RESEARCH & PUBLICATIONS

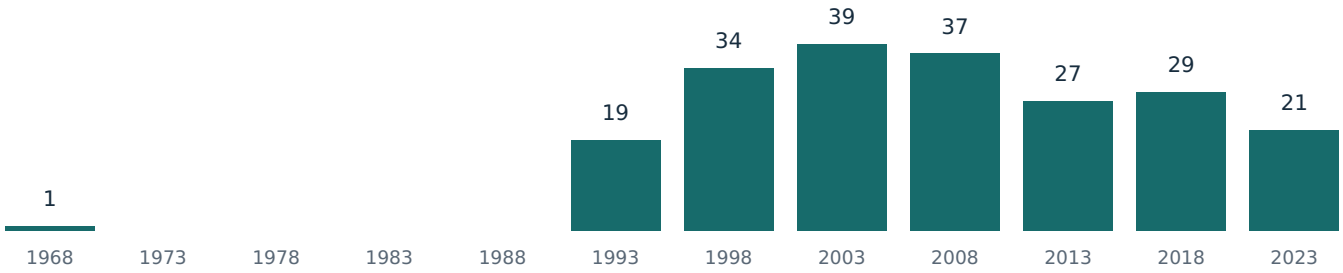
Adrian Constantin

A publication record at a glance

207	19,300	63
ARTICLES	CITATIONS	h-INDEX

PUBLICATION ACTIVITY

Articles grouped into 5-year periods



MOST CITED IN THIS LIST

Wave Breaking for Nonlinear Nonlocal Shallow Water Equations — 1,300
1998 Acta Mathematica

The Hydrodynamical Relevance of the Camassa–Holm and Degasperis–Procesi Equations — 913
2009 Archive for Rational Mechanics and Analysis

Stability of Peakons — 842
2000 Communications on Pure and Applied Mathematics

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Ordered by publication year, newest first

2027

01 **Stability of Magnetohydrodynamic Zonal Flows on a Sphere**
Discrete and Continuous Dynamical Systems · 58, 76-95
https://exaly.com/article/216507549
0 citations

2026

02 **Pressure Beneath a Periodic Travelling Water Wave in Constant-Vorticity Flow Over a Flat Bed**
Journal of Fluid Mechanics · 1038, A38
https://exaly.com/article/215818537
0 citations

03 **Classification of Atmospheric Traveling Waves at Cloud Level**
Archive for Rational Mechanics and Analysis · 250, 102
https://exaly.com/article/228642325
0 citations

2025

04 **On Hurricane Dynamics**
Journal of Differential Equations · 431, 113193
https://exaly.com/article/198176983
0 citations

05 **The Onset of Filamentation on Vorticity Interfaces in Two-Dimensional Euler Flows**
Journal of Fluid Mechanics · 1008, A48
https://exaly.com/article/199841576
1 citations

06 **Rigidity of Three-Dimensional Geophysical Flows**
International Mathematics Research Notices
https://exaly.com/article/200817478
0 citations

07 **Rigidity of Stratospheric Travelling Waves**
Communications in Mathematical Physics · 406, 193
https://exaly.com/article/202582138
3 citations

08 **Nonlinear Atmospheric Flow Patterns Confined to Zonal Cloud Bands: Saturn's Hexagon**
Journals of the Atmospheric Sciences · 82, 1815-1832
https://exaly.com/article/203643862
4 citations

09 **On the Onset of Filamentation on Two-Dimensional Vorticity Interfaces**
Nonlinearity · 38, 085018
https://exaly.com/article/204099184
0 citations

10 **Stable Stratospheric Flows**
Abel Symposia
https://exaly.com/article/204154486
0 citations

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2024

11 **Atmospheric Undular Bores**
Mathematische Annalen · 388, 4011-4036
https://exaly.com/article/164280169
24 citations

