Ahmed A Shabana

List of Publications by Year in Descending Order

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	Motion and shape control of soft robots and materials. *Nonlinear Dynamics*, **2021**, 104, 165-189	5	3
125	Geometric self-centering and force self-balancing of railroad-vehicle hunting oscillations. *Acta Mechanica*, **2021**, 232, 3323-3329	2.1	2
124	Euler angles and numerical representation of the railroad track geometry. *Acta Mechanica*, **2021**, 232, 3121-3139	2.1	4
123	Rotation-based finite elements: reference-configuration geometry and motion description. *Acta Mechanica Sinica/Lixue Xuebao*, **2021**, 37, 105-126	2	6
122	ANCF Multiplicative-Decomposition Thermoelastic Approach for Arbitrary Geometry. *Journal of Structural Engineering*, **2021**, 147,	3	2
121	Frenet force analysis in performance evaluation of railroad vehicle systems. *Acta Mechanica*, **2021**, 232, 4235	2.1	1
120	Frenet oscillations and Frenet–Euler angles: curvature singularity and motion-trajectory analysis. *Nonlinear Dynamics*, **2021**, 106, 1-19	5	6
119	A geometrically accurate deformable-body approach for the analysis of robotic and parallel-mechanism systems. *Mechanics Based Design of Structures and Machines*, **2020**, 1-21	1.7	2
118	ANCF curvature continuity: application to soft and fluid materials. *Nonlinear Dynamics*, **2020**, 100, 1497-1517	5	5
117	Dynamics of Multibody Systems **2020**,		37
116	Generalization of the strain-split method and evaluation of the nonlinear ANCF finite elements. *Acta Mechanica*, **2020**, 231, 1365-1376	2.1	5
115	Relative orientation constraints in the nonlinear large displacement analysis: application to soft materials. *Nonlinear Dynamics*, **2020**, 101, 2551-2575	5	3
114	Deformation basis and kinematic singularities of constrained systems. *Mechanics Based Design of Structures and Machines*, **2019**, 47, 659-679	1.7	4
113	Evaluation of breaking wave effects in liquid sloshing problems: ANCF/SPH comparative study. *Nonlinear Dynamics*, **2019**, 97, 45-62	5	11
112	Analysis of high-frequency ANCF modes: Navier–Stokes physical damping and implicit numerical integration. *Acta Mechanica*, **2019**, 230, 2581-2605	2.1	10
111	Development of Geometrically Accurate Continuum-Based Tire Models for Virtual Testing. *Journal of Computational and Nonlinear Dynamics*, **2019**, 14,	1.4	3
110	Prediction of the Pantograph/Catenary Wear Using Nonlinear Multibody System Dynamic Algorithms. *Journal of Tribology*, **2019**, 141,	1.8	9

