

GrÃ©goire Allaire

List of Publications by Year in descending order

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104
papers

8,574
citations

101543

36
h-index

43889

91
g-index

106
all docs

106
docs citations

106
times ranked

3348
citing authors

#	ARTICLE	IF	CITATIONS
1	Structural optimization using sensitivity analysis and a level-set method. Journal of Computational Physics, 2004, 194, 363-393.	3.8	2,015
2	Homogenization and Two-Scale Convergence. SIAM Journal on Mathematical Analysis, 1992, 23, 1482-1518.	1.9	1,700
3	Shape Optimization by the Homogenization Method. Applied Mathematical Sciences (Switzerland), 2002, , .	0.8	562
4	A level-set method for shape optimization. Comptes Rendus Mathematique, 2002, 334, 1125-1130.	0.3	426
5	A Five-Equation Model for the Simulation of Interfaces between Compressible Fluids. Journal of Computational Physics, 2002, 181, 577-616.	3.8	409
6	Shape optimization by the homogenization method. Numerische Mathematik, 1997, 76, 27-68.	1.9	213
7	A level-set method for vibration and multiple loads structural optimization. Computer Methods in Applied Mechanics and Engineering, 2005, 194, 3269-3290.	6.6	175
8	Structural optimization under overhang constraints imposed by additive manufacturing technologies. Journal of Computational Physics, 2017, 351, 295-328.	3.8	148
9	Minimum stress optimal design with the level set method. Engineering Analysis With Boundary Elements, 2008, 32, 909-918.	3.7	135
10	Topology optimization of modulated and oriented periodic microstructures by the homogenization method. Computers and Mathematics With Applications, 2019, 78, 2197-2229.	2.7	125
11	Topology optimization for minimum stress design with the homogenization method. Structural and Multidisciplinary Optimization, 2004, 28, 87.	3.5	123
12	Thickness control in structural optimization via a level set method. Structural and Multidisciplinary Optimization, 2016, 53, 1349-1382.	3.5	121
13	Boundary layer tails in periodic homogenization. ESAIM - Control, Optimisation and Calculus of Variations, 1999, 4, 209-243.	1.3	115
14	Bloch wave homogenization and spectral asymptotic analysis. Journal Des Mathematiques Pures Et Appliquees, 1998, 77, 153-208.	1.6	103
15	Shape optimization with a level set based mesh evolution method. Computer Methods in Applied Mechanics and Engineering, 2014, 282, 22-53.	6.6	100
16	Multi-phase structural optimization via a level set method. ESAIM - Control, Optimisation and Calculus of Variations, 2014, 20, 576-611.	1.3	95
17	Damage and fracture evolution in brittle materials by shape optimization methods. Journal of Computational Physics, 2011, 230, 5010-5044.	3.8	88
18	Homogenization of the Schrödinger Equation and Effective Mass Theorems. Communications in Mathematical Physics, 2005, 258, 1-22.	2.2	85

