David P Nicholls

List of Publications by Year
in descending order

77 papers	1,549 citations	361413 20 h-index	330143 37 g-index
77 all docs	77 docs citations	77 times ranked	359 citing authors

#	Article	IF	Citations
1	Traveling Two and Three Dimensional Capillary Gravity Water Waves. SIAM Journal on Mathematical Analysis, 2000, 32, 323-359.	1.9	134
2	A new approach to analyticity of Dirichlet-Neumann operators. Proceedings of the Royal Society of Edinburgh Section A: Mathematics, 2001, 131, 1411-1433.	1.2	100
3	Stability of High-Order Perturbative Methods for the Computation of Dirichletâ€"Neumann Operators. Journal of Computational Physics, 2001, 170, 276-298.	3.8	97
4	Hamiltonian longâ€"wave expansions for water waves over a rough bottom. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2005, 461, 839-873.	2.1	83
5	Analytic continuation of Dirichlet-Neumann operators. Numerische Mathematik, 2003, 94, 107-146.	1.9	82
6	Traveling gravity water waves in two and three dimensions. European Journal of Mechanics, B/Fluids, 2002, 21, 615-641.	2.5	74
7	Shape deformations in rough-surface scattering: improved algorithms. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2004, 21, 606.	1.5	69
8	Shape deformations in rough-surface scattering: cancellations, conditioning, and convergence. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2004, 21, 590.	1.5	65
9	Traveling Water Waves: Spectral Continuation Methods with Parallel Implementation. Journal of Computational Physics, 1998, 143, 224-240.	3.8	49
10	Stable, high-order computation of traveling water waves in three dimensions. European Journal of Mechanics, B/Fluids, 2006, 25, 406-424.	2.5	40
11	Analyticity of Dirichlet--Neumann Operators on HÃ¶lder and Lipschitz Domains. SIAM Journal on Mathematical Analysis, 2005, 37, 302-320.	1.9	38
12	A Stable Highâ€Order Method for Twoâ€Dimensional Boundedâ€Obstacle Scattering. SIAM Journal of Scientific Computing, 2006, 28, 1398-1419.	2.8	37
13	Exact non-reflecting boundary conditions on general domains. Journal of Computational Physics, 2004, 194, 278-303.	3.8	36
14	A field expansions method for scattering by periodic multilayered media. Journal of the Acoustical Society of America, 2011, 129, 1783-1793.	1.1	36
15	A stable, high-order method for three-dimensional, bounded-obstacle, acoustic scattering. Journal of Computational Physics, 2007, 224, 1145-1169.	3.8	35
16	On analyticity of travelling water waves. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2005, 461, 1283-1309.	2.1	31
17	Joint Analyticity and Analytic Continuation of Dirichletâ€"Neumann Operators on Doubly Perturbed Domains. Journal of Mathematical Fluid Mechanics, 2008, 10, 238-271.	1.0	31
18	A Rigorous Numerical Analysis of the Transformed Field Expansion Method. SIAM Journal on Numerical Analysis, 2009, 47, 2708-2734.	2.3	26