109	Spatial ANCF/CRBF beam elements. *Acta Mechanica*, **2019**, 230, 929-952	2.1	10
108	Development and implementation of geometrically accurate reduced-order models: Convergence properties of planar beams. *Journal of Sound and Vibration*, **2019**, 439, 457-478	3.9	8
107	Locking alleviation in the large displacement analysis of beam elements: the strain split method. *Acta Mechanica*, **2018**, 229, 2923-2946	2.1	30
106	Use of independent volume parameters in the development of new large displacement ANCF triangular plate/shell elements. *Nonlinear Dynamics*, **2018**, 91, 2171-2202	5	24
105	Curvature Expressions for the Large Displacement Analysis of Planar Beam Motions. *Journal of Computational and Nonlinear Dynamics*, **2018**, 13,	1.4	8
104	Durability analysis and implementation of the floating frame of reference formulation. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2018**, 232, 295-313	0.9	4
103	Continuum-Based Geometry/Analysis Approach for Flexible and Soft Robotic Systems. *Soft Robotics* , **2018**, 5, 613-621	9.2	8
102	TLISMNI/Adams algorithm for the solution of the differential/algebraic equations of constrained dynamical systems. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2018**, 232, 129-149	0.9	
101	Nonlinear dynamic analysis of parabolic leaf springs using ANCF geometry and data acquisition. *Nonlinear Dynamics*, **2018**, 93, 2487-2515	5	14
100	Influence of rail flexibility in a wheel/rail wear prediction model. *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*, **2017**, 231, 57-74	1.4	15
99	Effect of the tank car thickness on the nonlinear dynamics of railroad vehicles. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2017**, 231, 3-29	0.9	
98	Pantograph/Catenary Contact Formulations. *Journal of Vibration and Acoustics, Transactions of the ASME*, **2017**, 139,	1.6	58
97	A New ANCF/CRBF Fully Parameterized Plate Finite Element. *Journal of Computational and Nonlinear Dynamics*, **2017**, 12,	1.4	32
96	Integration of geometry and analysis for the study of liquid sloshing in railroad vehicle dynamics. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2017**, 231, 608-629	0.9	8
95	On the formulation of the planar ANCF triangular finite elements. *Nonlinear Dynamics*, **2017**, 89, 1019-1045	5	32
94	Verification of a Total Lagrangian ANCF Solution Procedure for Fluid-Structure Interaction Problems. *Journal of Verification, Validation and Uncertainty Quantification*, **2017**, 2,	0.9	5
93	Development of ANCF tetrahedral finite elements for the nonlinear dynamics of flexible structures. *Nonlinear Dynamics*, **2017**, 89, 2905-2932	5	28
92	A two-dimensional shear deformable ANCF consistent rotation-based formulation beam element. *Nonlinear Dynamics*, **2017**, 87, 1031-1043	5	23

91	A new multibody system approach for tire modeling using ANCF finite elements. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2016**, 230, 69-84	0.9	21
90	Integration of Geometry and Analysis for Vehicle System Applications: Continuum-Based Leaf Spring and Tire Assembly. *Journal of Computational and Nonlinear Dynamics*, **2016**, 11,	1.4	8
89	ANCF Continuum-Based Soil Plasticity for Wheeled Vehicle Off-Road Mobility. *Journal of Computational and Nonlinear Dynamics*, **2016**, 11,	1.4	3
88	Rational ANCF Thin Plate Finite Element. *Journal of Computational and Nonlinear Dynamics*, **2016**, 11,	1.4	32
87	Contact force control in multibody pantograph/catenary systems. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2016**, 230, 307-328	0.9	30
86	Evaluation of the accuracy of the rigid body approach in the prediction of the dynamic stresses of complex multibody systems. *International Journal of Vehicle Performance*, **2016**, 2, 140	0.9	4
85	Implementation of electronically controlled pneumatic brake formulation in longitudinal train dynamics algorithms. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2016**, 230, 505-526	0.9	3
84	Analysis of warping deformation modes using higher order ANCF beam element. *Journal of Sound and Vibration*, **2016**, 363, 428-445	3.9	30
83	A nonlinear approach for modeling rail flexibility using the absolute nodal coordinate formulation. *Nonlinear Dynamics*, **2016**, 83, 463-481	5	8
82	Dynamics of Flexible Body Negotiating a Curve. *Journal of Computational and Nonlinear Dynamics*, **2016**, 11,	1.4	1
81	Analytical and numerical investigation of wheel climb at large angle of attack. *Nonlinear Dynamics*, **2016**, 83, 555-577	5	10
80	Definition of ANCF Finite Elements. *Journal of Computational and Nonlinear Dynamics*, **2015**, 10,	1.4	32
79	A Total Lagrangian ANCF Liquid Sloshing Approach for Multibody System Applications. *Journal of Computational and Nonlinear Dynamics*, **2015**, 10,	1.4	17
78	Mixed-Coordinate ANCF Rectangular Plate Finite Element. *Journal of Computational and Nonlinear Dynamics*, **2015**, 10,	1.4	7
77	Pantograph/Catenary Contact Force Control **2015**,		6
76	Low Order Continuum-Based Liquid Sloshing Formulation for Vehicle System Dynamics. *Journal of Computational and Nonlinear Dynamics*, **2015**, 10,	1.4	11
75	Ideal Compliant Joints and Integration of Computer Aided Design and Analysis. *Journal of Computational and Nonlinear Dynamics*, **2015**, 10,	1.4	10
74	ANCF Tire Assembly Model for Multibody System Applications. *Journal of Computational and Nonlinear Dynamics*, **2015**, 10,	1.4	22