12 **The Dynamics of the Transpolar Drift Current**
Geophysical and Astrophysical Fluid Dynamics · 118, 165-182
https://exaly.com/article/186392980
7 citations

13 **Spherical Coordinates for Arctic Ocean Flows**
Advances in Mathematical Fluid Mechanics
https://exaly.com/article/188008157
4 citations

14 **Analysis I**
Journal unavailable
https://exaly.com/article/193358088
0 citations

15 **Nonlinear Atmospheric Flow Patterns Confined to Zonal Cloud Bands**
Journals of the Atmospheric Sciences · 82, 3-15
https://exaly.com/article/194823603
9 citations

2023

16 **A Uniqueness Criterion for Ordinary Differential Equations**
Journal of Differential Equations · 342, 179-192
https://exaly.com/article/156048100
14 citations

17 **On the Dynamics of the Near-Surface Currents in the Arctic Ocean**
Nonlinear Analysis: Real World Applications · 73, 103894
https://exaly.com/article/159638081
26 citations

18 **Exact Nonlinear Mountain Waves Propagating Upwards**
Journal of Physics A: Mathematical and Theoretical · 56, 245702
https://exaly.com/article/164366401
17 citations

19 **Global Existence and Finite-Time Blow-Up for a Nonlinear Nonlocal Evolution Equation**
Communications in Mathematical Physics · 402, 3233-3252
https://exaly.com/article/165191967
5 citations

20 **On Saturn's Six-Sided Polar Jet Stream**
Geophysical and Astrophysical Fluid Dynamics · 117, 279-291
https://exaly.com/article/166403929
14 citations

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2023 / continued

21 **A Steady Azimuthal Stratified Flow Modelling the Antarctic Circumpolar Current**
Journal of Differential Equations · 374, 632-641
https://exaly.com/article/167035965
14 citations

2022

22 **Nonlinear Wind-Drift Ocean Currents in Arctic Regions**
Geophysical and Astrophysical Fluid Dynamics · 116, 101-115
https://exaly.com/article/120777822
23 citations

23 **Comments On: Nonlinear Wind-Drift Ocean Currents in Arctic Regions**
Geophysical and Astrophysical Fluid Dynamics · 116, 116-121
https://exaly.com/article/134770366
8 citations

24 **On the Propagation of Nonlinear Waves in the Atmosphere**
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences · 478, 20210895
https://exaly.com/article/134999095
33 citations

25 **Preface to the Special Issue on Analysis of Geophysical Phenomena**
Communications on Pure and Applied Analysis · 21, i-iv
https://exaly.com/article/146132692
0 citations

26 **Stratospheric Planetary Flows From the Perspective of the Euler Equation on a Rotating Sphere**
Archive for Rational Mechanics and Analysis · 245, 587-644
https://exaly.com/article/146178840
52 citations

2021

27 **Preface**
Journal of Nonlinear Mathematical Physics · 19, v
https://exaly.com/article/52666542
0 citations

28 **Preface**
Journal of Nonlinear Mathematical Physics · 22, 474
https://exaly.com/article/61322213
0 citations

29 **Frictional Effects in Wind-Driven Ocean Currents**
Geophysical and Astrophysical Fluid Dynamics · 115, 1-14
https://exaly.com/article/77700538
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30 **Equatorial Wave–Current Interactions**
Advances in Mathematical Fluid Mechanics
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31 **Stuart-Type Polar Vortices on a Rotating Sphere** — 18 citations
Discrete and Continuous Dynamical Systems · 41, 201-215
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32 **On the Propagation of Waves in the Atmosphere** — 32 citations
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences · 477, 20200424
https://exaly.com/article/80679149

33 **On the Modelling of Large-Scale Atmospheric Flow** — 65 citations
Journal of Differential Equations · 285, 751-798
https://exaly.com/article/80795745

34 **Liouville Chains: New Hybrid Vortex Equilibria of the Two-Dimensional Euler Equation** — 12 citations
Journal of Fluid Mechanics · 921, A1
https://exaly.com/article/81071043

