Xiaodong Huang

List of Publications by Year
in descending order

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150 papers	7,309 citations	57719 44 h-index	66879 78 g-index
150 all docs	150 docs citations	150 times ranked	3319 citing authors

#	Article	IF	Citations
1	Convergent and mesh-independent solutions for the bi-directional evolutionary structural optimization method. Finite Elements in Analysis and Design, 2007, 43, 1039-1049.	1.7	573
2	Bi-directional evolutionary topology optimization of continuum structures with one or multiple materials. Computational Mechanics, 2009, 43, 393-401.	2.2	392
3	A further review of ESO type methods for topology optimization. Structural and Multidisciplinary Optimization, 2010, 41, 671-683.	1.7	302
4	Topological design of microstructures of cellular materials for maximum bulk or shear modulus. Computational Materials Science, 2011, 50, 1861-1870.	1.4	224
5	Bi-directional Evolutionary Structural Optimization on Advanced Structures and Materials: A Comprehensive Review. Archives of Computational Methods in Engineering, 2018, 25, 437-478.	6.0	214
6	Design of lattice structures with controlled anisotropy. Materials and Design, 2016, 93, 443-447.	3.3	212
7	Evolutionary topological optimization of vibrating continuum structures for natural frequencies. Computers and Structures, 2010, 88, 357-364.	2.4	203
8	Topology optimization of microstructures of cellular materials and composites for macrostructures. Computational Materials Science, 2013, 67, 397-407.	1.4	146
9	Mechanical properties of luffa sponge. Journal of the Mechanical Behavior of Biomedical Materials, 2012, 15, 141-152.	1.5	121
10	Concurrent topology optimization of structures and their composite microstructures. Computers and Structures, 2014, 133, 103-110.	2.4	121
11	Optimal design of periodic structures using evolutionary topology optimization. Structural and Multidisciplinary Optimization, 2008, 36, 597-606.	1.7	112
12	Shape optimization of metallic yielding devices for passive mitigation of seismic energy. Engineering Structures, 2010, 32, 2258-2267.	2.6	110
13	Topology optimization of nonlinear structures under displacement loading. Engineering Structures, 2008, 30, 2057-2068.	2.6	109
14	Simple cubic three-dimensional auxetic metamaterials. Physica Status Solidi (B): Basic Research, 2014, 251, 1515-1522.	0.7	109
15	Topology Optimization of Photonic and Phononic Crystals and Metamaterials: A Review. Advanced Theory and Simulations, 2019, 2, 1900017.	1.3	107
16	Topological configuration analysis and design for foam filled multi-cell tubes. Engineering Structures, 2018, 155, 235-250.	2.6	103
17	On the axial splitting and curling of circular metal tubes. International Journal of Mechanical Sciences, 2002, 44, 2369-2391.	3.6	102
18	Crushing analysis and multiobjective optimization for functionally graded foam-filled tubes under multiple load cases. International Journal of Mechanical Sciences, 2014, 89, 439-452.	3.6	96

