Darren Crowdy

List of Publications by Citations

146 papers	2,200 citations	27 h-index	37 g-index
153 ext. papers	2,499 ext. citations	2.6 avg, IF	6.03 L-index

#	Paper	IF	Citations
146	Conformal Mappings between Canonical Multiply Connected Domains. *Computational Methods and Function Theory*, **2006**, 6, 59-76	0.9	84
145	Analytical formulae for the Kirchhoff‐Routh path function in multiply connected domains. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2005**, 461, 2477-2501	2.4	73
144	A class of exact multipolar vortices. *Physics of Fluids*, **1999**, 11, 2556-2564	4.4	64
143	The Schwarz‐Christoffel mapping to bounded multiply connected polygonal domains. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2005**, 461, 2653-2678	2.4	59
142	Slip length for longitudinal shear flow over a dilute periodic mattress of protruding bubbles. *Physics of Fluids*, **2010**, 22, 121703	4.4	56
141	Computing the Schottky-Klein Prime Function on the Schottky Double of Planar Domains. *Computational Methods and Function Theory*, **2007**, 7, 293-308	0.9	55
140	Exact solutions for rotating vortex arrays with finite-area cores. *Journal of Fluid Mechanics*, **2002**, 469, 209-235	3.7	49
139	Wall effects on self-diffusiophoretic Janus particles: a theoretical study. *Journal of Fluid Mechanics*, **2013**, 735, 473-498	3.7	46
138	Analytical solutions for uniform potential flow past multiple cylinders. *European Journal of Mechanics, B/Fluids*, **2006**, 25, 459-470	2.4	45
137	Schwarz‐Christoffel mappings to unbounded multiply connected polygonal regions. *Mathematical Proceedings of the Cambridge Philosophical Society*, **2007**, 142, 319-339	0.7	44
136	Constructing Multiply Connected Quadrature Domains. *SIAM Journal on Applied Mathematics*, **2004**, 64, 1334-1359	1.8	44
135	The motion of a point vortex around multiple circular islands. *Physics of Fluids*, **2005**, 17, 056602	4.4	40
134	A new calculus for two-dimensional vortex dynamics. *Theoretical and Computational Fluid Dynamics*, **2010**, 24, 9-24	2.3	38
133	Two-dimensional point singularity model of a low-Reynolds-number swimmer near a wall. *Physical Review E*, **2010**, 81, 036313	2.4	35
132	General solutions to the 2D Liouville equation. *International Journal of Engineering Science*, **1997**, 35, 141-149	5.7	35
131	A two-dimensional model of low-Reynolds number swimming beneath a free surface. *Journal of Fluid Mechanics*, **2011**, 681, 24-47	3.7	34
130	Stuart vortices on a sphere. *Journal of Fluid Mechanics*, **2004**, 498, 381-402	3.7	33