73	Prediction of dynamic stresses using flexible multibody system algorithms: Application to tracked vehicle upper structure. *Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics*, **2015**, 229, 177-192	0.9	2
72	Use of independent rotation field in the large displacement analysis of beams. *Nonlinear Dynamics*, **2014**, 76, 1829-1843	5	24
71	A Simple Procedure for the Solution of Three-Dimensional Wheel/Rail Conformal Contact Problem. *Journal of Computational and Nonlinear Dynamics*, **2014**, 9,	1.4	7
70	Comparison between ANCF and B-spline surfaces. *Multibody System Dynamics*, **2013**, 30, 119-138	2.8	23
69	A comparative study of joint formulations: application to multibody system tracked vehicles. *Nonlinear Dynamics*, **2013**, 74, 783-800	5	16
68	Soil Models and Vehicle System Dynamics. *Applied Mechanics Reviews*, **2013**, 65,	8.6	10
67	A train air brake force model: Car control unit and numerical results. *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*, **2013**, 227, 38-55	1.4	18
66	Modelling of structural flexiblity in multibody railroad vehicle systems. *Vehicle System Dynamics*, **2013**, 51, 1027-1058	2.8	30
65	A train air brake force model: Locomotive automatic brake valve and brake pipe flow formulations. *Proceedings of the Institution of Mechanical Engineers, Part F: Journal of Rail and Rapid Transit*, **2013**, 227, 19-37	1.4	16
64	Use of Finite Element and Finite Segment Methods in Modeling Rail Flexibility: A Comparative Study. *Journal of Computational and Nonlinear Dynamics*, **2012**, 7,	1.4	7
63	Modeling railroad track structures using the finite segment method. *Acta Mechanica*, **2012**, 223, 1707-1721	2.1	7
62	Numerical study of the noninertial systems: application to train coupler systems. *Nonlinear Dynamics*, **2012**, 68, 215-233	5	13
61	Nadal Formula and High Speed Rail Derailments. *Journal of Computational and Nonlinear Dynamics* , **2012**, 7,	1.4	7
60	General Method for Modeling Slope Discontinuities and T-Sections Using ANCF Gradient Deficient Finite Elements. *Journal of Computational and Nonlinear Dynamics*, **2011**, 6,	1.4	9
59	Sparse matrix implicit numerical integration of the Stiff differential/algebraic equations: Implementation. *Nonlinear Dynamics*, **2011**, 65, 369-382	5	35
58	Nonstructural geometric discontinuities in finite element/multibody system analysis. *Nonlinear Dynamics*, **2011**, 66, 809-824	5	14
57	A nonlinear visco-elastic constitutive model for large rotation finite element formulations. *Multibody System Dynamics*, **2011**, 26, 57-79	2.8	22
56	Rational Finite Elements and Flexible Body Dynamics. *Journal of Vibration and Acoustics, Transactions of the ASME*, **2010**, 132,	1.6	19

