of Fluid Mechanics</i> , 2012, 705, 322-347.	1.4	48
12	Stability of the flow of a fluid through a flexible tube at intermediate Reynolds number. <i>Journal of Fluid Mechanics</i> , 1998, 357, 123-140.	1.4	42
13	Magnetorheological fluids containing rod-shaped lithium-zinc ferrite particles: the steady-state shear response. <i>Soft Matter</i> , 2018, 14, 5407-5419.	1.2	41
14	Stability of non-parabolic flow in a flexible tube. <i>Journal of Fluid Mechanics</i> , 1999, 395, 211-236.	1.4	40
15	Synthesis and Characterization of Au@Pt Nanoparticles with Ultrathin Platinum Overlayers. <i>Journal of Physical Chemistry C</i> , 2015, 119, 5982-5987.	1.5	40
16	Stability of fluid flow in a flexible tube to non-axisymmetric disturbances. <i>Journal of Fluid Mechanics</i> , 2000, 407, 291-314.	1.4	39
17	Stability of inviscid flow in a flexible tube. <i>Journal of Fluid Mechanics</i> , 1996, 320, 1.	1.4	36
18	Stability of wall modes in a flexible tube. <i>Journal of Fluid Mechanics</i> , 1998, 362, 1-15.	1.4	36

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19	Kinetic theory for a vibro-fluidized bed. <i>Journal of Fluid Mechanics</i> , 1998, 364, 163-185.	1.4	35
20	Dynamics of dense sheared granular flows. Part 1. Structure and diffusion. <i>Journal of Fluid Mechanics</i> , 2009, 632, 109-144.	1.4	33
21	Neurogenesis-on-Chip: Electric field modulated transdifferentiation of human mesenchymal stem cell and mouse muscle precursor cell coculture. <i>Biomaterials</i> , 2020, 226, 119522.	5.7	32
22	Stability of the flow of a fluid through a flexible tube at high Reynolds number. <i>Journal of Fluid Mechanics</i> , 1995, 302, 117-139.	1.4	31
23	Instabilities due to Charge-Density-Curvature Coupling in Charged Membranes. <i>Physical Review Letters</i> , 2000, 85, 4996-4999.	2.9	31
24	Weakly nonlinear stability of viscous flow past a flexible surface. <i>Journal of Fluid Mechanics</i> , 2001, 434, 337-354.	1.4	30
25	Dynamics of dense sheared granular flows. Part II. The relative velocity distributions. <i>Journal of Fluid Mechanics</i> , 2009, 632, 145-198.	1.4	29
26	The generalized Onsager model for the secondary flow in a high-speed rotating cylinder. <i>Journal of Fluid Mechanics</i> , 2011, 686, 109-159.	1.4	28
27	Transition due to base roughness in a dense granular flow down an inclined plane. <i>Physics of Fluids</i> , 2012, 24, .	1.6	28
28	Ultra-fast microfluidic mixing by soft-wall turbulence. <i>Chemical Engineering Science</i> , 2016, 149, 156-168.	1.9	28
29	Effect of viscoelasticity on the soft-wall transition and turbulence in a microchannel. <i>Journal of Fluid Mechanics</i> , 2017, 812, 1076-1118.	1.4	28
30	Asymptotic analysis of wall modes in a flexible tube revisited. <i>European Physical Journal B</i> , 2001, 19, 607-622.	0.6	27
31	Velocity Autocorrelations and Viscosity Renormalization in Sheared Granular Flows. <i>Physical Review Letters</i> , 2006, 96, 258002.	2.9	27
32	Weakly nonlinear analysis of viscous instability in flow past a neo-Hookean surface. <i>Physical Review E</i> , 2008, 77, 056303.	0.8	27
33	The effect of base roughness on the development of a dense granular flow down an inclined plane. <i>Physics of Fluids</i> , 2013, 25, .	1.6	26
34	Effect of magnetic dipolar interactions and size dispersity on the origin of steady state magnetomechanical response in bidisperse Mn ²⁺ /Zn ferrite spherical particle based magnetorheological fluids. <i>New Journal of Chemistry</i> , 2019, 43, 9969-9979.	1.4	25