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19	A boundary perturbation method for recovering interface shapes in layered media. Inverse Problems, 2011, 27, 095009.	2.0	22
20	Traveling Waves in Deep Water with Gravity and Surface Tension. SIAM Journal on Applied Mathematics, 2010, 70, 2373-2389.	1.8	21
21	An efficient and stable spectral method for electromagnetic scattering from a layered periodic structure. Journal of Computational Physics, 2012, 231, 3007-3022.	3.8	21
22	Method of field expansions for vector electromagnetic scattering by layered periodic crossed gratings. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2015, 32, 701.	1.5	21
23	Error analysis of an enhanced DtN-FE method for exterior scattering problems. Numerische Mathematik, 2006, 105, 267-298.	1.9	18
24	Spectral Stability of Deep Two-Dimensional Gravity Water Waves: Repeated Eigenvalues. SIAM Journal on Applied Mathematics, 2012, 72, 689-711.	1.8	17
25	Launching surface plasmon waves via vanishingly small periodic gratings. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2016, 33, 276.	1.5	17
26	Boundary Perturbation Methods for Water Waves. GAMM Mitteilungen, 2007, 30, 44-74.	5.5	16
27	Spectral data for travelling water waves: singularities and stability. Journal of Fluid Mechanics, 2009, 624, 339-360.	3.4	16
28	Three-dimensional acoustic scattering by layered media: a novel surface formulation with operator expansions implementation. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2012, 468, 731-758.	2.1	15
29	Spectral Stability of Traveling Water Waves: Analytic Dependence of the Spectrum. Journal of Nonlinear Science, 2007, 17, 369-397.	2.1	14
30	A Spectral Element Method with Transparent Boundary Condition for Periodic Layered Media Scattering. Journal of Scientific Computing, 2016, 68, 772-802.	2.3	14
31	The spectrum of finite depth water waves. European Journal of Mechanics, B/Fluids, 2014, 46, 181-189.	2.5	13
32	Boundary perturbation methods for high-frequency acoustic scattering: Shallow periodic gratings. Journal of the Acoustical Society of America, 2008, 123, 2531-2541.	1.1	12
33	Detection of ocean bathymetry from surface wave measurements. European Journal of Mechanics, B/Fluids, 2009, 28, 224-233.	2.5	12
34	Efficient enforcement of far-field boundary conditions in the Transformed Field Expansions method. Journal of Computational Physics, 2011, 230, 8290-8303.	3.8	12
35	Fast high-order perturbation of surfaces methods for simulation of multilayer plasmonic devices and metamaterials. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2014, 31, 1820.	1.5	12
36	Fokas integral equations for three dimensional layered-media scattering. Journal of Computational Physics, 2014, 276, 1-25.	3.8	12

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37	Exact Non-Reflecting Boundary Conditions on Perturbed Domains and hp-Finite Elements. Journal of Scientific Computing, 2009, 39, 265-292.	2.3	11
38	Numerical Simulation of a Weakly Nonlinear Model forÂWater Waves withÂViscosity. Journal of Scientific Computing, 2010, 42, 274-290.	2.3	11
39	The domain of analyticity of Dirichletâ€"Neumann operators. Proceedings of the Royal Society of Edinburgh Section A: Mathematics, 2010, 140, 367-389.	1.2	11
40	On ill-posedness of truncated series models for water waves. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2014, 470, 20130849.	2.1	11
41	A Discontinuous Galerkin Method for Pricing American Options Under the Constant Elasticity of Variance Model. Communications in Computational Physics, 2015, 17, 761-778.	1.7	10
42	A numerical study of the Whitham equation as a model for steady surface water waves. Journal of Computational and Applied Mathematics, 2016, 296, 293-302.	2.0	10
43	On analyticity of linear waves scattered by a layered medium. Journal of Differential Equations, 2017, 263, 5042-5089.	2.2	10
44	Well-posedness and analyticity of solutions to a water wave problem with viscosity. Journal of Differential Equations, 2018, 265, 5031-5065.	2.2	10
45	Stable computation of the functional variation of the Dirichletâ€"Neumann operator. Journal of Computational Physics, 2010, 229, 906-920.	3.8	8
46	Operator expansions and constrained quadratic optimization for interface reconstruction: Impenetrable periodic acoustic media. Wave Motion, 2014, 51, 23-40.	2.0	8
47	A high-order perturbation of surfaces method for scattering of linear waves by periodic multiply layered gratings in two and three dimensions. Journal of Computational Physics, 2017, 345, 162-188.	3.8	8
48	Numerical Simulation of Grating Structures Incorporating Two-Dimensional Materials: A High-Order Perturbation of Surfaces Framework. SIAM Journal on Applied Mathematics, 2018, 78, 19-44.	1.8	8
49	A stable high-order perturbation of surfaces method for numerical simulation of diffraction problems in triply layered media. Journal of Computational Physics, 2017, 330, 1043-1068.	3.8	7
50	Wilton Ripples in Weakly Nonlinear Dispersive Models of Water Waves: Existence and Analyticity of Solution Branches. Water Waves, 2021, 3, 25-47.	1.0	7
51	A highâ€"order perturbation of surfaces (HOPS) approach to Fokas integral equations: Threeâ€"dimensional layeredâ€"media scattering. Quarterly of Applied Mathematics, 2015, 74, 61-87.	0.7	6
52	Sweeping Preconditioners for the Iterative Solution of Quasiperiodic Helmholtz Transmission Problems in Layered Media. Journal of Scientific Computing, 2020, 82, 1.	2.3	6
53	Error analysis and preconditioning for an enhanced DtN-FE algorithm for exterior scattering problems. Journal of Computational and Applied Mathematics, 2007, 204, 493-504.	2.0	5
54	An operator expansions method for computing Dirichletâ€"Neumann operators in linear elastodynamics. Journal of Computational Physics, 2014, 272, 266-278.	3.8	5