129	Frictional slip lengths for unidirectional superhydrophobic grooved surfaces. *Physics of Fluids*, **2011**, 23, 072001	4.4	32
128	The construction of exact multipolar equilibria of the two-dimensional Euler equations. *Physics of Fluids*, **2002**, 14, 257-267	4.4	32
127	Analytical formulae for longitudinal slip lengths over unidirectional superhydrophobic surfaces with curved menisci. *Journal of Fluid Mechanics*, **2016**, 791,	3.7	32
126	Green's functions for Laplace's equation in multiply connected domains. *IMA Journal of Applied Mathematics*, **2007**, 72, 278-301	1	31
125	Circulation-induced shape deformations of drops and bubbles: Exact two-dimensional models. *Physics of Fluids*, **1999**, 11, 2836-2845	4.4	31
124	Geometric function theory: a modern view of a classical subject. *Nonlinearity*, **2008**, 21, T205-T219	1.7	30
123	Calculating the lift on a finite stack of cylindrical aerofoils. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2006**, 462, 1387-1407	2.4	30
122	Drawing of micro-structured fibres: circular and non-circular tubes. *Journal of Fluid Mechanics*, **2014**, 755, 176-203	3.7	27
121	Treadmilling swimmers near a no-slip wall at low Reynolds number. *International Journal of Non-Linear Mechanics*, **2011**, 46, 577-585	2.8	27
120	Contour dynamics in complex domains. *Journal of Fluid Mechanics*, **2007**, 593, 235-254	3.7	27
119	The motion of a point vortex through gaps in walls. *Journal of Fluid Mechanics*, **2006**, 551, 31	3.7	27
118	Analytical solutions for von Kármán streets of hollow vortices. *Physics of Fluids*, **2011**, 23, 126602	4.4	26
117	Hydrodynamic bound states of a low-Reynolds-number swimmer near a gap in a wall. *Journal of Fluid Mechanics*, **2011**, 667, 309-335	3.7	25
116	Exact Solutions for Steady Capillary Waves on a Fluid Annulus. *Journal of Nonlinear Science*, **1999**, 9, 615-640	2.0	24
115	A transform method for Laplace's equation in multiply connected circular domains. *IMA Journal of Applied Mathematics*, **2015**, 80, 1902-1931	1	23
114	CONFORMAL SLIT MAPS IN APPLIED MATHEMATICS. *ANZIAM Journal*, **2012**, 53, 171-189	0.5	23
113	Analytical solutions for distributed multipolar vortex equilibria on a sphere. *Physics of Fluids*, **2003**, 15, 22-34	4.4	23
112	The Schottky-Klein prime function: a theoretical and computational tool for applications. *IMA Journal of Applied Mathematics*, **2016**, 81, 589-628	1	23

93	Microstructured optical fibre drawing with active channel pressurisation. *Journal of Fluid Mechanics*, **2015**, 783, 137-165	3.7	14
92	Fourier–Mellin Transforms for Circular Domains. *Computational Methods and Function Theory*, **2015**, 15, 655-687	0.9	14
91	Explicit solution for the potential flow due to an assembly of stirrers in an inviscid fluid. *Journal of Engineering Mathematics*, **2008**, 62, 333-344	1.2	14
90	Stability analysis of a class of two-dimensional multipolar vortex equilibria. *Physics of Fluids*, **2002**, 14, 1862-1876	4.4	14
89	Shapes of two-dimensional bubbles deformed by circulation. *Nonlinearity*, **2000**, 13, 2131-2141	1.7	14
88	Multiple steady bubbles in a Hele-Shaw cell. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2009**, 465, 421-435	2.4	13
87	Frictional slip lengths and blockage coefficients. *Physics of Fluids*, **2011**, 23, 091703	4.4	13
86	Polygonal N-vortex arrays: A Stuart model. *Physics of Fluids*, **2003**, 15, 3710-3717	4.4	13
85	A New Approach to Free Surface Euler Flows with Capillarity. *Studies in Applied Mathematics*, **2000**, 105, 35-58	2.1	13
84	Uniform flow past a periodic array of cylinders. *European Journal of Mechanics, B/Fluids*, **2016**, 56, 120-129	2.4	12
83	Translating hollow vortex pairs. *European Journal of Mechanics, B/Fluids*, **2013**, 37, 180-186	2.4	12
82	Conformal Mappings to Multiply Connected Polycircular Arc Domains. *Computational Methods and Function Theory*, **2012**, 11, 685-706	0.9	12
81	Analytical formulae for source and sink flows in multiply connected domains. *Theoretical and Computational Fluid Dynamics*, **2013**, 27, 1-19	2.3	12
80	Exact solutions for cylindrical slip–stick Janus swimmers in Stokes flow. *Journal of Fluid Mechanics*, **2013**, 719,	3.7	11
79	Solving Wiener–Hopf problems without kernel factorization. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2014**, 470, 20140304	2.4	11
78	Conformal mappings to a doubly connected polycircular arc domain. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2007**, 463, 1885-1907	2.4	11
77	Exact solutions for the viscous sintering of multiply-connected fluid domains. *Journal of Engineering Mathematics*, **2002**, 42, 225-242	1.2	11
76	Steady nonlinear capillary waves on curved sheets. *European Journal of Applied Mathematics*, **2001**, 12, 689-708	1	11