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19	Shape and topology optimization of the robust compliance <i>via</i> the level set method. ESAIM - Control, Optimisation and Calculus of Variations, 2008, 14, 43-70.	1.3	80
20	Structural optimization with $\{FreeFem++\}$. Structural and Multidisciplinary Optimization, 2006, 32, 173-181.	3.5	77
21	3-d topology optimization of modulated and oriented periodic microstructures by the homogenization method. Journal of Computational Physics, 2020, 401, 108994.	3.8	77
22	Material interface effects on the topology optimization of multi-phase structures using a level set method. Structural and Multidisciplinary Optimization, 2014, 50, 623-644.	3.5	69
23	Optimizing supports for additive manufacturing. Structural and Multidisciplinary Optimization, 2018, 58, 2493-2515.	3.5	56
24	Geometric constraints for shape and topology optimization in architectural design. Computational Mechanics, 2017, 59, 933-965.	4.0	55
25	Body-fitted topology optimization of 2D and 3D fluid-to-fluid heat exchangers. Computer Methods in Applied Mechanics and Engineering, 2021, 376, 113638.	6.6	55
26	Shape optimization of a coupled thermal fluid-structure problem in a level set mesh evolution framework. SeMA Journal, 2019, 76, 413-458.	2.0	52
27	Homogenization of a convection-diffusion model with reaction in a porous medium. Comptes Rendus Mathematique, 2007, 344, 523-528.	0.3	51
28	Two-scale expansion with drift approach to the Taylor dispersion for reactive transport through porous media. Chemical Engineering Science, 2010, 65, 2292-2300.	3.8	48
29	A comparison between two-scale asymptotic expansions and Bloch wave expansions for the homogenization of periodic structures. SeMA Journal, 2016, 73, 237-259.	2.0	47
30	Taking into account thermal residual stresses in topology optimization of structures built by additive manufacturing. Mathematical Models and Methods in Applied Sciences, 2018, 28, 2313-2366.	3.3	47
31	Shape and topology optimization. Handbook of Numerical Analysis, 2021, 22, 1-132.	1.8	44
32	Topology optimization of thermal fluid-structure systems using body-fitted meshes and parallel computing. Journal of Computational Physics, 2020, 417, 109574.	3.8	42
33	A mesh evolution algorithm based on the level set method for geometry and topology optimization. Structural and Multidisciplinary Optimization, 2013, 48, 711-715.	3.5	40
34	Homogenization Approach to the Dispersion Theory for Reactive Transport through Porous Media. SIAM Journal on Mathematical Analysis, 2010, 42, 125-144.	1.9	39
35	Stacking sequence and shape optimization of laminated composite plates via a level-set method. Journal of the Mechanics and Physics of Solids, 2016, 97, 168-196.	4.8	39
36	Shape optimization of a layer by layer mechanical constraint for additive manufacturing. Comptes Rendus Mathematique, 2017, 355, 699-717.	0.3	38

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37	Homogenization of Periodic Systems with Large Potentials. Archive for Rational Mechanics and Analysis, 2004, 174, 179-220.	2.4	37
38	Homogenization of the linearized ionic transport equations in rigid periodic porous media. Journal of Mathematical Physics, 2010, 51, .	1.1	36
39	Topology and geometry optimization of elastic structures by exact deformation of simplicial mesh. Comptes Rendus Mathematique, 2011, 349, 999-1003.	0.3	36
40	Support optimization in additive manufacturing for geometric and thermo-mechanical constraints. Structural and Multidisciplinary Optimization, 2020, 61, 2377-2399.	3.5	33
41	Ion transport in porous media: derivation of the macroscopic equations using upscaling and properties of the effective coefficients. Computational Geosciences, 2013, 17, 479-495.	2.4	31
42	A linearized approach to worst-case design in parametric and geometric shape optimization. Mathematical Models and Methods in Applied Sciences, 2014, 24, 2199-2257.	3.3	31
43	Boundary Layers in the Homogenization of a Spectral Problem in Fluid-Solid Structures. SIAM Journal on Mathematical Analysis, 1998, 29, 343-379.	1.9	30
44	Homogenization of a spectral problem in neutronic multigroup diffusion. Computer Methods in Applied Mechanics and Engineering, 2000, 187, 91-117.	6.6	30
45	Modelling and simulation of liquid-vapor phase transition in compressible flows based on thermodynamical equilibrium. ESAIM: Mathematical Modelling and Numerical Analysis, 2012, 46, 1029-1054.	1.9	29
46	Coupling the Level Set Method and the Topological Gradient in Structural Optimization. , 2006, , 3-12.		21
47	Diffraction Geometric Optics for Bloch Wave Packets. Archive for Rational Mechanics and Analysis, 2011, 202, 373-426.	2.4	21
48	UNIFORM SPECTRAL ASYMPTOTICS FOR SINGULARLY PERTURBED LOCALLY PERIODIC OPERATORS. Communications in Partial Differential Equations, 2002, 27, 705-725.	2.2	20
49	Diffraction behavior of the wave equation in periodic media: weak convergence analysis. Annali Di Matematica Pura Ed Applicata, 2009, 188, 561.	1.0	20
50	Elasto-plastic Shape Optimization Using the Level Set Method. SIAM Journal on Control and Optimization, 2018, 56, 556-581.	2.1	20
51	The homogenization method for topology and shape optimization. Single and multiple loads case. Revue Europeenne Des Elements, 1996, 5, 649-672.	0.1	19
52	Homogenization of periodic non self-adjoint problems with large drift and potential. ESAIM - Control, Optimisation and Calculus of Variations, 2007, 13, 735-749.	1.3	19
53	Homogenization of nonlinear reaction-diffusion equation with a large reaction term. Annali Dell'Universita Di Ferrara, 2010, 56, 141-161.	1.3	17
54	Upscaling nonlinear adsorption in periodic porous media â€“ homogenization approach. Applicable Analysis, 2016, 95, 2126-2161.	1.3	17

