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	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
2	Data-driven design of thin-film optical systems using deep active learning. Optics Express, 2022, 30, 22901.	3.4	4
3	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
4	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
5	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
6	Special Issue Dedicated to Walter Craig. Water Waves, 2021, 3, 1-4.	1.0	0
7	On analyticity of scattered fields in layered structures with interfacial graphene. Studies in Applied Mathematics, 2021, 147, 527.	2.4	2
8	Wilton Ripples in Weakly Nonlinear Models of Water Waves: Existence and Computation. Water Waves, 2021, 3, 491-511.	1.0	2
9	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
10	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
11	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
12	Sweeping Preconditioners for the Iterative Solution of Quasiperiodic Helmholtz Transmission Problems in Layered Media. Journal of Scientific Computing, 2020, 82, 1.	2.3	6
13	Modal explicit filtering for large eddy simulation in discontinuous spectral element method. Journal of Computational Physics: X, 2019, 3, 100024.	0.7	1
14	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
15	Periodic corrugations to increase efficiency of thermophotovoltaic emitting structures. Applied Physics Letters, 2019, 114, .	3.3	3
16	High-Order Spectral Simulation of Graphene Ribbons. Communications in Computational Physics, 2019, 26, 1575-1596.	1.7	3
17	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
18	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

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19	Well-posedness and analyticity of solutions to a water wave problem with viscosity. Journal of Differential Equations, 2018, 265, 5031-5065.	2.2	10
20	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
21	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
22	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
23	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
24	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
25	On analyticity of linear waves scattered by a layered medium. Journal of Differential Equations, 2017, 263, 5042-5089.	2.2	10
26	High-Order Perturbation of Surfaces Short Course: Stability of Traveling Water Waves. , 2016, , 51-62.		2
27	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
28	A Spectral Element Method with Transparent Boundary Condition for Periodic Layered Media Scattering. Journal of Scientific Computing, 2016, 68, 772-802.	2.3	14
29	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
30	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
31	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
32	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
33	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
34	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
35	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
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	Operator expansions and constrained quadratic optimization for interface reconstruction: Impenetrable periodic acoustic media. Wave Motion, 2014, 51, 23-40.	2.0	8
38	The spectrum of finite depth water waves. European Journal of Mechanics, B/Fluids, 2014, 46, 181-189.	2.5	13
39	An operator expansions method for computing Dirichletâ€"Neumann operators in linear elastodynamics. Journal of Computational Physics, 2014, 272, 266-278.	3.8	5
40	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
41	Numerical Simulation of a Weakly Nonlinear Model for Internal Waves. Communications in Computational Physics, 2012, 12, 1461-1481.	1.7	0
42	Spectral Stability of Deep Two-Dimensional Gravity Water Waves: Repeated Eigenvalues. SIAM Journal on Applied Mathematics, 2012, 72, 689-711.	1.8	17
43	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
44	Efficient enforcement of far-field boundary conditions in the Transformed Field Expansions method. Journal of Computational Physics, 2011, 230, 8290-8303.	3.8	12
45	A boundary perturbation method for recovering interface shapes in layered media. Inverse Problems, 2011, 27, 095009.	2.0	22
46	A field expansions method for scattering by periodic multilayered media. Journal of the Acoustical Society of America, 2011, 129, 1783-1793.	1.1	36
47	Stable computation of the functional variation of the Dirichletâ€"Neumann operator. Journal of Computational Physics, 2010, 229, 906-920.	3.8	8
48	Numerical Simulation of a Weakly Nonlinear Model forÂWater Waves withÂViscosity. Journal of Scientific Computing, 2010, 42, 274-290.	2.3	11
49	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
50	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
51	Traveling Waves in Deep Water with Gravity and Surface Tension. SIAM Journal on Applied Mathematics, 2010, 70, 2373-2389.	1.8	21
52	Exact Non-Reflecting Boundary Conditions on Perturbed Domains and hp-Finite Elements. Journal of Scientific Computing, 2009, 39, 265-292.	2.3	11
53	Detection of ocean bathymetry from surface wave measurements. European Journal of Mechanics, B/Fluids, 2009, 28, 224-233.	2.5	12
54	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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55	Spectral data for travelling water waves: singularities and stability. Journal of Fluid Mechanics, 2009, 624, 339-360.	3.4	16
56	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
57	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
58	Boundary Perturbation Methods for Water Waves. GAMM Mitteilungen, 2007, 30, 44-74.	5.5	16
59	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
60	A stable, high-order method for three-dimensional, bounded-obstacle, acoustic scattering. Journal of Computational Physics, 2007, 224, 1145-1169.	3.8	35
61	Spectral Stability of Traveling Water Waves: Analytic Dependence of the Spectrum. Journal of Nonlinear Science, 2007, 17, 369-397.	2.1	14
62	A Stable Highâ€Order Method for Twoâ€Dimensional Boundedâ€Obstacle Scattering. SIAM Journal of Scientific Computing, 2006, 28, 1398-1419.	2.8	37
63	Stable, high-order computation of traveling water waves in three dimensions. European Journal of Mechanics, B/Fluids, 2006, 25, 406-424.	2.5	40
64	Error analysis of an enhanced DtN-FE method for exterior scattering problems. Numerische Mathematik, 2006, 105, 267-298.	1.9	18
65	Analyticity of Dirichlet--Neumann Operators on HÃ¶lder and Lipschitz Domains. SIAM Journal on Mathematical Analysis, 2005, 37, 302-320.	1.9	38
66	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
67	On analyticity of travelling water waves. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2005, 461, 1283-1309.	2.1	31
68	Exact non-reflecting boundary conditions on general domains. Journal of Computational Physics, 2004, 194, 278-303.	3.8	36
69	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
70	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
71	Analytic continuation of Dirichlet-Neumann operators. Numerische Mathematik, 2003, 94, 107-146.	1.9	82
72	Traveling gravity water waves in two and three dimensions. European Journal of Mechanics, B/Fluids, 2002, 21, 615-641.	2.5	74

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73	Stability of High-Order Perturbative Methods for the Computation of Dirichletâ€"Neumann Operators. Journal of Computational Physics, 2001, 170, 276-298.	3.8	97
74	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
75	Traveling Two and Three Dimensional Capillary Gravity Water Waves. SIAM Journal on Mathematical Analysis, 2000, 32, 323-359.	1.9	134
76	Traveling Water Waves: Spectral Continuation Methods with Parallel Implementation. Journal of Computational Physics, 1998, 143, 224-240.	3.8	49
77	High-Order Perturbation of Surfaces Short Course: Boundary Value Problems. , 0, , 1-18.		2