

# Attilio Alberto Frangi

## List of Publications by Year in descending order

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147  
papers

2,810  
citations

172457

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233421

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161  
all docs

161  
docs citations

161  
times ranked

1544  
citing authors

#	ARTICLE	IF	CITATIONS
1	A Lagrangian fluid-structure interaction approach for the simulation of airbag deployment. Finite Elements in Analysis and Design, 2022, 198, 103659.	3.2	8
2	Reduced Order Modelling in a Mems Arch Resonator Exhibiting 1:2 Internal Resonance. , 2022, , .		3
3	Fast and Accurate Predictions of MEMS Micromirrors Nonlinear Dynamic Response Using Direct Computation of Invariant Manifolds. , 2022, , .		4
4	A Defect-Based MEMS Phononic Crystal Slab Waveguide. , 2022, , .		2
5	Reduced order modeling of nonlinear microstructures through Proper Orthogonal Decomposition. Mechanical Systems and Signal Processing, 2022, 171, 108864.	8.0	16
6	Investigation of Quasi-Periodic Solutions in Nonlinear Oscillators Featuring Internal Resonance. , 2022, , 797-806.		1
7	Full-Order Frequency-Domain Simulations of Nonlinear Piezoelectric MEMS. , 2022, , 291-300.		0
8	Linear and Nonlinear Mechanics in MEMS. , 2022, , 389-437.		1
9	Deep learning-based reduced order models for the real-time simulation of the nonlinear dynamics of microstructures. International Journal for Numerical Methods in Engineering, 2022, 123, 4749-4777.	2.8	14
10	High order direct parametrisation of invariant manifolds for model order reduction of finite element structures: application to large amplitude vibrations and uncovering of a folding point. Nonlinear Dynamics, 2022, 110, 525-571.	5.2	28
11	A novel low-frequency multi-bandgaps metaplate: Genetic algorithm based optimization and experimental validation. Mechanical Systems and Signal Processing, 2022, 181, 109495.	8.0	8
12	Reduced order models for geometrically nonlinear structures: Assessment of implicit condensation in comparison with invariant manifold approach. European Journal of Mechanics, A/Solids, 2021, 86, 104165.	3.7	33
13	Experimental Evidence of Mechanical Frequency Comb in a Quad-Mass Mems Structure. , 2021, , .		4
14	Modeling Material Nonlinearities in Piezoelectric Films: Quasi-Static Actuation. , 2021, , .		2
15	Analysis of the Nonlinear Response of Piezo-Micromirrors with the Harmonic Balance Method. Actuators, 2021, 10, 21.	2.3	24
16	Electro-mechanical validation of a resonant MEMS mirror with PZT actuation and PZR sensing. , 2021, , .		3
17	Backbone curves, Neimark-Sacker boundaries and appearance of quasi-periodicity in nonlinear oscillators: application to 1:2 internal resonance and frequency combs in MEMS. Meccanica, 2021, 56, 1937-1969.	2.0	22
18	Model order reduction based on direct normal form: application to large finite element MEMS structures featuring internal resonance. Nonlinear Dynamics, 2021, 105, 1237-1272.	5.2	36

