

Ahmed A Shabana

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126
papers

3,839
citations

30
h-index

58
g-index

137
ext. papers

4,743
ext. citations

2.9
avg, IF

6.1
L-index

#	Paper	IF	Citations
126	Flexible Multibody Dynamics: Review of Past and Recent Developments. <i>Multibody System Dynamics</i> , 1997 , 1, 189-222	2.8	486
125	Three Dimensional Absolute Nodal Coordinate Formulation for Beam Elements: Theory. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2001 , 123, 606-613	3	293
124	Analysis of Thin Beams and Cables Using the Absolute Nodal Co-ordinate Formulation. <i>Nonlinear Dynamics</i> , 2006 , 45, 109-130	5	218
123	Three Dimensional Absolute Nodal Coordinate Formulation for Beam Elements: Implementation and Applications. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2001 , 123, 614-621	3	198
122	A Non-Incremental Finite Element Procedure for the Analysis of Large Deformation of Plates and Shells in Mechanical System Applications. <i>Multibody System Dynamics</i> , 2003 , 9, 283-309	2.8	126
121	Development of elastic force model for wheel/rail contact problems. <i>Journal of Sound and Vibration</i> , 2004 , 269, 295-325	3.9	125
120	A Coordinate Reduction Technique for Dynamic Analysis of Spatial Substructures with Large Angular Rotations*. <i>Journal of Structural Mechanics</i> , 1983 , 11, 401-431		124
119	Formulation of Three-Dimensional Joint Constraints Using the Absolute Nodal Coordinates. <i>Nonlinear Dynamics</i> , 2003 , 31, 167-195	5	94
118	Computer Implementation of the Absolute Nodal Coordinate Formulation for Flexible Multibody Dynamics. <i>Nonlinear Dynamics</i> , 1998 , 16, 293-306	5	91
117	On the Computer Formulations of the Wheel/Rail Contact Problem. <i>Nonlinear Dynamics</i> , 2005 , 40, 169-193	3	83
116	Flexible Multibody Simulation and Choice of Shape Functions. <i>Nonlinear Dynamics</i> , 1999 , 20, 361-380	5	78
115	A Survey of Rail Vehicle Track Simulations and Flexible Multibody Dynamics. <i>Nonlinear Dynamics</i> , 2001 , 26, 179-212	5	70
114	Nonlinear dynamics of three-dimensional belt drives using the finite-element method. <i>Nonlinear Dynamics</i> , 2007 , 48, 449-466	5	68
113	Implicit and explicit integration in the solution of the absolute nodal coordinate differential/algebraic equations. <i>Nonlinear Dynamics</i> , 2008 , 54, 283-296	5	68
112	Definition of the Elastic Forces in the Finite-Element Absolute Nodal Coordinate Formulation and the Floating Frame of Reference Formulation. <i>Multibody System Dynamics</i> , 2001 , 5, 21-54	2.8	63
111	Pantograph/Catenary Contact Formulations. <i>Journal of Vibration and Acoustics, Transactions of the ASME</i> , 2017 , 139,	1.6	58
110	Three-dimensional absolute nodal co-ordinate formulation: plate problem. <i>International Journal for Numerical Methods in Engineering</i> , 1997 , 40, 2775-2790	2.4	56