55	ANCF Finite Element/Multibody System Formulation of the Ligament/Bone Insertion Site Constraints. *Journal of Computational and Nonlinear Dynamics*, **2010**, 5,	1.4	8
54	Uniqueness of the Geometric Representation in Large Rotation Finite Element Formulations. *Journal of Computational and Nonlinear Dynamics*, **2010**, 5,	1.4	12
53	Use of General Nonlinear Material Models in Beam Problems: Application to Belts and Rubber Chains. *Journal of Computational and Nonlinear Dynamics*, **2010**, 5,	1.4	16
52	Study of the ligament tension and cross-section deformation using nonlinear finite element/multibody system algorithms. *Multibody System Dynamics*, **2010**, 23, 227-248	2.8	13
51	A new nonlinear multibody/finite element formulation for knee joint ligaments. *Nonlinear Dynamics* , **2010**, 60, 357-367	5	11
50	Integration of B-spline geometry and ANCF finite element analysis. *Nonlinear Dynamics*, **2010**, 61, 193-206	5	43
49	Clamped end conditions and cross section deformation in the finite element absolute nodal coordinate formulation. *Multibody System Dynamics*, **2009**, 21, 375-393	2.8	12
48	On the integration of computer aided design and analysis using the finite element absolute nodal coordinate formulation. *Multibody System Dynamics*, **2009**, 22, 181-197	2.8	41
47	Numerical investigation of the slope discontinuities in large deformation finite element formulations. *Nonlinear Dynamics*, **2009**, 58, 23-37	5	5
46	A rational finite element method based on the absolute nodal coordinate formulation. *Nonlinear Dynamics*, **2009**, 58, 565-572	5	30
45	Coupled Deformation Modes in the Large Deformation Finite Element Analysis: Generalization. *Journal of Computational and Nonlinear Dynamics*, **2009**, 4,	1.4	9
44	Implicit and explicit integration in the solution of the absolute nodal coordinate differential/algebraic equations. *Nonlinear Dynamics*, **2008**, 54, 283-296	5	68
43	Effect of the centrifugal forces on the finite element eigenvalue solution of a rotating blade: a comparative study. *Multibody System Dynamics*, **2008**, 19, 281-302	2.8	21
42	Slope discontinuities in the finite element absolute nodal coordinate formulation: gradient deficient elements. *Multibody System Dynamics*, **2008**, 20, 239-249	2.8	22
41	Poisson modes and general nonlinear constitutive models in the large displacement analysis of beams. *Multibody System Dynamics*, **2007**, 18, 375-396	2.8	33
40	Nonlinear dynamics of three-dimensional belt drives using the finite-element method. *Nonlinear Dynamics*, **2007**, 48, 449-466	5	68
39	A velocity transformation method for the nonlinear dynamic simulation of railroad vehicle systems. *Nonlinear Dynamics*, **2007**, 51, 289-307	5	5
38	Coupled Deformation Modes in the Large Deformation Finite-Element Analysis: Problem Definition. *Journal of Computational and Nonlinear Dynamics*, **2007**, 2, 146-154	1.4	26

37	Integration of Large Deformation Finite Element and Multibody System Algorithms. *Journal of Computational and Nonlinear Dynamics*, **2007**, 2, 351-359	1.4	12
36	Trajectory Coordinate Constraints in Multibody Railroad Vehicle Systems. *Journal of System Design and Dynamics*, **2007**, 1, 481-490		2
35	Effect of the Linearization of the Kinematic Equations in Railroad Vehicle System Dynamics. *Journal of Computational and Nonlinear Dynamics*, **2006**, 1, 25-34	1.4	7
34	Effect of the Wheel Geometric Design on the Nonlinear Dynamics of Railroad Vehicles. *Journal of Mechanical Design, Transactions of the ASME*, **2006**, 128, 1130-1140	3	2
33	Analysis of Thin Beams and Cables Using the Absolute Nodal Co-ordinate Formulation. *Nonlinear Dynamics*, **2006**, 45, 109-130	5	218
32	Geometry and differentiability requirements in multibody railroad vehicle dynamic formulations. *Nonlinear Dynamics*, **2006**, 47, 249-261	5	5
31	A Study of the Wheel Geometry Effect on the Dynamic Behavior of Railroad Vehicles **2005**, 2197		
30	Spatial Finite Element Formulation for the Pantograph/Catenary Systems **2005**, 2133		
29	Three-Dimensional Large Deformation Analysis of the Multibody Pantograph/Catenary Systems. *Nonlinear Dynamics*, **2005**, 42, 199-215	5	54
28	On the Computer Formulations of the Wheel/Rail Contact Problem. *Nonlinear Dynamics*, **2005**, 40, 169-193	5	83
27	On the Use of Implicit Integration Methods and the Absolute Nodal Coordinate Formulation in the Analysis of Elasto-Plastic Deformation Problems. *Nonlinear Dynamics*, **2004**, 37, 245-270	5	16
26	Development of elastic force model for wheel/rail contact problems. *Journal of Sound and Vibration* , **2004**, 269, 295-325	3.9	125
25	Application of Plasticity Theory and Absolute Nodal Coordinate Formulation to Flexible Multibody System Dynamics. *Journal of Mechanical Design, Transactions of the ASME*, **2004**, 126, 478-487	3	23
24	Use of the Finite Element Absolute Nodal Coordinate Formulation in Modeling Slope Discontinuity. *Journal of Mechanical Design, Transactions of the ASME*, **2003**, 125, 342-350	3	44
23	Use of Plasticity Theory in Flexible Multibody System Dynamics **2003**, 219		6
22	Formulation of Three-Dimensional Joint Constraints Using the Absolute Nodal Coordinates. *Nonlinear Dynamics*, **2003**, 31, 167-195	5	94
21	A Non-Incremental Finite Element Procedure for the Analysis of Large Deformation of Plates and Shells in Mechanical System Applications. *Multibody System Dynamics*, **2003**, 9, 283-309	2.8	126
20	A Non-Incremental Nonlinear Finite Element Solution for Cable Problems. *Journal of Mechanical Design, Transactions of the ASME*, **2003**, 125, 746-756	3	27

