FranÃ§ois J M Gay-Balmaz

List of Publications by Year
in descending order

106 papers	1,281 citations	361413 20 h-index	454955 30 g-index
109 all docs	109 docs citations	109 times ranked	415 citing authors

#	Article	IF	Citations
1	The geometric structure of complex fluids. Advances in Applied Mathematics, 2009, 42, 176-275.	0.7	66
2	A Lagrangian variational formulation for nonequilibrium thermodynamics. Part I: Discrete systems. Journal of Geometry and Physics, 2017, 111, 169-193.	1.4	55
3	A Lagrangian variational formulation for nonequilibrium thermodynamics. Part II: Continuum systems. Journal of Geometry and Physics, 2017, 111, 194-212.	1.4	49
4	The Momentum Map Representation of Images. Journal of Nonlinear Science, 2011, 21, 115-150.	2.1	48
5	Symmetry Reduced Dynamics of Charged Molecular Strands. Archive for Rational Mechanics and Analysis, 2010, 197, 811-902.	2.4	47
6	Invariant Higher-Order Variational Problems. Communications in Mathematical Physics, 2012, 309, 413-458.	2.2	44
7	Koopman wavefunctions and classicalâ€“quantum correlation dynamics. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2019, 475, 20180879.	2.1	39
8	From Lagrangian Mechanics to Nonequilibrium Thermodynamics: A Variational Perspective. Entropy, 2019, 21, 8.	2.2	38
9	Understanding memristors and memcapacitors in engineering mechanics applications. Nonlinear Dynamics, 2015, 80, 457-489.	5.2	33
10	Reduction theory for symmetry breaking with applications to nematic systems. Physica D: Nonlinear Phenomena, 2010, 239, 1929-1947.	2.8	31
11	Multisymplectic Lie group variational integrator for a geometrically exact beam in. Communications in Nonlinear Science and Numerical Simulation, 2014, 19, 3492-3512.	3.3	31
12	Clebsch optimal control formulation in mechanics. Journal of Geometric Mechanics, 2011, 3, 41-79.	0.8	30
13	The geometry of the universal TeichmÃ¼ller space and the Eulerâ€“Weilâ€“Petersson equation. Advances in Mathematics, 2015, 279, 717-778.	1.1	28
14	Stochastic Geometric Models with Non-stationary Spatial Correlations in Lagrangian Fluid Flows. Journal of Nonlinear Science, 2018, 28, 873-904.	2.1	28
15	Higher order Lagrange-PoincarÃ© and Hamilton-PoincarÃ© reductions. Bulletin of the Brazilian Mathematical Society, 2011, 42, 579-606.	0.8	27
16	Invariant Higher-Order Variational Problems II. Journal of Nonlinear Science, 2012, 22, 553-597.	2.1	27
17	Reduced Variational Formulations in Free Boundary Continuum Mechanics. Journal of Nonlinear Science, 2012, 22, 463-497.	2.1	26
18	Lagrangeâ€“PoincarÃ© field equations. Journal of Geometry and Physics, 2011, 61, 2120-2146.	1.4	25

