Frank Smith

List of Publications by Citations

135 papers	2,834 citations	30 h-index	47 g-index
141 ext. papers	3,120 ext. citations	2.5 avg, IF	5.14 L-index

#	Paper	IF	Citations
135	On the High Reynolds Number Theory of Laminar Flows. *IMA Journal of Applied Mathematics*, **1982**, 28, 207-281	1	158
134	Vortex-induced boundary-layer separation. Part 1. The unsteady limit problem Re -$\frac{1}{5}$. *Journal of Fluid Mechanics*, **1991**, 232, 99	3.7	112
133	Laminar flow of an incompressible fluid past a bluff body: the separation, reattachment, eddy properties and drag. *Journal of Fluid Mechanics*, **1979**, 92, 171-205	3.7	96
132	Vortex-induced boundary-layer separation. Part 2. Unsteady interacting boundary-layer theory. *Journal of Fluid Mechanics*, **1991**, 232, 133	3.7	95
131	Breakdown of boundary layers: (i) on moving surfaces; (ii) in semi-similar unsteady flow; (iii) in fully unsteady flow. *Geophysical and Astrophysical Fluid Dynamics*, **1983**, 25, 77-138	1.4	90
130	Finite-time break-up can occur in any unsteady interacting boundary layer. *Mathematika*, **1988**, 35, 256-273	0.6	81
129	Air cushioning with a lubrication/inviscid balance. *Journal of Fluid Mechanics*, **2003**, 482, 291-318	3.7	77
128	A two-dimensional boundary layer encountering a three-dimensional hump. *Journal of Fluid Mechanics*, **1977**, 83, 163-176	3.7	77
127	Pulsatile flow in curved pipes. *Journal of Fluid Mechanics*, **1975**, 71, 15-42	3.7	74
126	A structure for laminar flow past a bluff body at high Reynolds number. *Journal of Fluid Mechanics*, **1985**, 155, 175	3.7	72
125	On boundary-layer flow past two-dimensional obstacles. *Journal of Fluid Mechanics*, **1981**, 113, 123	3.7	72
124	The separating flow through a severely constricted symmetric tube. *Journal of Fluid Mechanics*, **1979**, 90, 725	3.7	68
123	The resonant-triad nonlinear interaction in boundary-layer transition. *Journal of Fluid Mechanics*, **1987**, 179, 227-252	3.7	67
122	Droplet impact on a thin fluid layer. *Journal of Fluid Mechanics*, **2005**, 542, 1	3.7	64
121	Upstream interactions in channel flows. *Journal of Fluid Mechanics*, **1977**, 79, 631	3.7	62
120	Nonlinear critical layers and their development in streaming-flow stability. *Journal of Fluid Mechanics*, **1982**, 118, 165	3.7	49
119	Unsteady separation past moving surfaces. *Journal of Fluid Mechanics*, **1998**, 375, 1-38	3.7	47