109	Three-Dimensional Large Deformation Analysis of the Multibody Pantograph/Catenary Systems. <i>Nonlinear Dynamics</i> , 2005 , 42, 199-215	5	54
108	Study of the Centrifugal Stiffening Effect Using the Finite Element Absolute Nodal Coordinate Formulation. <i>Multibody System Dynamics</i> , 2002 , 7, 357-387	2.8	46
107	Use of the Finite Element Absolute Nodal Coordinate Formulation in Modeling Slope Discontinuity. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2003 , 125, 342-350	3	44
106	Integration of B-spline geometry and ANCF finite element analysis. <i>Nonlinear Dynamics</i> , 2010 , 61, 193-206		43
105	On the integration of computer aided design and analysis using the finite element absolute nodal coordinate formulation. <i>Multibody System Dynamics</i> , 2009 , 22, 181-197	2.8	41
104	An Augmented Formulation for Mechanical Systems with Non-Generalized Coordinates: Application to Rigid Body Contact Problems. <i>Nonlinear Dynamics</i> , 2001 , 24, 183-204	5	39
103	Dynamics of Multibody Systems 2020 ,		37
102	Sparse matrix implicit numerical integration of the Stiff differential/algebraic equations: Implementation. <i>Nonlinear Dynamics</i> , 2011 , 65, 369-382	5	35
101	Poisson modes and general nonlinear constitutive models in the large displacement analysis of beams. <i>Multibody System Dynamics</i> , 2007 , 18, 375-396	2.8	33
100	A New ANCF/CRBF Fully Parameterized Plate Finite Element. <i>Journal of Computational and Nonlinear Dynamics</i> , 2017 , 12,	1.4	32
99	On the formulation of the planar ANCF triangular finite elements. <i>Nonlinear Dynamics</i> , 2017 , 89, 1019-1045	1.4	32
98	Rational ANCF Thin Plate Finite Element. <i>Journal of Computational and Nonlinear Dynamics</i> , 2016 , 11,	1.4	32
97	Definition of ANCF Finite Elements. <i>Journal of Computational and Nonlinear Dynamics</i> , 2015 , 10,	1.4	32
96	Locking alleviation in the large displacement analysis of beam elements: the strain split method. <i>Acta Mechanica</i> , 2018 , 229, 2923-2946	2.1	30
95	Contact force control in multibody pantograph/catenary systems. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2016 , 230, 307-328	0.9	30
94	Analysis of warping deformation modes using higher order ANCF beam element. <i>Journal of Sound and Vibration</i> , 2016 , 363, 428-445	3.9	30
93	Modelling of structural flexibility in multibody railroad vehicle systems. <i>Vehicle System Dynamics</i> , 2013 , 51, 1027-1058	2.8	30
92	A rational finite element method based on the absolute nodal coordinate formulation. <i>Nonlinear Dynamics</i> , 2009 , 58, 565-572	5	30

91	Development of ANCF tetrahedral finite elements for the nonlinear dynamics of flexible structures. <i>Nonlinear Dynamics</i> , 2017 , 89, 2905-2932	5	28
90	A Non-Incremental Nonlinear Finite Element Solution for Cable Problems. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2003 , 125, 746-756	3	27
89	Numerical Procedure for the Simulation of Wheel/Rail Contact Dynamics. <i>Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME</i> , 2001 , 123, 168-178	1.6	27
88	Coupled Deformation Modes in the Large Deformation Finite-Element Analysis: Problem Definition. <i>Journal of Computational and Nonlinear Dynamics</i> , 2007 , 2, 146-154	1.4	26
87	Use of independent volume parameters in the development of new large displacement ANCF triangular plate/shell elements. <i>Nonlinear Dynamics</i> , 2018 , 91, 2171-2202	5	24
86	Use of independent rotation field in the large displacement analysis of beams. <i>Nonlinear Dynamics</i> , 2014 , 76, 1829-1843	5	24
85	Comparison between ANCF and B-spline surfaces. <i>Multibody System Dynamics</i> , 2013 , 30, 119-138	2.8	23
84	A two-dimensional shear deformable ANCF consistent rotation-based formulation beam element. <i>Nonlinear Dynamics</i> , 2017 , 87, 1031-1043	5	23
83	Application of Plasticity Theory and Absolute Nodal Coordinate Formulation to Flexible Multibody System Dynamics. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2004 , 126, 478-487	3	23
82	ANCF Tire Assembly Model for Multibody System Applications. <i>Journal of Computational and Nonlinear Dynamics</i> , 2015 , 10,	1.4	22
81	A nonlinear visco-elastic constitutive model for large rotation finite element formulations. <i>Multibody System Dynamics</i> , 2011 , 26, 57-79	2.8	22
80	Slope discontinuities in the finite element absolute nodal coordinate formulation: gradient deficient elements. <i>Multibody System Dynamics</i> , 2008 , 20, 239-249	2.8	22
79	A new multibody system approach for tire modeling using ANCF finite elements. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2016 , 230, 69-84	0.9	21
78	Effect of the centrifugal forces on the finite element eigenvalue solution of a rotating blade: a comparative study. <i>Multibody System Dynamics</i> , 2008 , 19, 281-302	2.8	21
77	Rational Finite Elements and Flexible Body Dynamics. <i>Journal of Vibration and Acoustics, Transactions of the ASME</i> , 2010 , 132,	1.6	19
76	A train air brake force model: Car control unit and numerical results. <i>Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit</i> , 2013 , 227, 38-55	1.4	18
75	A Total Lagrangian ANCF Liquid Sloshing Approach for Multibody System Applications. <i>Journal of Computational and Nonlinear Dynamics</i> , 2015 , 10,	1.4	17
74	A comparative study of joint formulations: application to multibody system tracked vehicles. <i>Nonlinear Dynamics</i> , 2013 , 74, 783-800	5	16