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55	Numerical Solution of Diffraction Problems: A High-Order Perturbation of Surfaces and Asymptotic Waveform Evaluation Method. SIAM Journal on Numerical Analysis, 2017, 55, 144-167.	2.3	5
56	A high-order perturbation of surfaces method for vector electromagnetic scattering by doubly layered periodic crossed gratings. Journal of Computational Physics, 2018, 372, 748-772.	3.8	5
57	A high-order perturbation of surfaces (HOPS) approach to Fokas integral equations: Vector electromagnetic scattering by periodic crossed gratings. Applied Numerical Mathematics, 2016, 101, 1-17.	2.1	4
58	Stable, high-order computation of impedanceâ€“impedance operators for three-dimensional layered medium simulations. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2018, 474, 20170704.	2.1	4
59	Data-driven design of thin-film optical systems using deep active learning. Optics Express, 2022, 30, 22901.	3.4	4
60	High-Order Perturbation of Surfaces Algorithms for the Simulation of Localized Surface Plasmon Resonances in Two Dimensions. Journal of Scientific Computing, 2018, 76, 1370-1395.	2.3	3
61	Periodic corrugations to increase efficiency of thermophotovoltaic emitting structures. Applied Physics Letters, 2019, 114, .	3.3	3
62	High-Order Spectral Simulation of Graphene Ribbons. Communications in Computational Physics, 2019, 26, 1575-1596.	1.7	3
63	A Boundary Perturbation Method for Vector Electromagnetic Scattering from Families of Doubly Periodic Gratings. Journal of Scientific Computing, 2010, 45, 471-486.	2.3	2
64	High-Order Perturbation of Surfaces Short Course: Boundary Value Problems. , 0, , 1-18.		2
65	High-Order Perturbation of Surfaces Short Course: Stability of Traveling Water Waves. , 2016, , 51-62.		2
66	A Rigorous Numerical Analysis of the Transformed Field Expansion Method for Diffraction by Periodic, Layered Structures. SIAM Journal on Numerical Analysis, 2021, 59, 456-476.	2.3	2
67	Launching graphene surface plasmon waves with vanishingly small periodic grating structures. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2021, 38, 556.	1.5	2
68	On analyticity of scattered fields in layered structures with interfacial graphene. Studies in Applied Mathematics, 2021, 147, 527.	2.4	2
69	Wilton Ripples in Weakly Nonlinear Models of Water Waves: Existence and Computation. Water Waves, 2021, 3, 491-511.	1.0	2
70	Modal explicit filtering for large eddy simulation in discontinuous spectral element method. Journal of Computational Physics: X, 2019, 3, 100024.	0.7	1
71	A nonlinear least squares framework for periodic grating identification with a highâ€“order perturbation of surfaces implementation. Applied Numerical Mathematics, 2019, 143, 20-34.	2.1	1
72	On the consistent choice of effective permittivity and conductivity for modeling graphene. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2021, 38, 1511.	1.5	1

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73	Simulation of Localized Surface Plasmon Resonances in Two Dimensions via Impedance-Impedance Operators. SIAM Journal on Applied Mathematics, 2021, 81, 871-896.	1.8	1
74	Numerical Simulation of a Weakly Nonlinear Model for Internal Waves. Communications in Computational Physics, 2012, 12, 1461-1481.	1.7	0
75	Highâ€“order perturbation of surfaces algorithms for the simulation of localized surface plasmon resonances in graphene nanotubes. Applied Numerical Mathematics, 2020, 157, 544-562.	2.1	0
76	Special Issue Dedicated to Walter Craig. Water Waves, 2021, 3, 1-4.	1.0	0
77	A highâ€“order spectral algorithm for the numerical simulation of layered media with uniaxial hyperbolic materials. Journal of Computational Physics, 2022, 453, 110961.	3.8	0