118	Removal of Goldstein's singularity at separation, in flow past obstacles in wall layers. *Journal of Fluid Mechanics*, **1981**, 110, 1-37	3.7	43
117	On hypersonic self-induced separation, hydraulic jumps and boundary layers with algebraic growth. *Mathematika*, **1983**, 30, 77-93	0.6	41
116	Linear instability of the wake behind a flat plate placed parallel to a uniform stream. *Journal of Fluid Mechanics*, **1989**, 208, 67-89	3.7	40
115	Trapping of air in impact between a body and shallow water. *Journal of Fluid Mechanics*, **2008**, 611, 365-394	3.7	39
114	Pipeflows distorted by non-symmetric indentation or branching. *Mathematika*, **1976**, 23, 62-83	0.6	39
113	The inviscid instability of a Blasius boundary layer at large values of the Mach number. *Journal of Fluid Mechanics*, **1990**, 219, 499	3.7	38
112	The onset of instability in unsteady boundary-layer separation. *Journal of Fluid Mechanics*, **1996**, 315, 223-256	3.7	37
111	Concerning Dynamic Stall. *Aeronautical Quarterly*, **1982**, 33, 331-352		37
110	Short-scale break-up in unsteady interactive layers: local development of normal pressure gradients and vortex wind-up. *Journal of Fluid Mechanics*, **1998**, 374, 335-378	3.7	35
109	An alternative approach to linear and nonlinear stability calculations at finite Reynolds numbers. *Journal of Fluid Mechanics*, **1984**, 146, 313-330	3.7	32
108	Nonlinear interaction of near-planar TS waves and longitudinal vortices in boundary-layer transition. *Mathematika*, **1989**, 36, 262-289	0.6	31
107	The structure of a three-dimensional turbulent boundary layer. *Journal of Fluid Mechanics*, **1993**, 250, 43-68	3.7	30
106	Dynamic stall due to unsteady marginal separation. *Journal of Fluid Mechanics*, **1987**, 179, 489-512	3.7	30
105	What happens to pressure when a flow enters a side branch?. *Journal of Fluid Mechanics*, **2003**, 479, 231-258	3.7	29
104	On entry-flow effects in bifurcating, blocked or constricted tubes. *Journal of Fluid Mechanics*, **1976**, 78, 709	3.7	29
103	Air-water interactions near droplet impact. *European Journal of Applied Mathematics*, **2004**, 15, 853-871	1	28
102	On turbulent separation in the flow past a bluff body. *Journal of Fluid Mechanics*, **1992**, 241, 443-467	3.7	28
101	Two-dimensional disturbance travel, growth and spreading in boundary layers. *Journal of Fluid Mechanics*, **1986**, 169, 353	3.7	27

100	Steady streaming induced between oscillating cylinders. *Journal of Fluid Mechanics*, **1979**, 91, 93	3.7	27
99	The interactive breakdown in supersonic ramp flow. *Journal of Fluid Mechanics*, **1991**, 224, 197-215	3.7	26
98	Interacting flow theory and trailing edge separation □ho stall. *Journal of Fluid Mechanics*, **1983**, 131, 219	3.7	26
97	Theoretical prediction and design for vortex generators in turbulent boundary layers. *Journal of Fluid Mechanics*, **1994**, 270, 91-132	3.7	25
96	Three-dimensional nonlinear blow-up from a nearly planar initial disturbance, in boundary-layer transition: theory and experimental comparisons. *Journal of Fluid Mechanics*, **1992**, 244, 79	3.7	25
95	Droplet impact on water layers: post-impact analysis and computations. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2005**, 363, 1209-21	3	24
94	A three-dimensional boundary-layer separation. *Journal of Fluid Mechanics*, **1980**, 99, 185-224	3.7	23
93	Direct simulations and modelling of basic three-dimensional bifurcating tube flows. *Journal of Fluid Mechanics*, **2004**, 519, 1-32	3.7	22
92	Skimming impacts and rebounds on shallow liquid layers. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2011**, 467, 653-674	2.4	21
91	ON INTERACTION BETWEEN FALLING BODIES AND THE SURROUNDING FLUID. *Mathematika*, **2010**, 56, 140-168	0.6	21
90	One-to-few and one-to-many branching tube flows. *Journal of Fluid Mechanics*, **2000**, 423, 1-31	3.7	21
89	Complete breakdown of an unsteady interactive boundary layer (over a surface distortion or in a liquid layer). *Mathematika*, **1987**, 34, 86-100	0.6	21
88	Short-length instabilities, breakdown and initial value problems in dynamic stall. *Mathematika*, **1984** , 31, 163-177	0.6	21
87	Droplet Impact on to a Rough Surface. *Quarterly Journal of Mechanics and Applied Mathematics*, **2011**, 64, 107-139	1	20
86	On the spiking stages in deep transition and unsteady separation. *Journal of Engineering Mathematics*, **2003**, 45, 227-245	1.2	20
85	Lifting multi-blade flows with interaction. *Journal of Fluid Mechanics*, **2000**, 415, 203-226	3.7	20
84	On the starting process of strongly nonlinear vortex/Rayleigh-wave interactions. *Mathematika*, **1993**, 40, 7-29	0.6	20
83	On the global instability of free disturbances with a time-dependent nonlinear viscous critical layer. *Journal of Fluid Mechanics*, **1985**, 157, 53-77	3.7	20