35 **Large-Amplitude Steady Downstream Water Waves** — 22 citations
Communications in Mathematical Physics · 387, 237-266
https://exaly.com/article/81979740

2020

36 **On the Decrease of Kinetic Energy With Depth in Wave–Current Interactions** — 13 citations
Mathematische Annalen · 378, 853-872
https://exaly.com/article/74983997

37 **The Deflection Angle Between a Wind-Forced Surface Current and the Overlying Wind in an Ocean With Vertically Varying Eddy Viscosity** — 23 citations
Physics of Fluids
https://exaly.com/article/85062749

38 **A Transformation Between Stationary Point Vortex Equilibria** — 9 citations
Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences · 476, 20200310
https://exaly.com/article/85574457

39 **The Ekman Spiral for Piecewise-Uniform Viscosity** — 36 citations
Ocean Science · 16, 1089-1093
https://exaly.com/article/90181894

2019

40 **Steady Point Vortex Pair in a Field of Stuart-Type Vorticity** — 10 citations
Journal of Fluid Mechanics · 874, R1
https://exaly.com/article/72123262

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2019 / continued

41 **Equatorial Wave–Current Interactions** — 144 citations
Communications in Mathematical Physics · 370, 1-48
https://exaly.com/article/72176153

42 **The Deflection Angle of Surface Ocean Currents From the Wind Direction** — 42 citations
Journal of Geophysical Research: Oceans · 124, 7412-7420
https://exaly.com/article/72255333

43 **On the Nonlinear, Three-Dimensional Structure of Equatorial Oceanic Flows** — 49 citations
Journal of Physical Oceanography · 49, 2029-2042
https://exaly.com/article/72302044

44 **Large-Scale Oceanic Currents as Shallow-Water Asymptotic Solutions of the Navier-Stokes Equation in Rotating Spherical Coordinates** — 29 citations
Deep-Sea Research Part II: Topical Studies in Oceanography · 160, 32-40
https://exaly.com/article/72842947

45 **Preface: Dynamics of Ocean Waves and Currents** — 0 citations
Deep-Sea Research Part II: Topical Studies in Oceanography · 160, 1-2
https://exaly.com/article/73433136

46 **Ekman-Type Solutions for Shallow-Water Flows on a Rotating Sphere: A New Perspective on a Classical Problem** — 59 citations
Physics of Fluids
https://exaly.com/article/73726572

47 **Atmospheric Ekman Flows With Variable Eddy Viscosity** — 67 citations
Boundary-Layer Meteorology · 170, 395-414
https://exaly.com/article/73744812

48 **Stuart-Type Vortices on a Rotating Sphere** — 16 citations
Journal of Fluid Mechanics · 865, 1072-1084
https://exaly.com/article/73750363

2018

49 **From the Guest Editors: Introduction to the Special Issue on Mathematical Aspects of Physical Oceanography** — 0 citations
Oceanography · 31, 12-13
https://exaly.com/article/70366532

50 **Steady Large-Scale Ocean Flows in Spherical Coordinates** — 56 citations
Oceanography · 31, 42-50
https://exaly.com/article/70366533

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2017

51 **A Nonlinear, Three-Dimensional Model for Ocean Flows, Motivated by Some Observations of the Pacific Equatorial Undercurrent and Thermocline** — 98 citations

Physics of Fluids

https://exaly.com/article/66441243

52 **Gerstner Waves in the Presence of Mean Currents and Rotation** — 107 citations

Journal of Fluid Mechanics · 820, 511-528

https://exaly.com/article/66456657

53 **Dressing Method for the Degasperis–Procesi Equation** — 40 citations

Studies in Applied Mathematics · 138, 205-226

https://exaly.com/article/67793138

54 **Large Gyres as a Shallow-Water Asymptotic Solution of Euler's Equation in Spherical Coordinates** — 82 citations

Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences · 473, 20170063

https://exaly.com/article/68123009

2016

55 **Nonlinear Water Waves** — 6 citations

Lecture Notes in Mathematics

https://exaly.com/article/63455429

56 **Extrema of the Dynamic Pressure in an Irrotational Regular Wave Train** — 26 citations

Physics of Fluids

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57 **An Exact, Steady, Purely Azimuthal Flow as a Model for the Antarctic Circumpolar Current** — 121 citations

Journal of Physical Oceanography · 46, 3585-3594

https://exaly.com/article/64263803

58 **Current and Future Prospects for the Application of Systematic Theoretical Methods to the Study of Problems in Physical Oceanography** — 15 citations

Physics Letters, Section A: General, Atomic and Solid State Physics · 380, 3007-3012

https://exaly.com/article/64306620

59 **Global Bifurcation of Steady Gravity Water Waves With Critical Layers** — 144 citations

Acta Mathematica · 217, 195-262

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2016 / continued

60 **Hamiltonian Formulation for Wave-Current Interactions in Stratified Rotational Flows**
Archive for Rational Mechanics and Analysis · 221, 1417-1447
https://exaly.com/article/65058501
95 citations

61 **An Exact, Steady, Purely Azimuthal Equatorial Flow With a Free Surface**
Journal of Physical Oceanography · 46, 1935-1945
https://exaly.com/article/65505120
164 citations

62 **Exact Travelling Periodic Water Waves in Two-Dimensional Irrotational Flows**
Lecture Notes in Mathematics
https://exaly.com/article/83609864
4 citations

63 **Fourier Analysis**
Journal unavailable
https://exaly.com/article/109066827
6 citations

2015

64 **The Time Evolution of the Maximal Horizontal Surface Fluid Velocity for an Irrotational Wave Approaching Breaking**
Journal of Fluid Mechanics · 768, 468-475
https://exaly.com/article/60098177
16 citations

65 **The Flow Beneath a Periodic Travelling Surface Water Wave**
Journal of Physics A: Mathematical and Theoretical · 48, 143001
https://exaly.com/article/61296412
21 citations

66 **A Penalization Method for Calculating the Flow Beneath Traveling Water Waves of Large Amplitude**
SIAM Journal on Applied Mathematics · 75, 1513-1535
https://exaly.com/article/61417585
21 citations

67 **Approximations of Steady Periodic Water Waves in Flows With Constant Vorticity**
Nonlinear Analysis: Real World Applications · 25, 276-306
https://exaly.com/article/61960983
21 citations

68 **A Hamiltonian Approach to Wave-Current Interactions in Two-Layer Fluids**
Physics of Fluids
https://exaly.com/article/62681098
63 citations

69 **The Dynamics of Waves Interacting With the Equatorial Undercurrent**
Geophysical and Astrophysical Fluid Dynamics · 109, 311-358
https://exaly.com/article/62681157
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2014

70 **Some Nonlinear, Equatorially Trapped, Nonhydrostatic Internal Geophysical Waves** — 174 citations
Journal of Physical Oceanography · 44, 781-789
https://exaly.com/article/59016789

71 **Stokes Waves in Water With a Non-Flat Bed** — 8 citations
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72 **Estimating Wave Heights From Pressure Data at the Bed** — 28 citations
Journal of Fluid Mechanics · 743, R2
https://exaly.com/article/60089518

73 **Introduction** — 0 citations
Discrete and Continuous Dynamical Systems · 34, i-iii
https://exaly.com/article/101482087

2013

74 **Mean Velocities in a Stokes Wave** — 32 citations
Archive for Rational Mechanics and Analysis · 207, 907-917
https://exaly.com/article/54785091

75 **Some Three-Dimensional Nonlinear Equatorial Flows** — 158 citations
Journal of Physical Oceanography · 43, 165-175
https://exaly.com/article/55610848