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55	Additive manufacturing scanning paths optimization using shape optimization tools. Structural and Multidisciplinary Optimization, 2020, 61, 2437-2466.	3.5	17
56	Homogenization of reactive flows in porous media and competition between bulk and surface diffusion. IMA Journal of Applied Mathematics, 2012, 77, 788-815.	1.6	16
57	Structural optimization under internal porosity constraints using topological derivatives. Computer Methods in Applied Mechanics and Engineering, 2019, 345, 1-25.	6.6	16
58	Homogenization and concentration for a diffusion equation with large convection in a bounded domain. Journal of Functional Analysis, 2012, 262, 300-330.	1.4	15
59	Role of non-ideality for the ion transport in porous media: Derivation of the macroscopic equations using upscaling. Physica D: Nonlinear Phenomena, 2014, 282, 39-60.	2.8	15
60	Modal basis approaches in shape and topology optimization of frequency response problems. International Journal for Numerical Methods in Engineering, 2018, 113, 1258-1299.	2.8	15
61	Null space gradient flows for constrained optimization with applications to shape optimization. ESAIM - Control, Optimisation and Calculus of Variations, 2020, 26, 90.	1.3	15
62	Dispersive limits in the homogenization of the wave equation. Annales De La Faculté Des Sciences De Toulouse, 2003, 12, 415-431.	0.3	14
63	Topology optimization of structures undergoing brittle fracture. Journal of Computational Physics, 2022, 458, 111048.	3.8	14
64	Optimization of dispersive coefficients in the homogenization of the wave equation in periodic structures. Numerische Mathematik, 2018, 140, 265-326.	1.9	13
65	Asymptotic analysis of the Poisson-Boltzmann equation describing electrokinetics in porous media. Nonlinearity, 2013, 26, 881-910.	1.4	12
66	Coupled optimization of macroscopic structures and lattice infill. International Journal for Numerical Methods in Engineering, 2022, 123, 2963-2985.	2.8	12
67	Structural optimization under overhang constraints imposed by additive manufacturing processes: an overview of some recent results. Applied Mathematics and Nonlinear Sciences, 2017, 2, 385-402.	1.6	12
68	Homogenization and localization for a 1-D eigenvalue problem in a periodic medium with an interface. Annali Di Matematica Pura Ed Applicata, 2002, 181, 247-282.	1.0	11
69	A strictly hyperbolic equilibrium phase transition model. Comptes Rendus Mathematique, 2007, 344, 135-140.	0.3	11
70	Topology optimization of connections in mechanical systems. Structural and Multidisciplinary Optimization, 2020, 61, 2253-2269.	3.5	11
71	Molding Direction Constraints in Structural Optimization via a Level-Set Method. Springer Optimization and Its Applications, 2016, , 1-39.	0.9	10
72	Time Dependent Scanning Path Optimization for the Powder Bed Fusion Additive Manufacturing Process. CAD Computer Aided Design, 2022, 142, 103122.	2.7	10