19	Non-Linear Dynamics of Multibody Systems with Generalized and Non-Generalized Coordinates **2003**, 1-16		3
18	Study of the Centrifugal Stiffening Effect Using the Finite Element Absolute Nodal Coordinate Formulation. *Multibody System Dynamics*, **2002**, 7, 357-387	2.8	46
17	On the Use of the Restitution Condition in Flexible Body Dynamics. *Nonlinear Dynamics*, **2002**, 30, 71-86	5	11
16	A Survey of Rail Vehicle Track Simulations and Flexible Multibody Dynamics. *Nonlinear Dynamics*, **2001**, 26, 179-212	5	70
15	An Augmented Formulation for Mechanical Systems with Non-Generalized Coordinates: Application to Rigid Body Contact Problems. *Nonlinear Dynamics*, **2001**, 24, 183-204	5	39
14	Definition of the Elastic Forces in the Finite-Element Absolute Nodal Coordinate Formulation and the Floating Frame of Reference Formulation. *Multibody System Dynamics*, **2001**, 5, 21-54	2.8	63
13	Numerical Procedure for the Simulation of Wheel/Rail Contact Dynamics. *Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME*, **2001**, 123, 168-178	1.6	27
12	Three Dimensional Absolute Nodal Coordinate Formulation for Beam Elements: Implementation and Applications. *Journal of Mechanical Design, Transactions of the ASME*, **2001**, 123, 614-621	3	198
11	Three Dimensional Absolute Nodal Coordinate Formulation for Beam Elements: Theory. *Journal of Mechanical Design, Transactions of the ASME*, **2001**, 123, 606-613	3	293
10	Flexible Multibody Simulation and Choice of Shape Functions. *Nonlinear Dynamics*, **1999**, 20, 361-380	5	78
9	Computer Implementation of the Absolute Nodal Coordinate Formulation for Flexible Multibody Dynamics. *Nonlinear Dynamics*, **1998**, 16, 293-306	5	91
8	Flexible Multibody Dynamics: Review of Past and Recent Developments. *Multibody System Dynamics*, **1997**, 1, 189-222	2.8	486
7	Three-dimensional absolute nodal co-ordinate formulation: plate problem. *International Journal for Numerical Methods in Engineering*, **1997**, 40, 2775-2790	2.4	56
6	Automated visco-elastic analysis of large scale inertia-variant spatial vehicles. *Computers and Structures*, **1986**, 22, 165-178	4.5	6
5	A Coordinate Reduction Technique for Dynamic Analysis of Spatial Substructures with Large Angular Rotations*. *Journal of Structural Mechanics*, **1983**, 11, 401-431		124
4	Cross-section deformation, geometric stiffening, and locking in the nonlinear vibration analysis of beams. *Nonlinear Dynamics*,1	5	2
3	Torsion and vertical curvature of motion-trajectory curves. *Mechanics Based Design of Structures and Machines*,1-23	1.7	1
2	Characterization and quantification of railroad spiral-joint discontinuities. *Mechanics Based Design of Structures and Machines*,1-26	1.7	3

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