#	ARTICLE	IF	CITATIONS
19	Evolutionary topology optimization of continuum structures with an additional displacement constraint. Structural and Multidisciplinary Optimization, 2010, 40, 409-416.	1.7	95
20	Evolutionary topological design for phononic band gap crystals. Structural and Multidisciplinary Optimization, 2016, 54, 595-617.	1.7	93
21	Topological optimization for the design of microstructures of isotropic cellular materials. Engineering Optimization, 2013, 45, 1331-1348.	1.5	88
22	Evolutionary topology optimization of continuum structures with smooth boundary representation. Structural and Multidisciplinary Optimization, 2018, 57, 2143-2159.	1.7	85
23	Topology optimization for microstructures of viscoelastic composite materials. Computer Methods in Applied Mechanics and Engineering, 2015, 283, 503-516.	3.4	79
24	Multi-scale design of composite materials and structures for maximum natural frequencies. Materials & Design, 2013, 51, 1023-1034.	5.1	77
25	Hybrid anisotropic plasmonic metasurfaces with multiple resonances of focused light beams. Nano Letters, 2021, 21, 8917-8923.	4.5	76
26	Comparison of functionally-graded structures under multiple loading angles. Thin-Walled Structures, 2015, 94, 334-347.	2.7	75
27	Dynamical bending analysis and optimization design for functionally graded thickness (FGT) tube. International Journal of Impact Engineering, 2015, 78, 128-137.	2.4	73
28	Designing orthotropic materials for negative or zero compressibility. International Journal of Solids and Structures, 2014, 51, 4038-4051.	1.3	71
29	Topology optimization of energy-absorbing structures. International Journal of Crashworthiness, 2007, 12, 663-675.	1.1	67
30	Topological design of 3D chiral metamaterials based on couple-stress homogenization. Journal of the Mechanics and Physics of Solids, 2019, 131, 372-386.	2.3	66
31	Energy absorption in splitting square metal tubes. Thin-Walled Structures, 2002, 40, 153-165.	2.7	65
32	Multiobjective robust optimization for crashworthiness design of foam filled thin-walled structures with random and interval uncertainties. Engineering Structures, 2015, 88, 111-124.	2.6	65
33	Behaviour of luffa sponge material under dynamic loading. International Journal of Impact Engineering, 2013, 57, 17-26.	2.4	63
34	A method to evaluate the formability of high-strength steel in hot stamping. Materials & Design, 2015, 77, 95-109.	5.1	58
35	Crashworthiness optimization of automotive parts with tailor rolled blank. Engineering Structures, 2018, 169, 201-215.	2.6	58
36	Creating acoustic topological insulators through topology optimization. Mechanical Systems and Signal Processing, 2021, 146, 107054.	4.4	57

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37	Bi-directional evolutionary optimization for photonic band gap structures. Journal of Computational Physics, 2015, 302, 393-404.	1.9	56
38	Two-scale optimal design of structures with thermal insulation materials. Composite Structures, 2015, 120, 358-365.	3.1	55
39	Evolutionary topology optimization of continuum structures including design-dependent self-weight loads. Finite Elements in Analysis and Design, 2011, 47, 942-948.	1.7	52
40	Topological Design of Cellular Phononic Band Gap Crystals. Materials, 2016, 9, 186.	1.3	51
41	Topological design of phononic crystals for unidirectional acoustic transmission. Journal of Sound and Vibration, 2017, 410, 103-123.	2.1	51
42	Maximizing spatial decay of evanescent waves in phononic crystals by topology optimization. Computers and Structures, 2017, 182, 430-447.	2.4	50
43	A New Algorithm for Bi-Directional Evolutionary Structural Optimization. JSME International Journal Series C-Mechanical Systems Machine Elements and Manufacturing, 2006, 49, 1091-1099.	0.3	49
44	Topology optimization of compliant mechanisms with desired structural stiffness. Engineering Structures, 2014, 79, 13-21.	2.6	48
45	Smooth topological design of structures using the floating projection. Engineering Structures, 2020, 208, 110330.	2.6	47
46	Bidirectional Evolutionary Topology Optimization for Structures with Geometrical and Material Nonlinearities. AIAA Journal, 2007, 45, 308-313.	1.5	44
47	Topological design of microstructures of multi-phase materials for maximum stiffness or thermal conductivity. Computational Materials Science, 2014, 91, 266-273.	1.4	44
48	Design and experimental validation of self-supporting topologies for additive manufacturing. Virtual and Physical Prototyping, 2019, 14, 382-394.	5.3	43
49	Determination of mechanical properties of the weld line by combining micro-indentation with inverse modeling. Computational Materials Science, 2014, 85, 347-362.	1.4	42
50	Concurrent topological design of composite thermoelastic macrostructure and microstructure with multi-phase material for maximum stiffness. Composite Structures, 2016, 150, 84-102.	3.1	42
51	Concurrent topology optimization of macrostructures and material microstructures for natural frequency. Materials and Design, 2016, 106, 380-390.	3.3	42
52	Topological design of phononic band gap crystals with sixfold symmetric hexagonal lattice. Computational Materials Science, 2017, 139, 97-105.	1.4	42
53	Inverse design of higher-order photonic topological insulators. Physical Review Research, 2020, 2, .	1.3	42
54	Combining genetic algorithms with BESO for topology optimization. Structural and Multidisciplinary Optimization, 2009, 38, 511-523.	1.7	40