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19	A Variational Formulation of Nonequilibrium Thermodynamics for Discrete Open Systems with Mass and Heat Transfer. Entropy, 2018, 20, 163.	2.2	25
20	A new Lagrangian dynamic reduction in field theory. Annales De L'Institut Fourier, 2010, 60, 1125-1160.	0.6	22
21	Selective decay by Casimir dissipation in inviscid fluids. Nonlinearity, 2013, 26, 495-524.	1.4	20
22	Lie Group Cohomology and (Multi)Symplectic Integrators: New Geometric Tools for Lie Group Machine Learning Based on Souriau Geometric Statistical Mechanics. Entropy, 2020, 22, 498.	2.2	20
23	Madelung transform and probability densities in hybrid quantumâ€“classical dynamics. Nonlinearity, 2020, 33, 5383-5424.	1.4	20
24	Dual pairs in fluid dynamics. Annals of Global Analysis and Geometry, 2012, 41, 1-24.	0.6	19
25	Equivalent Theories of Liquid Crystal Dynamics. Archive for Rational Mechanics and Analysis, 2013, 210, 773-811.	2.4	17
26	Reduced Lagrangian and Hamiltonian formulations of Euler-Yang-Mills fluids. Journal of Symplectic Geometry, 2008, 6, 189-237.	0.5	17
27	Dirac structures in nonequilibrium thermodynamics. Journal of Mathematical Physics, 2018, 59, 012701.	1.1	16
28	Vlasov moment flows and geodesics on the Jacobi group. Journal of Mathematical Physics, 2012, 53, .	1.1	14
29	Variational integrator for the rotating shallowâ€water equations on the sphere. Quarterly Journal of the Royal Meteorological Society, 2019, 145, 1070-1088.	2.7	14
30	A Variational Finite Element Discretization of Compressible Flow. Foundations of Computational Mathematics, 2021, 21, 961-1001.	2.5	14
31	On Flexible Tubes Conveying Fluid: Geometric Nonlinear Theory, Stability and Dynamics. Journal of Nonlinear Science, 2015, 25, 889-936.	2.1	12
32	Dirac reduction for nonholonomic mechanical systems and semidirect products. Advances in Applied Mathematics, 2015, 63, 131-213.	0.7	12
33	Stability of helical tubes conveying fluid. Journal of Fluids and Structures, 2018, 78, 146-174.	3.4	12
34	A variational derivation of the thermodynamics of a moist atmosphere with rain process and its pseudoincompressible approximation. Geophysical and Astrophysical Fluid Dynamics, 2019, 113, 428-465.	1.2	12
35	A conservative finite element method for the incompressible Euler equations with variable density. Journal of Computational Physics, 2020, 412, 109439.	3.8	12
36	A geometric theory of selective decay with applications in MHD. Nonlinearity, 2014, 27, 1747-1777.	1.4	11

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37	Multisymplectic variational integrators and space/time symplecticity. Analysis and Applications, 2016, 14, 341-391.	2.2	11
38	Affine Lieâ€“Poisson reduction, Yangâ€“Mills magnetohydrodynamics, and superfluids. Journal of Physics A: Mathematical and Theoretical, 2008, 41, 344007.	2.1	10
39	Single and double generator bracket formulations of multicomponent fluids with irreversible processes. Journal of Physics A: Mathematical and Theoretical, 2020, 53, 395701.	2.1	10
40	A finite element method for MHD that preserves energy, cross-helicity, magnetic helicity, incompressibility, and divâ€¯Bâ€¯=â€¯0. Journal of Computational Physics, 2022, 450, 110847.	3.8	10
41	The helicity and vorticity of liquid-crystal flows. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2011, 467, 1197-1213.	2.1	9
42	Exact geometric theory of dendronized polymer dynamics. Advances in Applied Mathematics, 2012, 48, 535-574.	0.7	9
43	Dual inputâ€“output pairs for modeling hysteresis inspired by mem-models. Nonlinear Dynamics, 2017, 88, 2435-2455.	5.2	9
44	Geometric dynamics of optimization. Communications in Mathematical Sciences, 2013, 11, 163-231.	1.0	9
45	Evolution of hybrid quantumâ€“classical wavefunctions. Physica D: Nonlinear Phenomena, 2022, 440, 133450.	2.8	9
46	Dynamics of Elastic Rods in Perfect Friction Contact. Physical Review Letters, 2012, 109, 244303.	7.8	8
47	Euler-PoincarÃ© Approaches to Nematodynamics. Acta Applicandae Mathematicae, 2012, 120, 127-151.	1.0	8
48	Principal bundles of embeddings and nonlinear Grassmannians. Annals of Global Analysis and Geometry, 2014, 46, 293-312.	0.6	8
49	Variational discretizations for the dynamics of fluid-conveying flexible tubes. Comptes Rendus - Mecanique, 2016, 344, 769-775.	2.1	8
50	Variational discretization of the nonequilibrium thermodynamics of simple systems. Nonlinearity, 2018, 31, 1673-1705.	1.4	8
51	On choosing state variables for piecewise-smooth dynamical system simulations. Nonlinear Dynamics, 2019, 95, 1165-1188.	5.2	8
52	Geometric dynamics on the automorphism group of principal bundles: Geodesic flows, dual pairs and chromomorphism groups. Journal of Geometric Mechanics, 2013, 5, 39-84.	0.8	8
53	Exact geometric theory for flexible, fluid-conducting tubes. Comptes Rendus - Mecanique, 2014, 342, 79-84.	2.1	7
54	The Geometric Nature of the Flaschka Transformation. Communications in Mathematical Physics, 2017, 352, 457-517.	2.2	7