82	Fluid motion for car undertrays in ground effect. *Journal of Engineering Mathematics*, **2003**, 45, 309-334	1.2	19
81	Stability of Long's vortex at large flow force. *Journal of Fluid Mechanics*, **1989**, 206, 405-432	3.7	19
80	Break-away separation for high turbulence intensity and large Reynolds number. *Journal of Fluid Mechanics*, **2011**, 670, 260-300	3.7	18
79	AVM modelling by multi-branching tube flow: large flow rates and dual solutions. *Mathematical Medicine and Biology*, **2003**, 20, 183-204	1.3	18
78	Properties of strongly nonlinear vortex/Tollmien□Schlichting-wave interactions. *Journal of Fluid Mechanics*, **1992**, 244, 649	3.7	18
77	On the severe non-symmetric constriction, curving or cornering of channel flows. *Journal of Fluid Mechanics*, **1980**, 98, 727-753	3.7	18
76	Fluid flow through various branching tubes. *Journal of Engineering Mathematics*, **2003**, 47, 277-298	1.2	16
75	Flow past a two□or three□dimensional steep□edged roughness. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **1998**, 454, 31-69	2.4	14
74	Body-rock or lift-off in flow. *Journal of Fluid Mechanics*, **2013**, 735, 91-119	3.7	12
73	Free convection boundary layers near corners and sharp trailing edges. *Zeitschrift Fur Angewandte Mathematik Und Physik*, **1982**, 33, 36-52	1.6	12
72	Multi-branching flows from one mother tube to many daughters or to a network. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2005**, 363, 1045-55	3	11
71	Free motion of a body in a boundary layer or channel flow. *Journal of Fluid Mechanics*, **2017**, 813, 279-300	3.7	10
70	Fluid-body interactions: clashing, skimming, bouncing. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2011**, 369, 3007-24	3	10
69	Short-scale effects on model boundary-layer spots. *Journal of Fluid Mechanics*, **1995**, 295, 395	3.7	10
68	Improving Aircraft Safety in Icing Conditions **2016**, 145-151		10
67	Separating shear flow past a surface-mounted blunt obstacle. *Journal of Engineering Mathematics*, **2001**, 39, 47-62	1.2	9
66	Wind-Up of a Spanwise Vortex in Deepening Transition and Stall. *Theoretical and Computational Fluid Dynamics*, **2000**, 14, 135-165	2.3	9
65	Comparisons and comments concerning recent calculations for flow past a circular cylinder. *Journal of Fluid Mechanics*, **1981**, 113, 407	3.7	9

64	Movement of a finite body in channel flow. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2016**, 472, 20160164	2.4	9
63	Ice formation on a smooth or rough cold surface due to the impact of a supercooled water droplet. *Journal of Engineering Mathematics*, **2017**, 102, 35-64	1.2	8
62	Computational modelling of the embolization process for the treatment of arteriovenous malformations (AVMs). *Mathematical and Computer Modelling*, **2013**, 57, 1312-1324		8
61	On turbulent separation. *Journal of Engineering Mathematics*, **2010**, 68, 373-400	1.2	8
60	Multi-branching three-dimensional flow with substantial changes in vessel shapes. *Journal of Fluid Mechanics*, **2008**, 614, 329-354	3.7	8
59	Enhanced effects from tiny flexible in-wall blips and shear flow. *Journal of Fluid Mechanics*, **2015**, 772, 16-41	3.7	7
58	The effects of nonsymmetry in a branching flow network. *Journal of Engineering Mathematics*, **2009** , 63, 213-239	1.2	7
57	A freely moving body in a boundary layer: Nonlinear separated-flow effects. *Applied Ocean Research*, **2019**, 85, 107-118	3.4	7
56	Collisions, rebounds and skimming. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2014**, 372,	3	6
55	Wall shape effects on multiphase flow in channels. *Theoretical and Computational Fluid Dynamics*, **2012**, 26, 339-360	2.3	6
54	Flow in a multi-branching vessel with compliant walls. *Journal of Engineering Mathematics*, **2009**, 64, 353-365	1.2	6
53	On physical mechanisms in two- and three-dimensional separations. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2000**, 358, 3091-3111	3	6
52	Interactive flow past multiple blades and wakes. *Quarterly Journal of Mechanics and Applied Mathematics*, **2000**, 53, 207-251	1	6
51	Modelling of sea-ice phenomena. *Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences*, **2018**, 376,	3	6
50	Channel Flow Past A Near-Wall Body. *Quarterly Journal of Mechanics and Applied Mathematics*, **2019** , 72, 359-385	1	5
49	Flooding and sinking of an originally skimming body. *Journal of Engineering Mathematics*, **2017**, 107, 37-60	1.2	5
48	On internal fluid dynamics. *Bulletin of Mathematical Sciences*, **2012**, 2, 125-180	0.9	5
47	Surface tension effects on interaction between two fluids near a wall. *Quarterly Journal of Mechanics and Applied Mathematics*, **2008**, 61, 117-128	1	5