73	A train air brake force model: Locomotive automatic brake valve and brake pipe flow formulations. <i>Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit</i> , 2013 , 227, 19-37	1.4	16
72	Use of General Nonlinear Material Models in Beam Problems: Application to Belts and Rubber Chains. <i>Journal of Computational and Nonlinear Dynamics</i> , 2010 , 5,	1.4	16
71	On the Use of Implicit Integration Methods and the Absolute Nodal Coordinate Formulation in the Analysis of Elasto-Plastic Deformation Problems. <i>Nonlinear Dynamics</i> , 2004 , 37, 245-270	5	16
70	Influence of rail flexibility in a wheel/rail wear prediction model. <i>Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit</i> , 2017 , 231, 57-74	1.4	15
69	Nonstructural geometric discontinuities in finite element/multibody system analysis. <i>Nonlinear Dynamics</i> , 2011 , 66, 809-824	5	14
68	Nonlinear dynamic analysis of parabolic leaf springs using ANCF geometry and data acquisition. <i>Nonlinear Dynamics</i> , 2018 , 93, 2487-2515	5	14
67	Numerical study of the noninertial systems: application to train coupler systems. <i>Nonlinear Dynamics</i> , 2012 , 68, 215-233	5	13
66	Study of the ligament tension and cross-section deformation using nonlinear finite element/multibody system algorithms. <i>Multibody System Dynamics</i> , 2010 , 23, 227-248	2.8	13
65	Clamped end conditions and cross section deformation in the finite element absolute nodal coordinate formulation. <i>Multibody System Dynamics</i> , 2009 , 21, 375-393	2.8	12
64	Uniqueness of the Geometric Representation in Large Rotation Finite Element Formulations. <i>Journal of Computational and Nonlinear Dynamics</i> , 2010 , 5,	1.4	12
63	Integration of Large Deformation Finite Element and Multibody System Algorithms. <i>Journal of Computational and Nonlinear Dynamics</i> , 2007 , 2, 351-359	1.4	12
62	Evaluation of breaking wave effects in liquid sloshing problems: ANCF/SPH comparative study. <i>Nonlinear Dynamics</i> , 2019 , 97, 45-62	5	11
61	Low Order Continuum-Based Liquid Sloshing Formulation for Vehicle System Dynamics. <i>Journal of Computational and Nonlinear Dynamics</i> , 2015 , 10,	1.4	11
60	A new nonlinear multibody/finite element formulation for knee joint ligaments. <i>Nonlinear Dynamics</i> , 2010 , 60, 357-367	5	11
59	On the Use of the Restitution Condition in Flexible Body Dynamics. <i>Nonlinear Dynamics</i> , 2002 , 30, 71-86	5	11
58	Analysis of high-frequency ANCF modes: Navier-Stokes physical damping and implicit numerical integration. <i>Acta Mechanica</i> , 2019 , 230, 2581-2605	2.1	10
57	Ideal Compliant Joints and Integration of Computer Aided Design and Analysis. <i>Journal of Computational and Nonlinear Dynamics</i> , 2015 , 10,	1.4	10
56	Soil Models and Vehicle System Dynamics. <i>Applied Mechanics Reviews</i> , 2013 , 65,	8.6	10