75	Effective slip lengths for longitudinal shear flow over partial-slip circular bubble mattresses. *Fluid Dynamics Research*, **2015**, 47, 065507	1.2	10
74	An assembly of steadily translating bubbles in a Hele‑Shaw channel. *Nonlinearity*, **2009**, 22, 51-65	1.7	10
73	Applying improved analytical methods for modelling flood displacement fronts in bounded reservoirs (Quitman field, east Texas). *Journal of Petroleum Science and Engineering*, **2018**, 166, 1018-1041	4.4	9
72	Surfactant-induced stagnant zones in the Jeong-Moffatt free surface Stokes flow problem. *Physics of Fluids*, **2013**, 25, 092104	4.4	9
71	On a pair of interacting bubbles in planar Stokes flow. *Journal of Fluid Mechanics*, **2005**, 541, 231	3.7	9
70	Exact solutions for uniform vortex layers attached to corners and wedges. *European Journal of Applied Mathematics*, **2004**, 15, 643-650	1	9
69	A transform method for the biharmonic equation in multiply connected circular domains. *IMA Journal of Applied Mathematics*, **2018**, 83, 942-976	1	9
68	Dynamics of a treadmilling microswimmer near a no-slip wall in simple shear. *Journal of Fluid Mechanics*, **2017**, 821, 647-667	3.7	8
67	Effective slip lengths for immobilized superhydrophobic surfaces. *Journal of Fluid Mechanics*, **2017**, 825,	3.7	8
66	Stresslet asymptotics for a treadmilling swimmer near a two-dimensional corner: hydrodynamic bound states. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2012**, 468, 3765-3783	2.4	8
65	On rectangular vortex lattices. *Applied Mathematics Letters*, **2010**, 23, 34-38	3.5	8
64	Hele-Shaw flows and water waves. *Journal of Fluid Mechanics*, **2000**, 409, 223-242	3.7	8
63	Accessory parameters in conformal mapping: exploiting the isomonodromic tau function for Painlevé VI. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2018**, 474, 20180080	2.4	8
62	Matched asymptotics for a treadmilling low-Reynolds-number swimmer near a wall. *Quarterly Journal of Mechanics and Applied Mathematics*, **2013**, 66, 53-73	1	7
61	The effect of solid boundaries on pore shrinkage in Stokes flow. *Journal of Fluid Mechanics*, **2005**, 531, 359-379	3.7	7
60	The Effect of Finiteness in the Saffman‑Taylor Viscous Fingering Problem. *Journal of Statistical Physics*, **2004**, 114, 1501-1536	1.5	7
59	Explicit solutions for a steady vortex‑wave interaction. *Journal of Fluid Mechanics*, **2004**, 513, 161-170	3.7	7
58	An elliptical-pore model for late-stage planar viscous sintering. *Journal of Fluid Mechanics*, **2004**, 501, 251-277	3.7	7