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55	Evolutionary Topology Optimization of Structures with Multiple Displacement and Frequency Constraints. Advances in Structural Engineering, 2012, 15, 359-372.	1.2	40
56	Convergence of topological patterns of optimal periodic structures under multiple scales. Structural and Multidisciplinary Optimization, 2012, 46, 41-50.	1.7	40
57	Topological design of 3D phononic crystals for ultra-wide omnidirectional bandgaps. Structural and Multidisciplinary Optimization, 2019, 60, 2405-2415.	1.7	39
58	Influence of thickness of composite layers on failure behaviors of carbon fiber reinforced plastics/aluminum alloy electromagnetic riveted lap joints under high-speed loading. International Journal of Impact Engineering, 2018, 115, 1-9.	2.4	38
59	Designing broad phononic band gaps for in-plane modes. Physics Letters, Section A: General, Atomic and Solid State Physics, 2018, 382, 679-684.	0.9	37
60	Topology optimization of viscoelastic materials on damping and frequency of macrostructures. Computer Methods in Applied Mechanics and Engineering, 2018, 337, 305-323.	3.4	36
61	Advantages of Bi-Directional Evolutionary Structural Optimization (BESO) over Evolutionary Structural Optimization (ESO). Advances in Structural Engineering, 2007, 10, 727-737.	1.2	35
62	Multi-objective topology optimization of a vehicle door using multiple material tailor-welded blank (TWB) technology. Advances in Engineering Software, 2018, 124, 1-9.	1.8	35
63	Maximizing wave attenuation in viscoelastic phononic crystals by topology optimization. Ultrasonics, 2019, 94, 419-429.	2.1	35
64	Topology optimization of photonic crystals with exotic properties resulting from Dirac-like cones. Acta Materialia, 2019, 164, 377-389.	3.8	35
65	On smooth or 0/1 designs of the fixed-mesh element-based topology optimization. Advances in Engineering Software, 2021, 151, 102942.	1.8	35
66	SEMDOT: Smooth-edged material distribution for optimizing topology algorithm. Advances in Engineering Software, 2020, 150, 102921.	1.8	33
67	Coding metalens with helical-structured units for acoustic focusing and splitting. Applied Physics Letters, 2020, 117, .	1.5	33
68	Additively manufactured fiber-reinforced composites: A review of mechanical behavior and opportunities. Journal of Materials Science and Technology, 2022, 119, 219-244.	5.6	33
69	Design of 3D orthotropic materials with prescribed ratios for effective Youngâ€™s moduli. Computational Materials Science, 2013, 67, 229-237.	1.4	32
70	A study on the critical wall thickness of the inner tube for magnetic pulse welding of tubular Alâ€“Fe parts. Journal of Materials Processing Technology, 2016, 227, 138-146.	3.1	32
71	Experimental observations of the double shock deformation mode in density graded honeycombs. International Journal of Impact Engineering, 2019, 134, 103386.	2.4	32
72	Dual-Polarization Second-Order Photonic Topological Insulators. Physical Review Applied, 2021, 15, .	1.5	31