55	Analytical and numerical investigation of wheel climb at large angle of attack. <i>Nonlinear Dynamics</i> , 2016 , 83, 555-577	5	10
54	Spatial ANCF/CRBF beam elements. <i>Acta Mechanica</i> , 2019 , 230, 929-952	2.1	10
53	General Method for Modeling Slope Discontinuities and T-Sections Using ANCF Gradient Deficient Finite Elements. <i>Journal of Computational and Nonlinear Dynamics</i> , 2011 , 6,	1.4	9
52	Coupled Deformation Modes in the Large Deformation Finite Element Analysis: Generalization. <i>Journal of Computational and Nonlinear Dynamics</i> , 2009 , 4,	1.4	9
51	Prediction of the Pantograph/Catenary Wear Using Nonlinear Multibody System Dynamic Algorithms. <i>Journal of Tribology</i> , 2019 , 141,	1.8	9
50	Integration of geometry and analysis for the study of liquid sloshing in railroad vehicle dynamics. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2017 , 231, 608-629	0.9	8
49	Curvature Expressions for the Large Displacement Analysis of Planar Beam Motions. <i>Journal of Computational and Nonlinear Dynamics</i> , 2018 , 13,	1.4	8
48	Integration of Geometry and Analysis for Vehicle System Applications: Continuum-Based Leaf Spring and Tire Assembly. <i>Journal of Computational and Nonlinear Dynamics</i> , 2016 , 11,	1.4	8
47	A nonlinear approach for modeling rail flexibility using the absolute nodal coordinate formulation. <i>Nonlinear Dynamics</i> , 2016 , 83, 463-481	5	8
46	Continuum-Based Geometry/Analysis Approach for Flexible and Soft Robotic Systems. <i>Soft Robotics</i> , 2018 , 5, 613-621	9.2	8
45	ANCF Finite Element/Multibody System Formulation of the Ligament/Bone Insertion Site Constraints. <i>Journal of Computational and Nonlinear Dynamics</i> , 2010 , 5,	1.4	8
44	Development and implementation of geometrically accurate reduced-order models: Convergence properties of planar beams. <i>Journal of Sound and Vibration</i> , 2019 , 439, 457-478	3.9	8
43	Mixed-Coordinate ANCF Rectangular Plate Finite Element. <i>Journal of Computational and Nonlinear Dynamics</i> , 2015 , 10,	1.4	7
42	A Simple Procedure for the Solution of Three-Dimensional Wheel/Rail Conformal Contact Problem. <i>Journal of Computational and Nonlinear Dynamics</i> , 2014 , 9,	1.4	7
41	Use of Finite Element and Finite Segment Methods in Modeling Rail Flexibility: A Comparative Study. <i>Journal of Computational and Nonlinear Dynamics</i> , 2012 , 7,	1.4	7
40	Modeling railroad track structures using the finite segment method. <i>Acta Mechanica</i> , 2012 , 223, 1707-1721		7
39	Nadal's Formula and High Speed Rail Derailments. <i>Journal of Computational and Nonlinear Dynamics</i> , 2012 , 7,	1.4	7
38	Effect of the Linearization of the Kinematic Equations in Railroad Vehicle System Dynamics. <i>Journal of Computational and Nonlinear Dynamics</i> , 2006 , 1, 25-34	1.4	7

37	Pantograph/Catenary Contact Force Control 2015 ,		6
36	Use of Plasticity Theory in Flexible Multibody System Dynamics 2003 , 219		6
35	Automated visco-elastic analysis of large scale inertia-variant spatial vehicles. <i>Computers and Structures</i> , 1986 , 22, 165-178	4.5	6
34	Rotation-based finite elements: reference-configuration geometry and motion description. <i>Acta Mechanica Sinica/Lixue Xuebao</i> , 2021 , 37, 105-126	2	6
33	Frenet oscillations and Frenet-Euler angles: curvature singularity and motion-trajectory analysis. <i>Nonlinear Dynamics</i> , 2021 , 106, 1-19	5	6
32	ANCF curvature continuity: application to soft and fluid materials. <i>Nonlinear Dynamics</i> , 2020 , 100, 1497-1517	1.5	5
31	Verification of a Total Lagrangian ANCF Solution Procedure for Fluid-Structure Interaction Problems. <i>Journal of Verification, Validation and Uncertainty Quantification</i> , 2017 , 2,	0.9	5
30	Numerical investigation of the slope discontinuities in large deformation finite element formulations. <i>Nonlinear Dynamics</i> , 2009 , 58, 23-37	5	5
29	A velocity transformation method for the nonlinear dynamic simulation of railroad vehicle systems. <i>Nonlinear Dynamics</i> , 2007 , 51, 289-307	5	5
28	Geometry and differentiability requirements in multibody railroad vehicle dynamic formulations. <i>Nonlinear Dynamics</i> , 2006 , 47, 249-261	5	5
27	Generalization of the strain-split method and evaluation of the nonlinear ANCF finite elements. <i>Acta Mechanica</i> , 2020 , 231, 1365-1376	2.1	5
26	Deformation basis and kinematic singularities of constrained systems. <i>Mechanics Based Design of Structures and Machines</i> , 2019 , 47, 659-679	1.7	4
25	Durability analysis and implementation of the floating frame of reference formulation. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2018 , 232, 295-313	0.9	4
24	Evaluation of the accuracy of the rigid body approach in the prediction of the dynamic stresses of complex multibody systems. <i>International Journal of Vehicle Performance</i> , 2016 , 2, 140	0.9	4
23	Euler angles and numerical representation of the railroad track geometry. <i>Acta Mechanica</i> , 2021 , 232, 3121-3139	2.1	4
22	ANCF Continuum-Based Soil Plasticity for Wheeled Vehicle Off-Road Mobility. <i>Journal of Computational and Nonlinear Dynamics</i> , 2016 , 11,	1.4	3
21	Implementation of electronically controlled pneumatic brake formulation in longitudinal train dynamics algorithms. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2016 , 230, 505-526	0.9	3
20	Development of Geometrically Accurate Continuum-Based Tire Models for Virtual Testing. <i>Journal of Computational and Nonlinear Dynamics</i> , 2019 , 14,	1.4	3