35	Synthesis of highly magnetic Mn-Zn ferrite (Mn _{0.7} Zn _{0.3} Fe ₂ O ₄) ceramic powder and its use in smart magnetorheological fluid. <i>Rheologica Acta</i> , 2019, 58, 273-280.	1.1	25
36	Verifying scalings for bending rigidity of bilayer membranes using mesoscale models. <i>Soft Matter</i> , 2011, 7, 3963.	1.2	24

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37	Dense granular flow down an inclined plane: A comparison between the hard particle model and soft particle simulations. <i>Physics of Fluids</i> , 2010, 22, .	1.6	23
38	Fast decay of the velocity autocorrelation function in dense shear flow of inelastic hard spheres. <i>Europhysics Letters</i> , 2008, 84, 64003.	0.7	20
39	Particle dynamics in a turbulent particle-gas suspension at high Stokes number. Part 1. Velocity and acceleration distributions. <i>Journal of Fluid Mechanics</i> , 2010, 646, 59-90.	1.4	20
40	A cartridge based Point-of-Care device for complete blood count. <i>Scientific Reports</i> , 2019, 9, 18583.	1.6	18
41	Effect of surface charges on the curvature moduli of a membrane. <i>Physical Review E</i> , 2001, 64, 051922.	0.8	17
42	Dynamics of a dilute sheared inelastic fluid. I. Hydrodynamic modes and velocity correlation functions. <i>Physical Review E</i> , 2009, 79, 011301.	0.8	17
43	Stability of the plane shear flow of dilute polymeric solutions. <i>Physics of Fluids</i> , 2009, 21, .	1.6	17
44	Disruption of turbulence due to particle loading in a dilute gas-particle suspension. <i>Journal of Fluid Mechanics</i> , 2020, 889, .	1.4	17
45	Weakly nonlinear stability analysis of a flow past a neo-Hookean solid at arbitrary Reynolds numbers. <i>Physics of Fluids</i> , 2008, 20, .	1.6	16
46	Velocity distribution function for a dilute granular material in shear flow. <i>Journal of Fluid Mechanics</i> , 1997, 340, 319-341.	1.4	15
47	Electrohydrodynamic instability of a charged membrane. <i>Physical Review E</i> , 2001, 64, 011911.	0.8	15
48	Stability of the flow of a viscoelastic fluid past a deformable surface in the low Reynolds number limit. <i>Physics of Fluids</i> , 2007, 19, .	1.6	15
49	Particle dynamics in a turbulent particle-gas suspension at high Stokes number. Part 2. The fluctuating-force model. <i>Journal of Fluid Mechanics</i> , 2010, 646, 91-125.	1.4	15
50	The generalized Onsager model for a binary gas mixture. <i>Journal of Fluid Mechanics</i> , 2014, 753, 307-359.	1.4	15
51	Stability of the flow in a soft tube deformed due to an applied pressure gradient. <i>Physical Review E</i> , 2015, 91, 043001.	0.8	15
52	Experimental studies on the flow through soft tubes and channels. <i>Sadhana - Academy Proceedings in Engineering Sciences</i> , 2015, 40, 911-923.	0.8	15
53	Biophysical implications of Maxwell stress in electric field stimulated cellular microenvironment on biomaterial substrates. <i>Biomaterials</i> , 2019, 209, 54-66.	5.7	15
54	Kinetic Model for Sheared Granular Flows in the High Knudsen Number Limit. <i>Physical Review Letters</i> , 2005, 95, 108001.	2.9	14

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55	Dynamics of a dilute sheared inelastic fluid. II. The effect of correlations. <i>Physical Review E</i> , 2009, 79, 011302.	0.8	14
56	Dynamics of sheared inelastic dumbbells. <i>Journal of Fluid Mechanics</i> , 2010, 660, 475-498.	1.4	14
57	Particle dynamics in the channel flow of a turbulent particle-gas suspension at high Stokes number. Part 1. DNS and fluctuating force model. <i>Journal of Fluid Mechanics</i> , 2011, 687, 1-40.	1.4	14