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73	Evolutionary topology optimization of continuum structures considering fatigue failure. Materials and Design, 2019, 166, 107586.	3.3	30
74	Adhesive bond-electromagnetic rivet hybrid joining technique for CFRP/Al structure: Process, design and property. Composite Structures, 2020, 244, 112316.	3.1	30
75	Multiobjective optimization design for vehicle occupant restraint system under frontal impact. Structural and Multidisciplinary Optimization, 2013, 47, 465-477.	1.7	29
76	Optimal Topological Design of Periodic Structures for Natural Frequencies. Journal of Structural Engineering, 2011, 137, 1229-1240.	1.7	28
77	Comparing optimal material microstructures with optimal periodic structures. Computational Materials Science, 2013, 69, 137-147.	1.4	28
78	Water-responsive rapid recovery of natural cellular material. Journal of the Mechanical Behavior of Biomedical Materials, 2014, 34, 283-293.	1.5	28
79	Optimization for twist chirality of structural materials induced by axial strain. Materials Today Communications, 2018, 15, 175-184.	0.9	28
80	Inverse Design of Photonic Topological Insulators with Extraâ€Wide Bandgaps. Physica Status Solidi - Rapid Research Letters, 2019, 13, 1900175.	1.2	28
81	Identification of material parameters for aluminum foam at high strain rate. Computational Materials Science, 2013, 74, 65-74.	1.4	27
82	Topology Optimization of an Automotive Tailor-Welded Blank Door. Journal of Mechanical Design, Transactions of the ASME, 2015, 137, .	1.7	26
83	Stress optimization of smooth continuum structures based on the distortion strain energy density. Computer Methods in Applied Mechanics and Engineering, 2019, 343, 276-296.	3.4	26
84	Vibration attenuation analysis of periodic underground barriers using complex band diagrams. Computers and Geotechnics, 2020, 128, 103821.	2.3	26
85	Design and fabrication of biphasic cellular materials with transport properties â€“ A modified bidirectional evolutionary structural optimization procedure and MATLAB program. International Journal of Heat and Mass Transfer, 2012, 55, 8149-8162.	2.5	25
86	Concurrent topology design of structures and materials with optimal material orientation. Composite Structures, 2019, 220, 473-480.	3.1	25
87	Topology optimization of structures considering local material uncertainties in additive manufacturing. Computer Methods in Applied Mechanics and Engineering, 2020, 360, 112786.	3.4	25
88	A new multi-material topology optimization algorithm and selection of candidate materials. Computer Methods in Applied Mechanics and Engineering, 2021, 386, 114114.	3.4	25
89	Topological design of structures under dynamic periodic loads. Engineering Structures, 2017, 142, 128-136.	2.6	24
90	Two-scale dynamic optimal design of composite structures in the time domain using equivalent static loads. Composite Structures, 2016, 142, 335-345.	3.1	23

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91	Achieving Large Band Gaps in 2D Symmetric and Asymmetric Photonic Crystals. Journal of Lightwave Technology, 2017, 35, 1670-1676.	2.7	22
92	Topology optimization of dynamic acousticâ€“mechanical structures using the ersatz material model. Computer Methods in Applied Mechanics and Engineering, 2020, 372, 113387.	3.4	22
93	Design of fishnet metamaterials with broadband negative refractive index in the visible spectrum. Optics Letters, 2014, 39, 2415.	1.7	21
94	Maximizing stiffness of functionally graded materials with prescribed variation of thermal conductivity. Computational Materials Science, 2014, 82, 457-463.	1.4	21
95	Numerical investigation of compressive behaviour of luffa-filled tubes. Composites Part B: Engineering, 2015, 73, 149-157.	5.9	21
96	Topology optimization of periodic structures using BESO based on unstructured design points. Structural and Multidisciplinary Optimization, 2016, 53, 271-275.	1.7	21
97	On the shape transformation of cone scales. Soft Matter, 2016, 12, 9797-9802.	1.2	21
98	On-Demand Design of Tunable Complete Photonic Band Gaps based on Bloch Mode Analysis. Scientific Reports, 2018, 8, 14283.	1.6	21
99	Shape and Reinforcement Optimization of Underground Tunnels. Journal of Computational Science and Technology, 2010, 4, 51-63.	0.4	20
100	AN IMPROVED BI-DIRECTIONAL EVOLUTIONARY TOPOLOGY OPTIMIZATION METHOD FOR FREQUENCIES. International Journal of Structural Stability and Dynamics, 2010, 10, 55-75.	1.5	20
101	Topology optimization of photonic structures for all-angle negative refraction. Finite Elements in Analysis and Design, 2016, 117-118, 46-56.	1.7	20
102	Smooth topological design of 3D continuum structures using elemental volume fractions. Computers and Structures, 2020, 231, 106213.	2.4	19
103	Broadband All-angle Negative Refraction by Optimized Phononic Crystals. Scientific Reports, 2017, 7, 7445.	1.6	18
104	Parametric studies and manufacturability experiments on smooth self-supporting topologies. Virtual and Physical Prototyping, 2020, 15, 22-34.	5.3	18
105	Bending hinge characteristic of thin-walled square tubes. International Journal of Crashworthiness, 2005, 10, 275-285.	1.1	17
106	Topology Optimization of Composite Structure Using Bi-Directional Evolutionary Structural Optimization Method. Procedia Engineering, 2011, 14, 2980-2985.	1.2	17
107	Evolutionary topology optimization of hinge-free compliant mechanisms. International Journal of Mechanical Sciences, 2014, 86, 69-75.	3.6	17
108	Concurrent topology optimization of structures and orientation of anisotropic materials. Engineering Optimization, 2020, 52, 1598-1611.	1.5	17