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73	Topology optimization in quasi-static plasticity with hardening using a level-set method. <i>Structural and Multidisciplinary Optimization</i> , 0, , .	3.5	9
74	Localization for the Schrödinger Equation in a Locally Periodic Medium. <i>SIAM Journal on Mathematical Analysis</i> , 2006, 38, 127-142.	1.9	8
75	Ion transport through deformable porous media: derivation of the macroscopic equations using upscaling. <i>Computational and Applied Mathematics</i> , 2017, 36, 1431-1462.	1.3	8
76	Periodic Homogenization and Effective Mass Theorems for the Schrödinger Equation. <i>Lecture Notes in Mathematics</i> , 2008, , 1-44.	0.2	8
77	Approximation of liquid-vapor phase transition for compressible fluids with tabulated EOS. <i>Comptes Rendus Mathematique</i> , 2010, 348, 473-478.	0.3	7
78	Localization of high-frequency waves propagating in a locally periodic medium. <i>Proceedings of the Royal Society of Edinburgh Section A: Mathematics</i> , 2010, 140, 897-926.	1.2	7
79	Part and supports optimization in metal powder bed additive manufacturing using simplified process simulation. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2022, 395, 114975.	6.6	7
80	Second-order shape derivatives along normal trajectories, governed by Hamilton-Jacobi equations. <i>Structural and Multidisciplinary Optimization</i> , 2016, 54, 1245-1266.	3.5	6
81	Linearized Navier-Stokes equations for aeroacoustics using stabilized finite elements: Boundary conditions and industrial application to aft-fan noise propagation. <i>Computers and Fluids</i> , 2018, 166, 32-45.	2.5	6
82	A variational formulation for computing shape derivatives of geometric constraints along rays. <i>ESAIM: Mathematical Modelling and Numerical Analysis</i> , 2020, 54, 181-228.	1.9	6
83	Structural Optimization by the Level-Set Method. , 2003, , 1-15.		6
84	On the band gap structure of Hill's equation. <i>Journal of Mathematical Analysis and Applications</i> , 2005, 306, 462-480.	1.0	5
85	DIFFRACTION OF BLOCH WAVE PACKETS FOR MAXWELL'S EQUATIONS. <i>Communications in Contemporary Mathematics</i> , 2013, 15, 1350040.	1.2	5
86	Stress minimization for lattice structures. Part I: Micro-structure design. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2021, 379, 20200109.	3.4	5
87	Simulation numérique de l'endommagement à l'aide du modèle Francfort-Marigo. <i>ESAIM: Proceedings and Surveys</i> , 1998, 3, 1-9.	0.4	4
88	Two asymptotic models for arrays of underground waste containers. <i>Applicable Analysis</i> , 2009, 88, 1445-1467.	1.3	4
89	Homogenization of a nonstationary convection-diffusion equation in a thin rod and in a layer. <i>Boletín De La Sociedad Española De Matemática Aplicada</i> , 2012, 58, 53-95.	0.9	4
90	The Homogenization Method for Topology Optimization of Structures: Old and New. <i>Interdisciplinary Information Sciences</i> , 2019, 25, 75-146.	0.4	4

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91	Topological sensitivity analysis with respect to a small idealized bolt. <i>Engineering Computations</i> , 2022, 39, 115-146.	1.4	4
92	Shape Optimization of an Imperfect Interface: Steady-State Heat Diffusion. <i>Journal of Optimization Theory and Applications</i> , 2021, 191, 169-201.	1.5	4
93	On the homogenization of multicomponent transport. <i>Discrete and Continuous Dynamical Systems - Series B</i> , 2015, 20, 2527-2551.	0.9	4
94	On the asymptotic behaviour of the kernel of an adjoint convection-diffusion operator in a long cylinder. <i>Revista Matemática Iberoamericana</i> , 2017, 33, 1123-1148.	0.9	3
95	Coupled topology optimization of structure and connections for bolted mechanical systems. <i>European Journal of Mechanics, A/Solids</i> , 2022, 93, 104499.	3.7	3
96	Topology Optimization with the Homogenization and the Level-Set Methods. , 2004, , 1-13.		2
97	Crime pays; homogenized wave equations for long times. <i>Asymptotic Analysis</i> , 2022, 128, 295-336.	0.5	2
98	Damping optimization of viscoelastic cantilever beams and plates under free vibration. <i>Computers and Structures</i> , 2022, 268, 106811.	4.4	2
99	Combining topological and shape derivatives in structural optimization. , 2006, , 644-644.		1
100	Topological Optimization with Interfaces. <i>Springer Series in Materials Science</i> , 2019, , 173-193.	0.6	1
101	Crime pays; homogenization for long times. <i>Séminaire Laurent Schwartz "EDP Et Applications"</i> , 0, , 1-9.	0.0	1
102	Instability of Dielectrics and Conductors in Electrostatic Fields. <i>Archive for Rational Mechanics and Analysis</i> , 2017, 224, 233-268.	2.4	0
103	Optimization of Oriented and Parametric Cellular Structures by the Homogenization Method. , 2018, , 767-778.		0
104	Non-linear boundary condition for non-ideal electrokinetic equations in porous media. <i>Applicable Analysis</i> , 0, , 1-32.	1.3	0