76 **Instability of Some Equatorially Trapped Waves** — 127 citations
Journal of Geophysical Research: Oceans · 118, 2802-2810
https://exaly.com/article/55865206

77 **Recovery of Steady Periodic Wave Profiles From Pressure Measurements at the Bed** — 71 citations
Journal of Fluid Mechanics · 714, 463-475
https://exaly.com/article/56999536

2012

78 **Dispersion Relations for Periodic Traveling Water Waves in Flows With Discontinuous Vorticity** — 27 citations
Communications on Pure and Applied Analysis · 11, 1397-1406
https://exaly.com/article/52372420

79 **Particle Trajectories in Extreme Stokes Waves** — 98 citations
IMA Journal of Applied Mathematics · 77, 293-307
https://exaly.com/article/52830024

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80 On the Open Sea Propagation of Water Waves Generated by a Moving Bed — 6 citations
Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences · 370, 1587-601
https://exaly.com/article/52975897

81 On the Recovery of Solitary Wave Profiles From Pressure Measurements — 47 citations
Journal of Fluid Mechanics · 699, 376-384
https://exaly.com/article/53111848

82 On the Modelling of Equatorial Waves — 140 citations
Geophysical Research Letters
https://exaly.com/article/53792607

83 An Exact Solution for Equatorially Trapped Waves — 217 citations
Journal of Geophysical Research: Oceans
https://exaly.com/article/53793004

84 Harmonic Maps and Ideal Fluid Flows — 82 citations
Archive for Rational Mechanics and Analysis · 204, 479-513
https://exaly.com/article/54431199

85 On the Geometry of the Diffeomorphism Group of the Circle — 1 citations
Journal unavailable
https://exaly.com/article/98834996

86 Introduction to the Special Issue on Hydrodynamic Model Equations — 0 citations
Communications on Pure and Applied Analysis · 11, i-iii
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2011

87 Analyticity of Periodic Traveling Free Surface Water Waves With Vorticity — 408 citations
Annals of Mathematics · 173, 559-568
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88 Steady Periodic Water Waves With Constant Vorticity: Regularity and Local Bifurcation — 172 citations
Archive for Rational Mechanics and Analysis · 199, 33-67
https://exaly.com/article/51353531

89 A Dynamical Systems Approach Towards Isolated Vorticity Regions for Tsunami Background States — 15 citations
Archive for Rational Mechanics and Analysis · 200, 239-253
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90 **Pressure Beneath a Solitary Water Wave: Mathematical Theory and Experiments** — 49 citations
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91 **Periodic Traveling Gravity Water Waves With Discontinuous Vorticity** — 101 citations
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https://exaly.com/article/51353613

92 **Two-Dimensionality of Gravity Water Flows of Constant Nonzero Vorticity Beneath a Surface Wave Train** — 70 citations
European Journal of Mechanics, B/Fluids · 30, 12-16
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93 **Nonlinear Water Waves With Applications to Wave-Current Interactions and Tsunamis** — 282 citations
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94 **Pressure Beneath a Stokes Wave** — 228 citations
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95 **On the Particle Paths in Solitary Water Waves** — 23 citations
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97 **Inverse Scattering Transform for the Degasperis–Procesi Equation** — 151 citations
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98 **Trochoidal Solutions to the Incompressible Two-Dimensional Euler Equations** — 8 citations
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99 **On the Inviscid Proudman-Johnson Equation** — 15 citations
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100 **Effect of Non-Zero Constant Vorticity on the Nonlinear Resonances of Capillary Water Waves**
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101 **The Hydrodynamical Relevance of the Camassa–Holm and Degasperis–Procesi Equations**
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102 **Introduction**
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103 **On the Relevance of Soliton Theory to Tsunami Modelling**
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104 **Solitons and Tsunamis**
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https://exaly.com/article/47268712
30 citations

105 **Preface**
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https://exaly.com/article/89394404
1 citations