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19	Reduced order modelling and experimental validation of a MEMS gyroscope test-structure exhibiting 1:2 internal resonance. Scientific Reports, 2021, 11, 16390.	3.3	22
20	A fast boundary-finite element approach for estimating anchor losses in Micro-Electro-Mechanical System resonators. Applied Mathematical Modelling, 2021, 97, 741-753.	4.2	8
21	Model order reduction for the analysis of large arrays of piezoelectric micromachined ultrasonic transducers in water. Applied Acoustics, 2021, 182, 108231.	3.3	6
22	On the simulation of the hysteresis loop of polycrystalline PZT thin films. Smart Materials and Structures, 2020, 29, 095007.	3.5	5
23	Numerical Modelling of Non-Linearities in MEMS Resonators. Journal of Microelectromechanical Systems, 2020, 29, 1443-1454.	2.5	16
24	Nonlinear Response of PZT-Actuated Resonant Micromirrors. Journal of Microelectromechanical Systems, 2020, 29, 1421-1430.	2.5	27
25	Thermal Stability of DETF MEMS Resonators: Numerical Modelling and Experimental Validation. , 2020, , .		10
26	Snap-Through Buckling Mechanism for Frequency-up Conversion in Piezoelectric Energy Harvesting. Applied Sciences (Switzerland), 2020, 10, 3614.	2.5	16
27	An Outlook on Potentialities and Limits in Using Epitaxial Polysilicon for MEMS Real-Time Clocks. IEEE Transactions on Industrial Electronics, 2020, 67, 6996-7004.	7.9	4
28	The First Three-Dimensional Printed and Wet-Metallized Coriolis Mass Flowmeter. , 2020, 4, 1-4.		6
29	MEMS Resonators: Numerical Modeling. Lecture Notes in Mechanical Engineering, 2020, , 1159-1166.	0.4	0
30	Interpolation Based Reduced Order Modelling for Non-linearities in MEMS. , 2020, , .		3
31	Piezoelectric Micromirrors with Geometric and Material Nonlinearities: Experimental Study and Numerical Modeling. , 2020, , .		1
32	Numerical analysis of anchor loss and thermoelastic damping in piezoelectric AlN-on-Si Lamb wave resonators. Journal of Micromechanics and Microengineering, 2019, 29, 105013.	2.6	14
33	“Medical Assistance in Contextual awareness” (AMICO): a project for a better cardiopathic patients quality of care. , 2019, , .		8
34	Reduced order modelling of the non-linear stiffness in MEMS resonators. International Journal of Non-Linear Mechanics, 2019, 116, 211-218.	2.6	43
35	Phase-field modeling of domain evolution in ferroelectric materials in the presence of defects. Smart Materials and Structures, 2019, 28, 035021.	3.5	24
36	Phase-field modeling for polarization evolution in ferroelectric materials via an isogeometric collocation method. Computer Methods in Applied Mechanics and Engineering, 2019, 351, 789-807.	6.6	16

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37	Nonlinear dynamics of MEMS resonators: numerical modelling and experiments. , 2019, , .		1
38	Mode Coupling and Parametric Resonance in Electrostatically Actuated Micromirrors. IEEE Transactions on Industrial Electronics, 2018, 65, 5962-5969.	7.9	17
39	A Lagrangian Approach to the Simulation of a Constricted Vacuum Arc in a Magnetic Field. Mathematics in Industry, 2018, , 243-253.	0.3	1
40	Analysis of Frequency Stability and Thermoelastic Effects for Slotted Tuning Fork MEMS Resonators. Sensors, 2018, 18, 2157.	3.8	20
41	An Investigation on the Effects of Contact in MEMS Oscillators. Journal of Microelectromechanical Systems, 2018, 27, 963-972.	2.5	17
42	Resonators for real-time clocks based on epitaxial polysilicon process: A feasibility study on system-level compensation of temperature drifts. , 2018, , .		9
43	A dual-mass frequency-modulated (FM) pitch gyroscope: Mechanical design and modelling. , 2018, , .		13
44	Fluid damping modeling for MEMS sensors operating in the 10 kHzâ€“100 kHz range in near vacuum. , 2018, , .		1
45	Near Vacuum Gas Damping in MEMS: Simplified Modeling. Journal of Microelectromechanical Systems, 2017, 26, 632-642.	2.5	32
46	Mutual 3:1 subharmonic synchronization in a micromachined silicon disk resonator. Applied Physics Letters, 2017, 111, .	3.3	25
47	An explicit Lagrangian finite element method for free-surface weakly compressible flows. Computational Particle Mechanics, 2017, 4, 357-369.	3.0	23
48	Parametric Resonance in Electrostatically Actuated Micromirrors. IEEE Transactions on Industrial Electronics, 2017, 64, 1544-1551.	7.9	30
49	Accurate Simulation of Parametrically Excited Micromirrors via Direct Computation of the Electrostatic Stiffness. Sensors, 2017, 17, 779.	3.8	11
50	Integral equations for free-molecule ow in MEMS: recent advancements. Communications in Applied and Industrial Mathematics, 2017, 8, 67-80.	0.3	1
51	A Lagrangian finite element method for 3D compressible flow applications. Computer Methods in Applied Mechanics and Engineering, 2016, 311, 374-392.	6.6	13
52	Near Vacuum Gas Damping in MEMS: Numerical Modeling and Experimental Validation. Journal of Microelectromechanical Systems, 2016, 25, 890-899.	2.5	24
53	Application of optimally-shaped phononic crystals to reduce anchor losses of MEMS resonators. , 2016, , .		15
54	Evaluation of adhesion in microsystems using equivalent rough surfaces modeled with spherical caps. European Journal of Mechanics, A/Solids, 2016, 57, 121-131.	3.7	9