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109	Stress-based multi-material structural topology optimization considering graded interfaces. Computer Methods in Applied Mechanics and Engineering, 2022, 391, 114602.	3.4	17
110	Optimal microstructures of elastoplastic cellular materials under various macroscopic strains. Mechanics of Materials, 2018, 118, 120-132.	1.7	16
111	Reinventing the Wheel. Journal of Mechanical Design, Transactions of the ASME, 2011, 133, .	1.7	15
112	Realization of multidimensional sound propagation in 3D acoustic higher-order topological insulator. Applied Physics Letters, 2020, 117, .	1.5	15
113	Shell buckling: from morphogenesis of soft matter to prospective applications. Bioinspiration and Biomimetics, 2018, 13, 051001.	1.5	14
114	Reliability-based multiobjective optimisation of vehicle bumper structure holes for the pedestrian flexible legform impact. International Journal of Crashworthiness, 2016, 21, 198-210.	1.1	13
115	Topological design of sandwich structures filling with poroelastic materials for sound insulation. Finite Elements in Analysis and Design, 2022, 199, 103650.	1.7	13
116	Recent developments in evolutionary structural optimization (ESO) for continuum structures. IOP Conference Series: Materials Science and Engineering, 2010, 10, 012196.	0.3	12
117	Reliable optimisation design of vehicle structure crashworthiness under multiple impact cases. International Journal of Crashworthiness, 2017, 22, 26-37.	1.1	12
118	Stress Minimization of Structures Based on Bidirectional Evolutionary Procedure. Journal of Structural Engineering, 2019, 145, 04018256.	1.7	12
119	Inverse design of second-order photonic topological insulators in C3-symmetric lattices. Applied Mathematical Modelling, 2022, 102, 194-206.	2.2	11
120	Predicting the effective stiffness of cellular and composite materials with self-similar hierarchical microstructures. Journal of Mechanics of Materials and Structures, 2013, 8, 341-357.	0.4	10
121	Towards ultra-stiff materials: Surface effects on nanoporous materials. Applied Physics Letters, 2014, 105, .	1.5	10
122	Application of Topological Optimisation Technology to Bridge Design. Structural Engineering International: Journal of the International Association for Bridge and Structural Engineering (IABSE), 2014, 24, 185-191.	0.5	10
123	Buckling-induced retraction of spherical shells: A study on the shape of aperture. Scientific Reports, 2015, 5, 11309.	1.6	10
124	Topologyâ€Optimized 3D Photonic Structures with Maximal Omnidirectional Bandgaps. Advanced Theory and Simulations, 2018, 1, 1800122.	1.3	10
125	Designing photonic materials with complete band gaps by topology optimization. Smart Materials and Structures, 2019, 28, 015025.	1.8	10
126	Smooth topological design of structures with minimum length scale and chamfer/round controls. Computer Methods in Applied Mechanics and Engineering, 2021, 383, 113939.	3.4	10