106 **On the Propagation of Tsunami Waves, With Emphasis on the Tsunami of 2004**
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https://exaly.com/article/89394409
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107 **Wave Motion**
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108 **Particle Trajectories in Linear Water Waves**
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https://exaly.com/article/43260045
91 citations

109 **Nearly-Hamiltonian Structure for Water Waves With Constant Vorticity**
Journal of Mathematical Fluid Mechanics · 10, 224-237
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2008 / continued

110 On an Integrable Two-Component Camassa–Holm Shallow Water System
416 citations
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111 Particle Trajectories in Linear Deep-Water Waves
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https://exaly.com/article/43464095

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Fluid Dynamics Research · 40, 175
https://exaly.com/article/43550468

113 On the Non-Dimensionalisation, Scaling and Resulting Interpretation of the Classical Governing Equations for Water Waves
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0 citations
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1 citations
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120 **Rotational Steady Water Waves Near Stagnation** — 57 citations
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121 **Symmetry of Steady Periodic Gravity Water Waves With Vorticity** — 154 citations
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123 **Global Conservative Solutions of the Camassa–Holm Equation** — 750 citations
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2006

128 **Breaking Water Waves** — 5 citations
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https://exaly.com/article/39508150

129 **Inverse Scattering Transform for the Camassa–Holm Equation** — 374 citations
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https://exaly.com/article/39520212

130 **Variational Formulations for Steady Water Waves With Vorticity** — 89 citations
Journal of Fluid Mechanics · 548, 151-163
https://exaly.com/article/39755746

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131 **Integrability of Invariant Metrics on the Virasoro Group** — 13 citations
Physics Letters, Section A: General, Atomic and Solid State Physics · 350, 75-80
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132 **Poisson Structure and Action-Angle Variables for the Camassa–Holm Equation** — 35 citations
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133 **Integrability of Invariant Metrics on the Diffeomorphism Group of the Circle** — 75 citations
Journal of Nonlinear Science · 16, 109-122
https://exaly.com/article/40678974

134 **Global Existence for Fully Parabolic Boundary Value Problems** — 14 citations
Nonlinear Differential Equations and Applications · 13, 91-118
https://exaly.com/article/40690743

135 **The Trajectories of Particles in Stokes Waves** — 689 citations
Inventiones Mathematicae · 166, 523-535
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136 **Modelling Tsunamis** — 21 citations
Journal of Physics A · 39, L215-L217
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137 **Global Existence for Parabolic Systems by Lyapunov Functions** — 3 citations
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138 **On the Existence of Positive Solutions of Second Order Differential Equations** — 62 citations
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139 **Finite Propagation Speed for the Camassa–Holm Equation** — 133 citations
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140 **Global Solutions of the Hunter--Saxton Equation** — 145 citations
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https://exaly.com/article/39109681

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141 **A Hamiltonian Formulation for Free Surface Water Waves With Non-Vanishing Vorticity**
Journal of Nonlinear Mathematical Physics · 12, 202-211
https://exaly.com/article/39269738
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142 **Wave-Current Interactions**
Journal unavailable
https://exaly.com/article/86094708
19 citations

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143 **Wave Motion**
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https://exaly.com/article/36313535
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144 **Comment on “Steep Sharp-Crested Gravity Waves on Deep Water”**
Physical Review Letters · 93, 069402; author reply 069403
https://exaly.com/article/36443386
6 citations

145 **Symmetry of Steady Deep-Water Waves With Vorticity**
European Journal of Applied Mathematics · 15, 755-768
https://exaly.com/article/36579150
95 citations

146 **Exact Steady Periodic Water Waves With Vorticity**
Communications on Pure and Applied Mathematics · 57, 481-527
https://exaly.com/article/37111902
403 citations

147 **Global Solutions for Quasilinear Parabolic Systems**
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29 citations

148 **Symmetry of Steady Periodic Surface Water Waves With Vorticity**
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