46	Hypersonic aerodynamics on thin bodies with interaction and upstream influence. *Journal of Fluid Mechanics*, **1994**, 277, 85-108	3.7	5
45	Theory and computations for breakup of unsteady subsonic or supersonic separating flows. *Journal of Fluid Mechanics*, **1994**, 268, 147-173	3.7	5
44	CONCERNING UPSTREAM INFLUENCE IN SEPARATING BOUNDARY LAYERS AND DOWNSTREAM INFLUENCE IN CHANNEL FLOW. *Quarterly Journal of Mechanics and Applied Mathematics*, **1984**, 37, 389-399	1	5
43	Influence of Surface Roughness on Shear Flow. *Journal of Applied Mechanics, Transactions ASME*, **2004**, 71, 459-464	2.7	4
42	The impact of static and dynamic roughness elements on flow separation. *Journal of Fluid Mechanics*, **2017**, 830, 35-62	3.7	3
41	When a small thin two-dimensional body enters a viscous wall layer. *European Journal of Applied Mathematics*, **2020**, 31, 1002-1028	1	3
40	Inviscid and low-viscosity flows in multi-branching and reconnecting networks. *Journal of Engineering Mathematics*, **2017**, 104, 1-18	1.2	3
39	Singular modes in Rayleigh instability of three-dimensional streamwise-vortex flows. *Journal of Fluid Mechanics*, **1997**, 333, 139-160	3.7	3
38	Vortex/inflectional-wave interactions with weakly three-dimensional input. *Journal of Fluid Mechanics*, **1997**, 348, 247-294	3.7	3
37	Turbulent flow on a planar moving belt and a rotating disk: modelling and comparisons. *Journal of Fluid Mechanics*, **2007**, 587, 255-270	3.7	3
36	Swirl-flow effects in a duct bending through a substantial angle. *Journal of Engineering Mathematics* , **2002**, 43, 315-346	1.2	3
35	Non-Local Interactions and Feedback Instability in a High Reynolds Number Flow. *Theoretical and Computational Fluid Dynamics*, **2003**, 17, 1-18	2.3	3
34	On spot evolution under an adverse pressure gradient. *Journal of Fluid Mechanics*, **2001**, 430, 169-207	3.7	3
33	Nonlinear evolution of Rayleigh waves in an initial value context: non-symmetric input and cross-flow. *Mathematika*, **1998**, 45, 217-243	0.6	3
32	On the nonlinear growth of single three-dimensional disturbances in boundary layers. *Mathematika* , **1994**, 41, 1-39	0.6	3
31	On the Calculation of the Incompressible Flow Past an Aerofoil with a Jet Flap. *Aeronautical Quarterly*, **1978**, 29, 44-59		3
30	On Dynamic Interactions Between Body Motion and Fluid Motion. *Studies in Systems, Decision and Control*, **2019**, 45-89	0.8	3
29	A body in nonlinear near-wall shear flow: impacts, analysis and comparisons. *Journal of Fluid Mechanics*, **2020**, 904,	3.7	3