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55	Semi-analytical and numerical estimates of anchor losses in bistable MEMS. International Journal of Solids and Structures, 2016, 92-93, 141-148.	2.7	6
56	Comprehensive modelling and experimental verification of air damping coefficients in MEMS of complex geometry. , 2016, , .		3
57	A LAGRANGIAN FINITE ELEMENT METHOD FOR THE SIMULATION OF 3D COMPRESSIBLE FLOWS. , 2016, , .		0
58	GREENâ€™S FUNCTION FOR THE EVALUATION OF ANCHOR LOSSES IN MEMS. , 2016, , .		0
59	Anchor Losses in AlN Contour Mode Resonators. Journal of Microelectromechanical Systems, 2015, 24, 265-275.	2.5	108
60	Threshold Shock Sensor Based on a Bistable Mechanism: Design, Modeling, and Measurements. Journal of Microelectromechanical Systems, 2015, 24, 2019-2026.	2.5	24
61	Effect of Stators Geometry on the Resonance Sensitivity of Capacitive MEMS. Procedia Engineering, 2015, 120, 294-297.	1.2	3
62	Optimization of Sensing Stators in Capacitive MEMS Operating at Resonance. Journal of Microelectromechanical Systems, 2015, 24, 1077-1084.	2.5	16
63	Blowout in Gas Storage Caverns. Oil and Gas Science and Technology, 2014, 69, 1251-1267.	1.4	9
64	Enhancement of the Quality Factor of AlN Contour Mode Resonators by Acoustic Reflection: Numerical Design and Experimental Investigation. Procedia Engineering, 2014, 87, 468-471.	1.2	9
65	Energetic BEMâ€™FEM coupling for wave propagation in 3D multidomains. International Journal for Numerical Methods in Engineering, 2014, 97, 377-394.	2.8	14
66	Microsystems and Mechanics. Procedia IUTAM, 2014, 10, 138-160.	1.2	6
67	Advanced models for the calculation of capillary attraction in axisymmetric configurations. European Journal of Mechanics, A/Solids, 2014, 47, 298-308.	3.7	18
68	Q OPTIMIZATION VIA QUARTER WAVE ACOUSTIC TRANSFORMERS IN THE BODY OF ALN CONTOUR-MODE RESONATORS. , 2014, , .		1
69	Experimental evaluation and numerical modeling of adhesion phenomena in polysilicon MEMS. Meccanica, 2013, 48, 1835-1844.	2.0	56
70	Neumann exterior wave propagation problems: computational aspects of 3D energetic Galerkin BEM. Computational Mechanics, 2013, 51, 475-493.	4.0	23
71	Validation of PML-based models for the evaluation of anchor dissipation in MEMS resonators. European Journal of Mechanics, A/Solids, 2013, 37, 256-265.	3.7	57
72	Modelling of spontaneous adhesion phenomena in micro-electro-mechanical systems. European Journal of Mechanics, A/Solids, 2013, 39, 144-152.	3.7	31

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73	Analysis of anchor and interface losses in piezoelectric MEMS resonators. Sensors and Actuators A: Physical, 2013, 190, 127-135.	4.1	72
74	ZZ-Axis Magnetometers for MEMS Inertial Measurement Units Using an Industrial Process. IEEE Transactions on Industrial Electronics, 2013, 60, 3983-3990.	7.9	68
75	Interface dissipation in piezoelectric MEMS resonators: An experimental and numerical investigation. , 2013, , .		0
76	Optimization of Lorentz-force MEMS magnetometers using rarefied-gas-theory. , 2013, , .		2
77	Threshold shock sensor based on a bi-stable mechanism. , 2013, , .		3
78	Experimental study on the impact of anchor losses on the quality factor of contour mode AlN resonators. , 2013, , .		17
79	Reduction of anchor losses by etched slots in aluminum nitride contour mode resonators. , 2013, , .		24
80	Design criteria for MEMS magnetometers resonating in free-molecule flow and out of the acoustic bandwidth. , 2012, , .		3
81	On the optimization of piezoelectrically actuated MEMS resonators. , 2012, , .		5
82	Compact MEMS magnetometers for inertial measurement units. , 2012, , .		2
83	A kinetic model for capillary flows in MEMS. , 2012, , .		1
84	Experimental and numerical assessment of adhesion in real-life MEMS. , 2012, , .		1
85	Numerical modelling of anchor losses in MEMS resonators. , 2012, , .		0
86	A stable 3D energetic Galerkin BEM approach for wave propagation interior problems. Engineering Analysis With Boundary Elements, 2012, 36, 1756-1765.	3.7	15
87	Fast Stokes Solvers for MEMS. Lecture Notes in Applied and Computational Mechanics, 2012, , 221-240.	2.2	1
88	On the identification of rheological properties of cement suspensions: Rheometry, Computational Fluid Dynamics modeling and field test measurements. Cement and Concrete Research, 2012, 42, 1134-1146.	11.0	48
89	The effect of nano-scale interaction forces on the premature pull-in of real-life Micro-Electro-Mechanical Systems. Microelectronics Reliability, 2012, 52, 271-281.	1.7	15
90	A Lagrangian finite element approach for the simulation of water-waves induced by landslides. Computers and Structures, 2011, 89, 1086-1093.	4.4	98