58	After transition in a soft-walled microchannel. <i>Journal of Fluid Mechanics</i> , 2015, 780, 649-686.	1.4	14
59	Stability of fluid flow past a membrane. <i>Journal of Fluid Mechanics</i> , 2002, 472, 29-50.	1.4	13
60	Granular flow of rough particles in the high-Knudsen-number limit. <i>Journal of Fluid Mechanics</i> , 2006, 561, 43.	1.4	12
61	Multiscale modeling of lamellar mesophases. <i>Journal of Chemical Physics</i> , 2009, 130, 114907.	1.2	12
62	Dense shallow granular flows. <i>Journal of Fluid Mechanics</i> , 2014, 756, 555-599.	1.4	12
63	Controlled Shear Flow Directs Osteogenesis on UHMWPE-Based Hybrid Nanobiocomposites in a Custom-Designed PMMA Microfluidic Device. <i>ACS Applied Bio Materials</i> , 2018, 1, 414-435.	2.3	12
64	Droplet interaction in the spinodal decomposition of a fluid. <i>Journal of Chemical Physics</i> , 1998, 109, 7644-7648.	1.2	11
65	Reprogramming the Stem Cell Behavior by Shear Stress and Electric Field Stimulation: Lab-on-a-Chip Based Biomicrofluidics in Regenerative Medicine. <i>Regenerative Engineering and Translational Medicine</i> , 2019, 5, 99-127.	1.6	11
66	Stability and the transition to turbulence in the flow through conduits with compliant walls. <i>Journal of Fluid Mechanics</i> , 2021, 924, .	1.4	11
67	Effect of tangential interface motion on the viscous instability in fluid flow past flexible surfaces. <i>European Physical Journal B</i> , 2001, 23, 533-550.	0.6	10
68	Stability of a sheared particle suspension. <i>Physics of Fluids</i> , 2003, 15, 3625-3637.	1.6	10
69	Particle dynamics in the channel flow of a turbulent particle-gas suspension at high Stokes number. Part 2. Comparison of fluctuating force simulations and experiments. <i>Journal of Fluid Mechanics</i> , 2011, 687, 41-71.	1.4	10
70	Hydrodynamic Stability of Flow Through Compliant Channels and Tubes. <i>Fluid Mechanics and Its Applications</i> , 2003, , 95-118.	0.1	10
71	Hydrodynamic modes of a sheared granular flow from the Boltzmann and Navier-Stokes equations. <i>Physics of Fluids</i> , 2001, 13, 2258-2268.	1.6	9
72	A novel approach to computing the orientation moments of spheroids in simple shear flow at arbitrary Péclet number. <i>Physics of Fluids</i> , 2002, 14, 75-84.	1.6	9

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73	Mesoscale description of an asymmetric lamellar phase. <i>Journal of Chemical Physics</i> , 2009, 130, 224905.	1.2	9
74	Shear alignment of a disordered lamellar mesophase. <i>Physical Review E</i> , 2011, 83, 031501.	0.8	9
75	Effect of base dissipation on the granular flow down an inclined plane. <i>Granular Matter</i> , 2012, 14, 209-213.	1.1	8
76	Effect of particle stiffness on contact dynamics and rheology in a dense granular flow. <i>Physical Review E</i> , 2018, 97, 012902.	0.8	8
77	Asymptotic analysis of wall modes in a flexible tube. <i>European Physical Journal B</i> , 1998, 4, 519-527.	0.6	7
78	Coarsening of random interfaces in the spinodal decomposition of a binary fluid. <i>Journal of Chemical Physics</i> , 1998, 108, 3038-3044.	1.2	7
79	Stability of the viscous flow of a polymeric fluid past a flexible surface. <i>Physics of Fluids</i> , 2007, 19, 034102.	1.6	7
80	Wall-mode instability in plane shear flow of viscoelastic fluid over a deformable solid. <i>Physical Review E</i> , 2015, 91, 023007.	0.8	7
81	Structure-rheology relationship in a sheared lamellar fluid. <i>Physical Review E</i> , 2016, 93, 032609.	0.8	7
82	Effect of convective transport on droplet spinodal decomposition in fluids. <i>Journal of Chemical Physics</i> , 1998, 109, 2437-2441.	1.2	6