28	Skimming impacts and rebounds of smoothly shaped bodies on shallow liquid layers. *Journal of Engineering Mathematics*, **2020**, 124, 41-73	1.2	3
27	Fluid flow lifting a body from a solid surface. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2018**, 474, 20180286	2.4	3
26	Turbulent interactions for rotating blades and wakes. *Journal of Engineering Mathematics*, **2011**, 69, 185-198	1.2	2
25	SUPERCRITICAL TWO-FLUID INTERACTIONS WITH SURFACE TENSION AND GRAVITY. *Mathematika*, **2010**, 56, 93-106	0.6	2
24	Rapid plunging of a body partly submerged in water. *Journal of Engineering Mathematics*, **2002**, 42, 303-319	1.2	2
23	On generation of horseshoe vortices by corrugated surfaces, surface roughnesses or pipe bends. *Journal of Engineering Mathematics*, **2003**, 45, 5-20	1.2	2
22	A three-dimensional pipe flow adjusts smoothly to the sudden onset of a bend. *Physics of Fluids*, **2005**, 17, 048102	4.4	2
21	A Uniformly Valid Theory of Turbulent Separation. *Springer Proceedings in Physics*, **2012**, 85-89	0.2	2
20	A smoothly curved body skimming on shallow water. *Journal of Engineering Mathematics*, **2021**, 128, 1	1.2	2
19	Pre-impact dynamics of a droplet impinging on a deformable surface. *Physics of Fluids*, **2021**, 33, 092119	4.4	2
18	Rate effects on the growth of centres. *European Journal of Applied Mathematics*, **2017**, 28, 221-242	1	1
17	Stability of two competing populations in chemostat where one of the population changes its average mass of division in response to changes of its population. *PLoS ONE*, **2019**, 14, e0213518	3.7	1
16	On the evolving flow of grains down a chute. *Journal of Engineering Mathematics*, **2010**, 68, 233-247	1.2	1
15	The development of the turbulent flow in a bent pipe. *Journal of Fluid Mechanics*, **2007**, 578, 467-494	3.7	1
14	Spreading of Nonuniform Jets in Wind. *Journal of Fluids Engineering, Transactions of the ASME*, **2002** , 124, 694-699	2.1	1
13	On effects of increasing amplitude in a boundary-layer spot. *Mathematika*, **1998**, 45, 1-24	0.6	1
12	Computations on flow past an inclined flat plate of finite length. *Journal of Engineering Mathematics*, **1990**, 24, 311-321	1.2	1
11	A body in nonlinear near-wall shear flow: numerical results for a flat plate. *Journal of Fluid Mechanics*, **2021**, 915,	3.7	1

10	Particle movement in a boundary layer. *Journal of Engineering Mathematics*, **2021**, 128, 1	1.2	1
9	The impact of dynamic roughness elements on marginally separated boundary layers. *Journal of Fluid Mechanics*, **2018**, 855, 351-370	3.7	1
8	Numerical and Analytical Study of Bladder-Collapse Flow. *International Journal of Differential Equations*, **2012**, 2012, 1-14	0.8	0
7	NONSYMMETRIC BRANCHING OF FLUID FLOWS IN 3D VESSELS. *ANZIAM Journal*, **2018**, 59, 533-561	0.5	
6	Interference in a three-dimensional array of jets. *European Journal of Applied Mathematics*, **2015**, 26, 795-819	1	
5	A simplified model of glycoprotein production within cell culture. *European Journal of Applied Mathematics*, **2017**, 28, 535-561	1	
4	Composite, Navier-Stokes and Euler unsteady-flow computations in boundary layers. *Journal of Engineering Mathematics*, **1996**, 30, 307-320	1.2	
3	Internal Fluid Dynamics **2016**, 135-168		
2	Modelling, computation and analysis on combustion of explosives. *European Journal of Applied Mathematics*,1-31	1	
1	On flow through bends and branchings. *Biorheology*, **2002**, 39, 373-8	1.7	