# Robert I Mclachlan

List of Publications by Year
in descending order

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|---|---|---|---|
| 112 papers | 4,318 citations | 212478 28 h-index | 129628 63 g-index |
| 115 all docs | 115 docs citations | 115 times ranked | 2112 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Why Emissions Pricing Canâ€™t Do It Alone. Policy Quarterly, 2022, 18, 3-13. | 0.2 | 3 |
| 2 | Backward error analysis for variational discretisations of PDEs. Journal of Geometric Mechanics, 2022, 14, 447-471. | 0.5 | 4 |
| 3 | Structure-preserving deep learning. European Journal of Applied Mathematics, 2021, 32, 888-936. | 1.4 | 17 |
| 4 | Analysing â€˜Simpleâ€™ Image Registrations. Journal of Mathematical Imaging and Vision, 2021, 63, 528-540. | 0.8 | 1 |
| 5 | Multisymplecticity of Hybridizable Discontinuous Galerkin Methods. Foundations of Computational Mathematics, 2020, 20, 35-69. | 1.5 | 7 |
| 6 | Parallelization, initialization, and boundary treatments for the diamond scheme. Numerical Algorithms, 2020, 84, 761-779. | 1.1 | 0 |
| 7 | Detection of high codimensional bifurcations in variational PDEs. Nonlinearity, 2020, 33, 2335-2363. | 0.6 | 2 |
| 8 | Preservation of Bifurcations of Hamiltonian Boundary Value Problems Under Discretisation. Foundations of Computational Mathematics, 2020, 20, 1363-1400. | 1.5 | 3 |
| 9 | CONFORMAL IMAGE REGISTRATION BASED ON CONSTRAINED OPTIMIZATION. ANZIAM Journal, 2020, 62, 235-255. | 0.3 | 0 |
| 10 | Currents and Finite Elements as Tools for Shape Space. Journal of Mathematical Imaging and Vision, 2019, 61, 1197-1220. | 0.8 | 2 |
| 11 | Three classes of quadratic vector fields for which the Kahan discretisation is the root of a generalised Manin transformation. Journal of Physics A: Mathematical and Theoretical, 2019, 52, 045204. | 0.7 | 8 |
| 12 | Perspectives on geometric numerical integration. Journal of the Royal Society of New Zealand, 2019, 49, 114-125. | 1.0 | 2 |
| 13 | Symplectic integration of boundary value problems. Numerical Algorithms, 2019, 81, 1219-1233. | 1.1 | 3 |
| 14 | Principal symmetric space analysis. Journal of Computational Dynamics, 2019, 6, 251-276. | 0.4 | 2 |
| 15 | Preface Special issue in honor of Reinout Quispel. Journal of Computational Dynamics, 2019, 6, â…°-â…´. | 0.4 | 0 |
| 16 | The Lie algebra of classical mechanics. Journal of Computational Dynamics, 2019, 6, 345-360. | 0.4 | 0 |
| 17 | Bifurcation of solutions to Hamiltonian boundary value problems. Nonlinearity, 2018, 31, 2895-2927. | 0.6 | 8 |
| 18 | Symplectic integration of PDEs using Clebsch variables. Journal of Computational Dynamics, 2018, . | 0.4 | 0 |

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|---|---|---|---|
| 19 | Discrete gradient methods for solving variational image regularisation models. Journal of Physics A: Mathematical and Theoretical, 2017, 50, 295201. | 0.7 | 18 |
| 20 | Symmetry reduction for central force problems. European Journal of Physics, 2016, 37, 055003. | 0.3 | 0 |
| 21 | Travelling wave solutions of multisymplectic discretizations of semi-linear wave equations. Journal of Difference Equations and Applications, 2016, 22, 913-940. | 0.7 | 6 |
| 22 | Geometry of Discrete-Time Spin Systems. Journal of Nonlinear Science, 2016, 26, 1507-1523. | 1.0 | 1 |
| 23 | Efficient and accurate methods for solving the time-dependent spin-1 Gross-Pitaevskii equation. Physical Review E, 2016, 93, 053309. | 0.8 | 19 |
| 24 | A minimal-variable symplectic integrator on spheres. Mathematics of Computation, 2016, 86, 2325-2344. | 1.1 | 12 |
| 25 | B-series methods are exactly the affine equivariant methods. Numerische Mathematik, 2016, 133, 599-622. | 0.9 | 20 |
| 26 | Discretization of polynomial vector fields by polarization. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20150390. | 1.0 | 13 |
| 27 | The Multisymplectic Diamond Scheme. SIAM Journal of Scientific Computing, 2015, 37, A369-A390. | 1.3 | 9 |
| 28 | Collective Lie-Poisson integrators on R3. IMA Journal of Numerical Analysis, 2015, 35, 546-560. | 1.5 | 12 |
| 29 | Composition Methods. , 2015, , 237-242. | | 0 |
| 30 | Collective symplectic integrators. Nonlinearity, 2014, 27, 1525-1542. | 0.6 | 8 |
| 31 | High Order Multisymplectic Runge–Kutta Methods. SIAM Journal of Scientific Computing, 2014, 36, A2199-A2226. | 1.3 | 27 |
| 32 | Modified Trigonometric Integrators. SIAM Journal on Numerical Analysis, 2014, 52, 1378-1397. | 1.1 | 16 |
| 33 | Integrability properties of KahanÊ¼s method. Journal of Physics A: Mathematical and Theoretical, 2014, 47, 365202. | 0.7 | 28 |
| 34 | On conformal variational problems and free boundary continua. Journal of Physics A: Mathematical and Theoretical, 2014, 47, 145204. | 0.7 | 1 |
| 35 | Geometric Generalisations of shake and rattle. Foundations of Computational Mathematics, 2014, 14, 339-370. | 1.5 | 19 |
| 36 | Symplectic integrators for spin systems. Physical Review E, 2014, 89, 061301. | 0.8 | 20 |