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91	Recent Advances and Emerging Applications of the Boundary Element Method. Applied Mechanics Reviews, 2011, 64, .	10.1	121
92	Multiscale finite-element models for predicting spontaneous adhesion in MEMS. Mecanique Et Industries, 2010, 11, 177-182.	0.2	11
93	A Lagrangian finite element approach for the analysis of fluid-structure interaction problems. International Journal for Numerical Methods in Engineering, 2010, 84, 610-630.	2.8	27
94	Simulation of the flow of fresh cement suspensions by a Lagrangian finite element approach. Journal of Non-Newtonian Fluid Mechanics, 2010, 165, 1555-1563.	2.4	58
95	An on-chip experimental assessment Of Casimir force effect in micro-electromechanical systems. , 2010, , .		1
96	Finite Element modelling of adhesion phenomena in MEMS. , 2010, , .		5
97	On a deterministic approach for the evaluation of gas damping in inertial MEMS in the free-molecule regime. Sensors and Actuators A: Physical, 2009, 149, 21-28.	4.1	35
98	A BEM technique for free-molecule flows in high frequency MEMS resonators. Engineering Analysis With Boundary Elements, 2009, 33, 493-498.	3.7	19
99	On the analysis of spontaneous adhesion in MEMS. , 2009, , .		5
100	Boundary Integral Equations and Fluid-Structure Interaction at the Micro Scale. , 2009, , 93-111.		0
101	Solid damping in micro electro mechanical systems. Meccanica, 2008, 43, 419-428.	2.0	88
102	Numerical modelling of impact rupture in polysilicon microsystems. Computational Mechanics, 2008, 42, 251-259.	4.0	27
103	Analysis of fluid-structure interaction in low pressure MEMS by Integral Equations. Proceedings in Applied Mathematics and Mechanics, 2008, 8, 10007-10010.	0.2	0
104	Intrinsic dissipation in microelectromechanical systems. , 2008, , .		1
105	A wide pressure range estimate of gas damping in polysilicon inertial MEMS devices. , 2008, , .		0
106	An experimental assessment of Casimir force effect in micro-electromechanical systems. , 2008, , .		4
107	Mechanical Characterization of Polysilicon at the Micro-Scale Through On-Chip Tests. Computational and Experimental Methods in Structures, 2008, , 427-454.	0.3	0
108	Evaluating Gas Damping in MEMS Using Fast Integral Equation Solvers. Computational and Experimental Methods in Structures, 2008, , 153-181.	0.3	0