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57	Secondary Schottky–Klein prime functions associated with multiply connected planar domains. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2015**, 471, 20140688	2.4	6
56	Stokes flow singularities in a two-dimensional channel: a novel transform approach with application to microswimming. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2013**, 469, 20130198	2.4	6
55	Genus-N algebraic reductions of the Benney hierarchy within a Schottky model. *Journal of Physics A*, **2005**, 38, 10917-10934		6
54	A note on viscous sintering and quadrature identities. *European Journal of Applied Mathematics*, **1999**, 10, 623-634	1	6
53	Speed of a von Kármán point vortex street in a weakly compressible fluid. *Physical Review Fluids*, **2017**, 2,	2.8	6
52	Effect of shear thinning on superhydrophobic slip: Perturbative corrections to the effective slip length. *Physical Review Fluids*, **2017**, 2,	2.8	6
51	Thermocapillary flow between grooved superhydrophobic surfaces: transverse temperature gradients. *Journal of Fluid Mechanics*, **2019**, 871, 775-798	3.7	5
50	Thermocapillary stress and meniscus curvature effects on slip lengths in ridged microchannels. *Journal of Fluid Mechanics*, **2020**, 894,	3.7	5
49	Steady point vortex pair in a field of Stuart-type vorticity. *Journal of Fluid Mechanics*, **2019**, 874,	3.7	5
48	Hollow vortices, capillary water waves and double quadrature domains. *Fluid Dynamics Research*, **2014**, 46, 031424	1.2	5
47	Multiply Connected Quadrature Domains and the Bergman Kernel Function. *Complex Analysis and Operator Theory*, **2009**, 3, 379-397	0.7	5
46	Collective viscous propulsion of a two-dimensional flotilla of Marangoni boats. *Physical Review Fluids*, **2020**, 5,	2.8	5
45	Flipping and scooping of curved 2D rigid fibers in simple shear: The Jeffery equations. *Physics of Fluids*, **2016**, 28, 053105	4.4	5
44	Surface-tension-driven Stokes flow: A numerical method based on conformal geometry. *Journal of Computational Physics*, **2016**, 317, 347-361	4.1	5
43	Stuart-type polar vortices on a rotating sphere. *Discrete and Continuous Dynamical Systems*, **2021**, 41, 201-215	2	5
42	Periodic Schwarz-Christoffel mappings with multiple boundaries per period. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2019**, 475, 20190225	2.4	4
41	Matched asymptotics for a spherical low-Reynolds-number treadmilling swimmer near a rigid wall. *IMA Journal of Applied Mathematics*, **2015**, 80, 634-650	1	4
40	The effect of core size on the speed of compressible hollow vortex streets. *Journal of Fluid Mechanics*, **2018**, 836, 797-827	3.7	4

39	Stokes flows past gaps in a wall. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2010**, 466, 2727-2746	2.4	4
38	Steady interaction of a vortex street with a shear flow. *Physics of Fluids*, **2010**, 22, 096601	4.4	4
37	The spreading phase in Lighthill's model of the Weis-Fogh lift mechanism. *Journal of Fluid Mechanics*, **2009**, 641, 195-204	3.7	4
36	Uniformizing the boundaries of multiply connected quadrature domains using Fuchsian groups. *Physica D: Nonlinear Phenomena*, **2007**, 235, 82-89	3.3	4
35	RiemannHilbert Problem for Automorphic Functions and the SchottkyKlein Prime Function. *Complex Analysis and Operator Theory*, **2007**, 1, 317-334	0.7	4
34	Asymptotic Modelling of a Six-Hole MOF. *Journal of Lightwave Technology*, **2016**, 34, 5651-5656	4	4
33	Fay meets van der Pauw: the trisecant identity and the resistivity of holey samples. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2021**, 477, 20200796	2.4	4
32	Analytical solutions for two-dimensional Stokes flow singularities in a no-slip wedge of arbitrary angle. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2017**, 473, 20170134	2.4	3
31	Conformal mappings from annuli to canonical doubly connected Bell representations. *Journal of Mathematical Analysis and Applications*, **2008**, 340, 669-674	1.1	3
30	Effect of Surface Curvature on Contact Resistance Between Cylinders. *Journal of Heat Transfer*, **2019**, 141,	1.8	2
29	The dipolar field of rotating bodies in two dimensions. *Journal of Fluid Mechanics*, **2008**, 607, 109-118	3.7	2
28	Exact solutions for two steady inviscid bubbles in the slow viscous flow generated by a four-roller mill. *Journal of Engineering Mathematics*, **2002**, 44, 311-330	1.2	2
27	Vortex patch equilibria of the Euler equation and random normal matrices. *Journal of Physics A: Mathematical and Theoretical*, **2014**, 47, 212002	2	2
26	A transformation between stationary point vortex equilibria. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2020**, 476, 20200310	2.4	2
25	Longitudinal Thermocapillary Flow over a Dense Bubble Mattress. *SIAM Journal on Applied Mathematics*, **2020**, 80, 1-19	1.8	2
24	H-statesexact solutions for a rotating hollow vortex. *Journal of Fluid Mechanics*, **2021**, 913,	3.7	2
23	Viscous propulsion of a two-dimensional Marangoni boat driven by reaction and diffusion of insoluble surfactant. *Physical Review Fluids*, **2021**, 6,	2.8	2
22	Analytical solutions for two-dimensional singly periodic Stokes flow singularity arrays near walls. *Journal of Engineering Mathematics*, **2019**, 119, 199-215	1.2	2