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55	Dirac structures in nonequilibrium thermodynamics for simple open systems. Journal of Mathematical Physics, 2020, 61, .	1.1	7
56	Group actions on chains of Banach manifolds and applications to fluid dynamics. Annals of Global Analysis and Geometry, 2007, 31, 287-328.	0.6	6
57	A dual pair for free boundary fluids. International Journal of Geometric Methods in Modern Physics, 2015, 12, 1550068.	2.0	6
58	Thermodynamically consistent semi-compressible fluids: a variational perspective. Journal of Physics A: Mathematical and Theoretical, 2021, 54, 345701.	2.1	6
59	A structure-preserving finite element method for compressible ideal and resistive magnetohydrodynamics. Journal of Plasma Physics, 2021, 87, .	2.1	6
60	Towards a geometric variational discretization of compressible fluids: The rotating shallow water equations. Journal of Computational Dynamics, 2018, .	1.1	6
61	The Lie-Poisson structure of the LAE-Î± equation. Dynamics of Partial Differential Equations, 2005, 2, 25-57.	0.9	6
62	Isotropic submanifolds and coadjoint orbits of the Hamiltonian group. Journal of Symplectic Geometry, 2019, 17, 663-702.	0.5	6
63	Lagrangian Reductions and Integrable Systems in Condensed Matter. Communications in Mathematical Physics, 2015, 335, 609-636.	2.2	5
64	MULTISYMPLECTIC VARIATIONAL INTEGRATORS FOR NONSMOOTH LAGRANGIAN CONTINUUM MECHANICS. Forum of Mathematics, Sigma, 2016, 4, .	0.7	5
65	A multisymplectic integrator for elastodynamic frictionless impact problems. Computer Methods in Applied Mechanics and Engineering, 2017, 315, 1025-1052.	6.6	5
66	Geometric Theory of Flexible and Expandable Tubes Conveying Fluid: Equations, Solutions and Shock Waves. Journal of Nonlinear Science, 2019, 29, 377-414.	2.1	5
67	From variational to bracket formulations in nonequilibrium thermodynamics of simple systems. Journal of Geometry and Physics, 2020, 158, 103812.	1.4	5
68	Dirac structures and variational formulation of port-Dirac systems in nonequilibrium thermodynamics. IMA Journal of Mathematical Control and Information, 2020, 37, 1298-1347.	1.7	5
69	Geometric variational approach to the dynamics of porous medium, filled with incompressible fluid. Acta Mechanica, 2020, 231, 3897-3924.	2.1	5
70	Variational discretization for rotating stratified fluids. Discrete and Continuous Dynamical Systems, 2013, 34, 477-509.	0.9	5
71	Un-reduction. Journal of Geometric Mechanics, 2011, 3, 363-387.	0.8	5
72	Variational integrators for anelastic and pseudo-incompressible flows. Journal of Geometric Mechanics, 2019, 11, 511-537.	0.8	5