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109	On the Application of the Boltzmann Equation to the Simulation of Fluid Structure Interaction in Micro-Electro-Mechanical-Systems. Sensor Letters, 2008, 6, 121-129.	0.4	6
110	Analysis of Gas Flow in MEMS by a Deterministic 3D BGK Kinetic Model. Sensor Letters, 2008, 6, 69-75.	0.4	2
111	Numerical Simulation of Impact-Induced Rupture in Polysilicon MEMS. Sensor Letters, 2008, 6, 35-42.	0.4	2
112	Kinetic Approach to Gas Flows in Microchannels. Nanoscale and Microscale Thermophysical Engineering, 2007, 11, 211-226.	2.6	26
113	The BGK kinetic model applied to the analysis of gas-structure interactions in MEMS. , 2007, , .		0
114	On the application of the BGK kinetic model to the analysis of gas-structure interactions in MEMS. Computers and Structures, 2007, 85, 810-817.	4.4	37
115	BEM approaches and simplified kinetic models for the analysis of damping in deformable MEMS. Engineering Analysis With Boundary Elements, 2007, 31, 451-457.	3.7	23
116	On a robust BEM formulation for the Dirichlet problem of exterior stokes flow. Mechanics Research Communications, 2006, 33, 329-336.	1.8	1
117	On the evaluation of damping in MEMS in the slip-flow regime. International Journal for Numerical Methods in Engineering, 2006, 68, 1031-1051.	2.8	45
118	Micro-Scale Simulation of Impact Rupture in Polysilicon MEMS. , 2006, , 647-648.		3
119	Finite element modelling of a rotating piezoelectric ultrasonic motor. Ultrasonics, 2005, 43, 747-755.	3.9	73
120	Magneto-mechanical simulations by a coupled fast multipole methodâ€“finite element method and multigrid solvers. Computers and Structures, 2005, 83, 718-726.	4.4	8
121	A fast multipole implementation of the qualocation mixed-velocityâ€“traction approach for exterior Stokes flows. Engineering Analysis With Boundary Elements, 2005, 29, 1039-1046.	3.7	34
122	A qualocation enhanced approach for Stokes flow problems with rigid-body boundary conditions. Engineering Analysis With Boundary Elements, 2005, 29, 886-893.	3.7	16
123	Multipole BEM for the evaluation of damping forces on MEMS. Computational Mechanics, 2005, 37, 24-31.	4.0	47
124	Mechanical Characterization of Polysilicon Through On-Chip Tensile Tests. Journal of Microelectromechanical Systems, 2004, 13, 200-219.	2.5	119
125	BEM?FEM coupling for 3D fracture mechanics applications. Computational Mechanics, 2003, 32, 415-422.	4.0	21
126	The Symmetric Galerkin BEM in Linear and Non-Linear Fracture Mechanics. , 2003, , 167-204.		1



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127	Mechanical characterization of epitaxial polysilicon in MEMS. , 2003, , 722-726.		3
128	Magneto-mechanical simulations by a coupled fast multipole method-finite element method. , 2003, , 1347-1349.		0
129	3D fracture analysis by the symmetric Galerkin BEM. Computational Mechanics, 2002, 28, 220-232.	4.0	68
130	Fracture propagation in 3D by the symmetric Galerkin boundary element method. International Journal of Fracture, 2002, 116, 313-330.	2.2	22
131	Free Terms and Compatibility Conditions for 3D Hypersingular Boundary Integral Equations. ZAMM Zeitschrift Fur Angewandte Mathematik Und Mechanik, 2001, 81, 651-664.	1.6	22
132	A direct approach for boundary integral equations with high-order singularities. International Journal for Numerical Methods in Engineering, 2000, 49, 871-898.	2.8	50
133	"Causal" shape functions in the time domain boundary element method. Computational Mechanics, 2000, 25, 533-541.	4.0	29
134	Dynamic elastic-plastic analysis by a symmetric Galerkin boundary element method with time-independent kernels. Computer Methods in Applied Mechanics and Engineering, 1999, 171, 281-308.	6.6	25
135	On the numerical stability of time-domain elastodynamic analyses by BEM. Computer Methods in Applied Mechanics and Engineering, 1999, 173, 403-417.	6.6	38
136	Elastodynamics by BEM: a new direct formulation. International Journal for Numerical Methods in Engineering, 1999, 45, 721-740.	2.8	23
137	Boundary element analysis of Kirchhoff plates with direct evaluation of hypersingular integrals. International Journal for Numerical Methods in Engineering, 1999, 46, 1845-1863.	2.8	31
138	A Galerkin symmetric and direct BIE method for Kirchhoff elastic plates: formulation and implementation. International Journal for Numerical Methods in Engineering, 1998, 41, 337-369.	2.8	27
139	Regularized symmetric Galerkin BIE formulations in the Laplace transform domain for 2D problems. Computational Mechanics, 1998, 22, 50-60.	4.0	13
140	Regularized BE formulations for the analysis of fracture in thin plates. International Journal of Fracture, 1997, 84, 351-365.	2.2	3
141	Symmetric BE method in two-dimensional elasticity: evaluation of double integrals for curved elements. Computational Mechanics, 1996, 19, 58-68.	4.0	57
142	On-chip tensile test for epitaxial polysilicon. , 0, , .		6
143	On the evaluation of damping forces in MEMS. , 0, , .		0
144	MVT corrections for the evaluation of damping in MEMS. , 0, , .		0

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145	On the application of the BGK model to the simulation of fluid structure interaction in MEMS. , 0, , .		0
146	Simulation of Impact Rupture in Polysilicon Mems. , 0, , .		3
147	COMPUTATION OF ADHESIVE FORCES DUE TO VAN DER WAALS AND CAPILLARY EFFECTS ON REALISTIC ROUGH SURFACES. , 0, , .		0