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|---|---|---|---|
| 37 | Discrete gradient methods have an energy conservation law. Discrete and Continuous Dynamical Systems, 2014, 34, 1099-1104. | 0.5 | 29 |
| 38 | Geodesic Warps by Conformal Mappings. International Journal of Computer Vision, 2013, 105, 144-154. | 10.9 | 6 |
| 39 | Geometric properties of Kahan's method. Journal of Physics A: Mathematical and Theoretical, 2013, 46, 025201. | 0.7 | 48 |
| 40 | Symplectic Integrators for Index 1 Constraints. SIAM Journal of Scientific Computing, 2013, 35, A2150-A2162. | 1.3 | 2 |
| 41 | Preserving energy resp. dissipation in numerical PDEs using the â€œAverage Vector Fieldâ€•method. Journal of Computational Physics, 2012, 231, 6770-6789. | 1.9 | 198 |
| 42 | Linear Stability of Partitioned Rungeâ€“Kutta Methods. SIAM Journal on Numerical Analysis, 2011, 49, 232-263. | 1.1 | 13 |
| 43 | Asymptotic Blowup Profiles for Modified Camassaâ€“Holm Equations. SIAM Journal on Applied Dynamical Systems, 2011, 10, 452-468. | 0.7 | 4 |
| 44 | On Eulerâ€“Arnold equations and totally geodesic subgroups. Journal of Geometry and Physics, 2011, 61, 1446-1461. | 0.7 | 15 |
| 45 | Energy-Preserving Integrators and the Structure ofÂB-series. Foundations of Computational Mathematics, 2010, 10, 673-693. | 1.5 | 51 |
| 46 | Preservation and destruction of periodic orbits by symplectic integrators. Numerical Algorithms, 2010, 53, 343-362. | 1.1 | 2 |
| 47 | Exploiting the Hamiltonian structure of a neural field model. Physica D: Nonlinear Phenomena, 2010, 239, 537-546. | 1.3 | 18 |
| 48 | Energy-preserving Runge-Kutta methods. ESAIM: Mathematical Modelling and Numerical Analysis, 2009, 43, 645-649. | 0.8 | 89 |
| 49 | RECONSIDERING TRIGONOMETRIC INTEGRATORS. ANZIAM Journal, 2009, 50, 320-332. | 0.3 | 1 |
| 50 | Structure of B-series for Some Classes of Geometric Integrators. , 2009, , . | | 0 |
| 51 | Linearization-preserving self-adjoint and symplectic integrators. BIT Numerical Mathematics, 2009, 49, 177-197. | 1.0 | 20 |
| 52 | Well-posedness of modified Camassaâ€“Holm equations. Journal of Differential Equations, 2009, 246, 3241-3259. | 1.1 | 30 |
| 53 | The structure of a set of vector fields on Poisson manifolds. Journal of Physics A: Mathematical and Theoretical, 2009, 42, 142001. | 0.7 | 1 |
| 54 | On energy conservation of the simplified Takahashi-Imada method. ESAIM: Mathematical Modelling and Numerical Analysis, 2009, 43, 631-644. | 0.8 | 20 |