19	Non-Linear Dynamics of Multibody Systems with Generalized and Non-Generalized Coordinates 2003 , 1-16		3
18	Characterization and quantification of railroad spiral-joint discontinuities. <i>Mechanics Based Design of Structures and Machines</i> ,1-26	1.7	3
17	Relative orientation constraints in the nonlinear large displacement analysis: application to soft materials. <i>Nonlinear Dynamics</i> , 2020 , 101, 2551-2575	5	3
16	Motion and shape control of soft robots and materials. <i>Nonlinear Dynamics</i> , 2021 , 104, 165-189	5	3
15	A geometrically accurate deformable-body approach for the analysis of robotic and parallel-mechanism systems. <i>Mechanics Based Design of Structures and Machines</i> , 2020 , 1-21	1.7	2
14	Prediction of dynamic stresses using flexible multibody system algorithms: Application to tracked vehicle upper structure. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2015 , 229, 177-192	0.9	2
13	Trajectory Coordinate Constraints in Multibody Railroad Vehicle Systems. <i>Journal of System Design and Dynamics</i> , 2007 , 1, 481-490		2
12	Effect of the Wheel Geometric Design on the Nonlinear Dynamics of Railroad Vehicles. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2006 , 128, 1130-1140	3	2
11	Cross-section deformation, geometric stiffening, and locking in the nonlinear vibration analysis of beams. <i>Nonlinear Dynamics</i> ,1	5	2
10	Geometric self-centering and force self-balancing of railroad-vehicle hunting oscillations. <i>Acta Mechanica</i> , 2021 , 232, 3323-3329	2.1	2
9	ANCF Multiplicative-Decomposition Thermoelastic Approach for Arbitrary Geometry. <i>Journal of Structural Engineering</i> , 2021 , 147,	3	2
8	Torsion and vertical curvature of motion-trajectory curves. <i>Mechanics Based Design of Structures and Machines</i> ,1-23	1.7	1
7	Dynamics of Flexible Body Negotiating a Curve. <i>Journal of Computational and Nonlinear Dynamics</i> , 2016 , 11,	1.4	1
6	Frenet force analysis in performance evaluation of railroad vehicle systems. <i>Acta Mechanica</i> , 2021 , 232, 4235	2.1	1
5	Effect of the tank car thickness on the nonlinear dynamics of railroad vehicles. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2017 , 231, 3-29	0.9	
4	A Study of the Wheel Geometry Effect on the Dynamic Behavior of Railroad Vehicles 2005 , 2197		
3	Spatial Finite Element Formulation for the Pantograph/Catenary Systems 2005 , 2133		
2	TLISMNI/Adams algorithm for the solution of the differential/algebraic equations of constrained dynamical systems. <i>Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics</i> , 2018 , 232, 129-149	0.9	

- 1 Space-curve Cartan matrix and exact differentiability of the curvature and torsion. *Mechanics Based Design of Structures and Machines*,1-21 1.7