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73	Geometry of nonabelian charged fluids. Dynamics of Partial Differential Equations, 2011, 8, 5-19.	0.9	5
74	Asynchronous variational Lie group integration for geometrically exact beam dynamics. Proceedings in Applied Mathematics and Mechanics, 2013, 13, 45-46.	0.2	4
75	Dynamics of elastic strands with rolling contact. Physica D: Nonlinear Phenomena, 2015, 294, 6-23.	2.8	4
76	Dynamics and optimal control of flexible solar updraft towers. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20140539.	2.1	4
77	On Noisy Extensions of Nonholonomic Constraints. Journal of Nonlinear Science, 2016, 26, 1571-1613.	2.1	4
78	Multisymplectic Variational Integrators for Fluid Models with Constraints. Lecture Notes in Computer Science, 2021, , 283-291.	1.3	4
79	Actively deforming porous media in an incompressible fluid: A variational approach. Physica D: Nonlinear Phenomena, 2021, 426, 132984.	2.8	4
80	From Quantum Hydrodynamics toÂKoopman Wavefunctions I. Lecture Notes in Computer Science, 2021, , 302-310.	1.3	4
81	Clebsch Variational Principles in Field Theories and Singular Solutions of Covariant Epdiff Equations. Reports on Mathematical Physics, 2013, 71, 231-277.	0.8	3
82	A free energy Lagrangian variational formulation of the Navierâ€“Stokesâ€“Fourier system. International Journal of Geometric Methods in Modern Physics, 2019, 16, 1940006.	2.0	3
83	Connecting mem-models with classical theories. Nonlinear Dynamics, 2021, 103, 1321-1344.	5.2	3
84	From Quantum Hydrodynamics toÂKoopman Wavefunctions II. Lecture Notes in Computer Science, 2021, , 311-319.	1.3	3
85	Dual Pairs for Non-Abelian Fluids. Fields Institute Communications, 2015, , 107-135.	1.3	3
86	Predicting uncertainty in geometric fluid mechanics. Discrete and Continuous Dynamical Systems - Series S, 2020, 13, 1229-1242.	1.1	3
87	Selective decay for the rotating shallow-water equations with a structure-preserving discretization. Physics of Fluids, 2021, 33, 116604.	4.0	3
88	On the classification of the coadjoint orbits of the Sobolev Bottâ€“Virasoro group. Journal of Functional Analysis, 2009, 256, 2815-2841.	1.4	2
89	From Variational to Bracket Formulations in Nonequilibrium Thermodynamics of Simple Systems. Lecture Notes in Computer Science, 2019, , 209-217.	1.3	2
90	Variational discretization of thermodynamical simple systems on Lie groups. Discrete and Continuous Dynamical Systems - Series S, 2020, 13, 1075-1102.	1.1	2

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91	Variational Discretization Framework for Geophysical Flow Models. Lecture Notes in Computer Science, 2019, , 523-531.	1.3	2
92	IntegrableG-strands on semisimple Lie groups. Journal of Physics A: Mathematical and Theoretical, 2014, 47, 075201.	2.1	1
93	A Variational Perspective on the Thermodynamics of Non-isothermal Reacting Open Systems. Lecture Notes in Computer Science, 2021, , 900-908.	1.3	1
94	Double bracket flows, toda flows and rigid body toda. , 2013, , .		0
95	Geometric Analysis of Noisy Perturbations to Nonholonomic Constraints. Springer Proceedings in Mathematics and Statistics, 2017, , 57-75.	0.2	0
96	A Lagrangian variational formulation for nonequilibrium thermodynamics âž âžF.G.B. is partially supported by the ANR project GEOMFLUID, ANR-14-CE23-0002-01; H.Y. is partially supported by JSPS Grant-in-Aid for Scientific Research (26400408, 16KT0024, 24224004), Waseda University (SR2017K-167), and the MEXT â€œTop Global University Projectâ€•. IFAC-PapersOnLine, 2018, 51, 25-30.	0.9	0
97	Dirac structures in nonequilibrium thermodynamics âž âžH.Y. is partially supported by JSPS Grant-in-Aid for Scientific Research (26400408, 16KT0024, 24224004), Waseda University Grant for Special Research Project (2017K-167), and the MEXT â€œTop Global University Projectâ€; F.G.B. is partially supported by the ANR project GEOMFLUID, ANR-14-CE23-0002-01.. IFAC-PapersOnLine, 2018, 51, 31-37.	0.9	0
98	On computing the analytic-signal backbone of the unforced harmonic oscillator. Journal of Computational and Applied Mathematics, 2021, 385, 113206.	2.0	0
99	Dirac Structures in Thermodynamics ofÂNon-simple Systems. Lecture Notes in Computer Science, 2021, , 918-925.	1.3	0
100	Dirac Structures in Nonequilbrium Thermodynamics. Lecture Notes in Computer Science, 2017, , 410-417.	1.3	0
101	The Clebsch Representation in Optimal Control and Low Rank Integrable Systems. Abel Symposia, 2018, , 129-158.	0.3	0
102	Dirac Structures in Open Thermodynamics. Lecture Notes in Computer Science, 2019, , 199-208.	1.3	0
103	Variational Methods for Fluid-Structure Interactions. , 2020, , 175-205.		0
104	Geometric Variational Finite Element Discretizations for Fluids. IFAC-PapersOnLine, 2021, 54, 8-12.	0.9	0
105	A variational perspective on the thermodynamics of non-isothermal reacting open systems. IFAC-PapersOnLine, 2021, 54, 58-63.	0.9	0
106	A port-Dirac formulation for thermodynamics of non-simple systems. IFAC-PapersOnLine, 2021, 54, 32-37.	0.9	0