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127	A Kirigami Approach to Forming a Synthetic Buckliball. Scientific Reports, 2016, 6, 33016.	1.6	9
128	Microstructural design for 2D photonic crystals with large polarization-independent band gaps. Materials Letters, 2017, 207, 176-178.	1.3	9
129	An ultrahigh sensitivity micro-cliff graphene wearable pressure sensor made by instant flash light exposure. Nanoscale, 2021, 13, 15380-15393.	2.8	9
130	Topology optimization of multi-material structures with explicitly graded interfaces. Computer Methods in Applied Mechanics and Engineering, 2022, 398, 115166.	3.4	9
131	Observation of Emergent Dirac Physics at the Surfaces of Acoustic Higherâ€Order Topological Insulators. Advanced Science, 2022, 9, .	5.6	9
132	Concurrent optimization of macrostructures and material microstructures and orientations for maximizing natural frequency. Engineering Structures, 2020, 209, 109997.	2.6	8
133	Optimizing Support Locations in the Roofâ€“Column Structural System. Applied Sciences (Switzerland), 2021, 11, 2775.	1.3	8
134	A study of shape optimization on the metallic nanoparticles for thin-film solar cells. Nanoscale Research Letters, 2013, 8, 447.	3.1	7
135	To avoid unpractical optimal design without support. Structural and Multidisciplinary Optimization, 2017, 56, 1589-1595.	1.7	7
136	Inertia Effect on Buckling-Induced Auxetic Metamaterials. International Journal of Protective Structures, 2015, 6, 311-322.	1.4	7
137	A finite-element approach to evaluating the size effects of complex nanostructures. Royal Society Open Science, 2016, 3, 160625.	1.1	6
138	Stress-based topology optimization of continuum structures for the elastic contact problems with friction. Structural and Multidisciplinary Optimization, 2022, 65, 54.	1.7	6
139	Acoustic hologram of the metasurface with phased arrays via optimality criteria. Mechanical Systems and Signal Processing, 2022, 180, 109420.	4.4	4
140	Natural frequency optimization of structures using a soft-kill BESO method. IOP Conference Series: Materials Science and Engineering, 2010, 10, 012191.	0.3	3
141	Investigating size effects of complex nanostructures through Young-Laplace equation and finite element analysis. Journal of Applied Physics, 2015, 118, 204301.	1.1	3
142	All-angle negative refraction flatlens with a broad bandwidth. Photonics and Nanostructures - Fundamentals and Applications, 2017, 27, 11-16.	1.0	3
143	Controlling the maximum stress in structural stiffness topology optimization of geometrical and material nonlinear structures. Structural and Multidisciplinary Optimization, 2021, 64, 3971-3998.	1.7	3
144	Energy absorption of metallic structures involving ductile tearing. International Journal of Vehicle Design, 2005, 37, 224.	0.1	2

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145	Luffa Sponge as a Sustainable Engineering Material. Applied Mechanics and Materials, 0, 238, 3-8.	0.2	2
146	A cascadic multilevel optimization framework for the concurrent design of the fiber-reinforced composite structure through the NURBS surface. Engineering With Computers, 2023, 39, 2735-2756.	3.5	2
147	Fishnet metamaterial with double negative refractive index in blue region of visible spectrum. Proceedings of SPIE, 2013, , .	0.8	1
148	Effects of electric field and pressure on the shrinkage behaviors of cylindrical pore in piezoelectric materials. International Journal of Damage Mechanics, 2016, 25, 491-505.	2.4	0
149	Topology Optimization of Viscoelastic Materials for Maximizing Damping and Natural Frequency of Macrostructures. , 2018, , 1738-1756.		0
150	Optimizing 3D Self-Supporting Topologies for Additive Manufacturing. , 2020, , .		0