83	Spontaneous motion of droplets during the demixing transition in binary fluids. <i>Journal of Chemical Physics</i> , 2000, 112, 10984-10991.	1.2	6
84	Effect of ultra-fast mixing in a microchannel due to a soft wall on the room temperature synthesis of gold nanoparticles. <i>Sadhana - Academy Proceedings in Engineering Sciences</i> , 2015, 40, 973-983.	0.8	6
85	Effect of base topography on dynamics and transition in a dense granular flow. <i>Journal of Fluid Mechanics</i> , 2017, 832, 600-640.	1.4	6
86	Comparison of the compressible class of models and non-local models with the discrete element method for steady fully developed flow of cohesionless granular materials through a vertical channel. <i>Journal of Fluid Mechanics</i> , 2022, 937, .	1.4	6
87	Dynamics of edge dislocations in a sheared lamellar mesophase. <i>Journal of Chemical Physics</i> , 2013, 139, 134907.	1.2	5
88	Transitions to different kinds of turbulence in a channel with soft walls. <i>Journal of Fluid Mechanics</i> , 2017, 822, 267-306.	1.4	5
89	Rheology of a suspension of conducting particles in a magnetic field. <i>Journal of Fluid Mechanics</i> , 2019, 871, 139-185.	1.4	5
90	Stability of fluid flow past a membrane. <i>European Physical Journal B</i> , 1998, 2, 259-266.	0.6	4

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91	A suspension of conducting particles in a magnetic field – the particle stress. Journal of Fluid Mechanics, 2020, 901, .	1.4	4
92	Bifurcations in the dynamics of a dipolar spheroid in a shear flow subjected to an external field. Physical Review Fluids, 2020, 5, .	1.0	4
93	Effect of fluid flow on the fluctuations at the surface of an elastic medium. Journal of Chemical Physics, 1995, 102, 3452-3460.	1.2	3
94	Effect of dynamical asymmetry on the viscosity of a random copolymer melt. Journal of Chemical Physics, 1996, 104, 3120-3133.	1.2	3
95	Fluctuation-dissipation relation for nonlinear Langevin equations. Physical Review E, 2011, 83, 041126.	0.8	3
96	System size dependence of the structure and rheology in a sheared lamellar liquid crystalline medium. Journal of Chemical Physics, 2016, 145, 244901.	1.2	3
97	Stability of oscillatory flows past compliant surfaces. European Physical Journal B, 2004, 41, 135-145.	0.6	2
98	Dynamics of polarizable spheroid in a shear flow subjected to a parallel magnetic field. Physical Review Fluids, 2021, 6, .	1.0	2
99	Moving efficiently through a crowd: A nature-inspired traffic rule. Physical Review E, 2021, 104, 054609.	0.8	2
100	Microscopic analysis of the coarsening of an interface in the spinodal decomposition of a binary fluid. Journal of Chemical Physics, 1998, 109, 3240-3244.	1.2	1
101	Josiah Willard Gibbs. Resonance, 2007, 12, 4-11.	0.2	1
102	Steady and rotating states of a polarizable spheroid subjected to a magnetic field and a shear flow. Physical Review Fluids, 2021, 6, .	1.0	1
103	Cessation of a dense granular flow down an inclined plane. Physical Review Fluids, 2019, 4, .	1.0	1
104	Effect of Convection on Domain Growth During Demixing Transitions in Fluids. Phase Transitions, 2002, 75, 339-352.	0.6	0
105	Rheology of Dense Sheared Granular Flows. AIP Conference Proceedings, 2008, , .	0.3	0
106	The hard-particle model for a dense granular flow down an inclined plane. , 2010, , .		0
107	The effect of inter-particle hydrodynamic and magnetic interactions in a magnetorheological fluid. Journal of Fluid Mechanics, 2022, 944, .	1.4	0