21	The corotating hollow vortex pair: steady merger and break-up via a topological singularity. *Journal of Fluid Mechanics*, **2021**, 907,	3.7	2
20	The Prime Function, the Fay Trisecant Identity, and the van der Pauw Method. *Computational Methods and Function Theory*,1	0.9	2
19	Fast evaluation of the fundamental singularities of two-dimensional doubly periodic Stokes flow. *Journal of Engineering Mathematics*, **2018**, 111, 95-110	1.2	1
18	Hybrid basis scheme for computing electrostatic fields exterior to close-to-touching discs. *IMA Journal of Numerical Analysis*, **2016**, 36, 743-769	1.8	1
17	A constructive method for plane-wave representations of special functions. *Journal of Mathematical Analysis and Applications*, **2016**, 436, 149-167	1.1	1
16	Philip Geoffrey Saffman. 19 March 1931 –17 August 2008. *Biographical Memoirs of Fellows of the Royal Society*, **2014**, 60, 375-395	0.1	1
15	Phoretic self-propulsion of Janus disks in the fast-reaction limit. *Physical Review Fluids*, **2020**, 5,	2.8	1
14	Viscous Marangoni Flow Driven by Insoluble Surfactant and the Complex Burgers Equation. *SIAM Journal on Applied Mathematics*, **2021**, 81, 2526-2546	1.8	1
13	Exact solutions for the formation of stagnant caps of insoluble surfactant on a planar free surface. *Journal of Engineering Mathematics*, **2021**, 131, 1	1.2	1
12	A new calculus for two-dimensional vortex dynamics. *IUTAM Symposium on Cellular, Molecular and Tissue Mechanics*, **2009**, 25-40	0.3	1
11	Exact solutions for rotating vortex arrays with finite-area cores		1
10	Liouville chains: new hybrid vortex equilibria of the two-dimensional Euler equation. *Journal of Fluid Mechanics*, **2021**, 921,	3.7	1
9	Superhydrophobic annular pipes: a theoretical study. *Journal of Fluid Mechanics*, **2021**, 906,	3.7	1
8	Spreading and Contact Resistance Formulae Capturing Boundary Curvature and Contact Distribution Effects. *Journal of Heat Transfer*, **2018**, 140,	1.8	1
7	Geometry-Fitted Fourier-Mellin Transform Pairs. *Springer Proceedings in Mathematics and Statistics*, **2016**, 37-53	0.2	0
6	Finite Gap Jacobi Matrices and the Schottky–Klein Prime Function. *Computational Methods and Function Theory*, **2017**, 17, 319-341	0.9	
5	Stress fields around two pores in an elastic body: exact quadrature domain solutions. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **2015**, 471, 20150240	2.4	
4	Uniformizing Real Hyperelliptic M-Curves Using the Schottky–Klein Prime Function. *Lecture Notes in Mathematics*, **2011**, 183-193	0.4	

3   Some highlights from 50 years of the IMA Journal of Applied Mathematics. *IMA Journal of Applied Mathematics*, **2016**, 81, 393-408   1

2   Special issue in honour of Professor John Blake FIMA CMath. *IMA Journal of Applied Mathematics*, **2018**, 83, 553-555   1

1   Zeros of the isomonodromic tau functions in constructive conformal mapping of polycircular arc domains: the n-vertex case. *Journal of Physics A: Mathematical and Theoretical*, **2022**, 55, 025201   2