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|---|---|---|---|
| 55 | Achieving Brouwerâ€™s law with implicit Rungeâ€“Kutta methods. BIT Numerical Mathematics, 2008, 48, 231-243. | 1.0 | 45 |
| 56 | Explicit Volume-Preserving Splitting Methods for Linear and Quadratic Divergence-Free Vector Fields. Foundations of Computational Mathematics, 2008, 8, 335-355. | 1.5 | 11 |
| 57 | On Multisymplecticity of Partitioned Rungeâ€“Kutta Methods. SIAM Journal of Scientific Computing, 2008, 30, 1318-1340. | 1.3 | 19 |
| 58 | N-particle dynamics of the Euler equations for planar diffeomorphisms. Dynamical Systems, 2007, 22, 269-290. | 0.2 | 14 |
| 59 | A New Implementation of Symplectic Rungeâ€“Kutta Methods. SIAM Journal of Scientific Computing, 2007, 29, 1637-1649. | 1.3 | 11 |
| 60 | A Hamiltonian Particle Method for Diffeomorphic Image Registration. , 2007, 20, 396-407. | | 21 |
| 61 | On the multisymplecticity of partitioned Rungeâ€“Kutta and splitting methods. International Journal of Computer Mathematics, 2007, 84, 847-869. | 1.0 | 30 |
| 62 | Geometric Numerical Integration of Differential Equations. Journal of Physics A, 2006, 39, . | 1.6 | 10 |
| 63 | A double exponential model for biochemical oxygen demand. Bioresource Technology, 2006, 97, 273-282. | 4.8 | 20 |
| 64 | Integrators for Nonholonomic Mechanical Systems. Journal of Nonlinear Science, 2006, 16, 283-328. | 1.0 | 60 |
| 65 | Geometric integrators for ODEs. Journal of Physics A, 2006, 39, 5251-5285. | 1.6 | 134 |
| 66 | The Kelvinâ€“Helmholtz Instability of Momentum Sheets in the Euler Equations for Planar Diffeomorphisms. SIAM Journal on Applied Dynamical Systems, 2006, 5, 726-758. | 0.7 | 6 |
| 67 | Geometric integration for a two-spin system. Journal of Physics A, 2006, 39, L447-L452. | 1.6 | 2 |
| 68 | The Discrete Moser?Veselov Algorithm for the Free Rigid Body, Revisited. Foundations of Computational Mathematics, 2005, 5, 87-123. | 1.5 | 26 |
| 69 | On symplectic and multisymplectic schemes for the KdV equation. Journal of Scientific Computing, 2005, 25, 83-104. | 1.1 | 9 |
| 70 | On Symplectic and Multisymplectic Schemes for the KdV Equation. Journal of Scientific Computing, 2005, 25, 83-104. | 1.1 | 75 |
| 71 | Energy drift in reversible time integration. Journal of Physics A, 2004, 37, L593-L598. | 1.6 | 15 |
| 72 | On the Nonlinear Stability of Symplectic Integrators. BIT Numerical Mathematics, 2004, 44, 99-117. | 1.0 | 9 |

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| 73 | Explicit Geometric Integration of Polynomial Vector Fields. BIT Numerical Mathematics, 2004, 44, 515-538. | 1.0 | 15 |
| 74 | Source Release-Rate Estimation of Atmospheric Pollution from a Non-Steady Point Source at a Known Location. Environmental Modeling and Assessment, 2004, 9, 33-42. | 1.2 | 20 |
| 75 | Multisymplectic box schemes and the Kortewegâ€“de Vries equation. Applied Numerical Mathematics, 2004, 48, 255-269. | 1.2 | 128 |
| 76 | Lie group foliations: dynamical systems and integrators. Future Generation Computer Systems, 2003, 19, 1207-1219. | 4.9 | 6 |
| 77 | Geometric integration of conservative polynomial ODEs. Applied Numerical Mathematics, 2003, 45, 411-418. | 1.2 | 12 |
| 78 | Spatial discretization of partial differential equations with integrals. IMA Journal of Numerical Analysis, 2003, 23, 645-664. | 1.5 | 13 |
| 79 | The Combinatorics of Tandem Duplication Trees. Systematic Biology, 2003, 52, 110-118. | 2.7 | 23 |
| 80 | The algebraic entropy of classical mechanics. Journal of Mathematical Physics, 2003, 44, 3071. | 0.5 | 4 |
| 81 | Splitting methods. Acta Numerica, 2002, 11, 341-434. | 6.3 | 546 |
| 82 | Splitting methods. , 2002, , 341-434. | | 36 |
| 83 | Families of High-Order Composition Methods. Numerical Algorithms, 2002, 31, 233-246. | 1.1 | 21 |
| 84 | What kinds of dynamics are there? Lie pseudogroups, dynamical systems and geometric integration. Nonlinearity, 2001, 14, 1689-1705. | 0.6 | 36 |
| 85 | Six lectures on the geometric integration of ODEs. , 2001, , 155-210. | | 36 |
| 86 | Conformal Hamiltonian systems. Journal of Geometry and Physics, 2001, 39, 276-300. | 0.7 | 74 |
| 87 | Numerical integrators that contract volume. Applied Numerical Mathematics, 2000, 34, 253-260. | 1.2 | 7 |
| 88 | Geometric integration using discrete gradients. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 1999, 357, 1021-1045. | 1.6 | 350 |
| 89 | Area preservation in computational fluid dynamics. Physics Letters, Section A: General, Atomic and Solid State Physics, 1999, 264, 36-44. | 0.9 | 9 |
| 90 | Approximately preserving symmetries in the numerical integration of ordinary differential equations. European Journal of Applied Mathematics, 1999, 10, 419-445. | 1.4 | 12 |

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|---|---|---|---|
| 91 | Generating functions for dynamical systems with symmetries, integrals, and differential invariants. Physica D: Nonlinear Phenomena, 1998, 112, 298-309. | 1.3 | 18 |
| 92 | Numerical Integrators that Preserve Symmetries and Reversing Symmetries. SIAM Journal on Numerical Analysis, 1998, 35, 586-599. | 1.1 | 43 |
| 93 | Unified Approach to Hamiltonian Systems, Poisson Systems, Gradient Systems, and Systems with Lyapunov Functions or First Integrals. Physical Review Letters, 1998, 81, 2399-2403. | 2.9 | 79 |
| 94 | On a possible mechanism of anomalous diffusion by Rossby waves. Physics of Fluids, 1998, 10, 3185-3193. | 1.6 | 12 |
| 95 | Symplectic splitting methods for rigid body molecular dynamics. Journal of Chemical Physics, 1997, 107, 5840-5851. | 1.2 | 205 |
| 96 | Hamiltonian finite-dimensional models of baroclinic instability. Physics Letters, Section A: General, Atomic and Solid State Physics, 1997, 229, 299-305. | 0.9 | 7 |
| 97 | Optimal stability polynomials for splitting methods, with application to the time-dependent SchrÃ¶dinger equation. Applied Numerical Mathematics, 1997, 25, 275-286. | 1.2 | 16 |
| 98 | Composition methods in the presence of small parameters. BIT Numerical Mathematics, 1995, 35, 258-268. | 1.0 | 91 |
| 99 | Equivariant constrained symplectic integration. Journal of Nonlinear Science, 1995, 5, 233-256. | 1.0 | 53 |
| 100 | On the Numerical Integration of Ordinary Differential Equations by Symmetric Composition Methods. SIAM Journal of Scientific Computing, 1995, 16, 151-168. | 1.3 | 284 |
| 101 | A note on the motion of surfaces. Physics Letters, Section A: General, Atomic and Solid State Physics, 1994, 194, 165-172. | 0.9 | 43 |
| 102 | A gallery of constant-negative-curvature surfaces. Mathematical Intelligencer, 1994, 16, 31-37. | 0.1 | 37 |
| 103 | Integrable four-dimensional symplectic maps of standard type. Physics Letters, Section A: General, Atomic and Solid State Physics, 1993, 177, 211-214. | 0.9 | 14 |
| 104 | Symplectic integration of Hamiltonian wave equations. Numerische Mathematik, 1993, 66, 465-492. | 0.9 | 135 |
| 105 | Explicit Lie-Poisson integration and the Euler equations. Physical Review Letters, 1993, 71, 3043-3046. | 2.9 | 101 |
| 106 | The accuracy of symplectic integrators. Nonlinearity, 1992, 5, 541-562. | 0.6 | 329 |
| 107 | A steady separated viscous corner flow. Journal of Fluid Mechanics, 1991, 231, 1-34. | 1.4 | 6 |
| 108 | The boundary layer on a finite flat plate. Physics of Fluids A, Fluid Dynamics, 1991, 3, 341-348. | 1.6 | 11 |

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| 109 | Generalized squeezing. Physical Review A, 1987, 35, 1659-1667. | 1.0 | 103 |
| 110 | Discrete Mechanics and Optimal Control for Image Registration. ANZIAM Journal, 0, 48, 1. | 0.0 | 12 |
| 111 | MÃ¶bius Invariants of Shapes and Images. Symmetry, Integrability and Geometry: Methods and Applications (SIGMA), 0, , . | 0.5 | 4 |
| 112 | Parametric study of E. coli incidence with reference to the New Zealand freshwater standards and the ManawatÅ«â€“Whanganui region. ANZIAM Journal, 0, 59, . | 0.0 | 0 |