# Ahmed A Shabana

List of Publications by Year
in descending order

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|---|---|---|---|
| 132 papers | 5,478 citations | 101384<br>36 h-index | 91712<br>69 g-index |
| 137 all docs | 137 docs citations | 137 times ranked | 1452 citing authors |

| # | Article | IF | Citations |
|---|---------|----|-----------|
| 1 | Flexible Multibody Dynamics: Review of Past and Recent Developments. Multibody System Dynamics, 1997, 1, 189-222. | 1.7 | 681 |
| 2 | Three Dimensional Absolute Nodal Coordinate Formulation for Beam Elements: Theory. Journal of Mechanical Design, Transactions of the ASME, 2001, 123, 606-613. | 1.7 | 390 |
| 3 | Analysis of Thin Beams and Cables Using the Absolute Nodal Co-ordinate Formulation. Nonlinear Dynamics, 2006, 45, 109-130. | 2.7 | 292 |
| 4 | Three Dimensional Absolute Nodal Coordinate Formulation for Beam Elements: Implementation and Applications. Journal of Mechanical Design, Transactions of the ASME, 2001, 123, 614-621. | 1.7 | 274 |
| 5 | Title is missing!. Multibody System Dynamics, 2003, 9, 283-309. | 1.7 | 174 |
| 6 | A Coordinate Reduction Technique for Dynamic Analysis of Spatial Substructures with Large Angular Rotationsâˆ—. Journal of Structural Mechanics, 1983, 11, 401-431. | 0.7 | 162 |
| 7 | Development of elastic force model for wheel/rail contact problems. Journal of Sound and Vibration, 2004, 269, 295-325. | 2.1 | 148 |
| 8 | Title is missing!. Nonlinear Dynamics, 1998, 16, 293-306. | 2.7 | 147 |
| 9 | Formulation of Three-Dimensional Joint Constraints Using the Absolute Nodal Coordinates. Nonlinear Dynamics, 2003, 31, 167-195. | 2.7 | 127 |
| 10 | Title is missing!. Multibody System Dynamics, 2001, 5, 21-54. | 1.7 | 109 |
| 11 | On the Computer Formulations of the Wheel/Rail Contact Problem. Nonlinear Dynamics, 2005, 40, 169-193. | 2.7 | 102 |
| 12 | Nonlinear dynamics of three-dimensional belt drives using the finite-element method. Nonlinear Dynamics, 2007, 48, 449-466. | 2.7 | 102 |
| 13 | Implicit and explicit integration in the solution ofÂtheÂabsolute nodal coordinate differential/algebraic equations. Nonlinear Dynamics, 2008, 54, 283-296. | 2.7 | 102 |
| 14 | Flexible Multibody Simulation and Choice of Shape Functions. Nonlinear Dynamics, 1999, 20, 361-380. | 2.7 | 95 |
| 15 | Three-dimensional absolute nodal co-ordinate formulation: plate problem. International Journal for Numerical Methods in Engineering, 1997, 40, 2775-2790. | 1.5 | 88 |
| 16 | Title is missing!. Multibody System Dynamics, 2002, 7, 357-387. | 1.7 | 83 |
| 17 | A Survey of Rail Vehicle Track Simulations and Flexible Multibody Dynamics. Nonlinear Dynamics, 2001, 26, 179-212. | 2.7 | 79 |
| 18 | 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. | 1.7 | 77 |

| # | ARTICLE | IF | CITATIONS |
|---|---------|----|-----------| 
| 19 | Integration of B-spline geometry and ANCF finite element analysis. Nonlinear Dynamics, 2010, 61, 193-206. | 2.7 | 70 |
| 20 | Pantograph/Catenary Contact Formulations. Journal of Vibration and Acoustics, Transactions of the ASME, 2017, 139, . | 1.0 | 67 |
| 21 | Locking alleviation in the large displacement analysis of beam elements: the strain split method. Acta Mechanica, 2018, 229, 2923-2946. | 1.1 | 66 |
| 22 | On the integration of computer aided design and analysis using the finite element absolute nodal coordinate formulation. Multibody System Dynamics, 2009, 22, 181-197. | 1.7 | 65 |
| 23 | Three-Dimensional Large Deformation Analysis of the Multibody Pantograph/Catenary Systems. Nonlinear Dynamics, 2005, 42, 199-215. | 2.7 | 62 |
| 24 | Title is missing!. Nonlinear Dynamics, 2001, 24, 183-204. | 2.7 | 53 |
| 25 | A rational finite element method based on the absolute nodal coordinate formulation. Nonlinear Dynamics, 2009, 58, 565-572. | 2.7 | 50 |
| 26 | Definition of ANCF Finite Elements. Journal of Computational and Nonlinear Dynamics, 2015, 10, . | 0.7 | 49 |
| 27 | A Non-Incremental Nonlinear Finite Element Solution for Cable Problems. Journal of Mechanical Design, Transactions of the ASME, 2003, 125, 746-756. | 1.7 | 48 |
| 28 | Poisson modes and general nonlinear constitutive models in the large displacement analysis of beams. Multibody System Dynamics, 2007, 18, 375-396. | 1.7 | 47 |
| 29 | Analysis of warping deformation modes using higher order ANCF beam element. Journal of Sound and Vibration, 2016, 363, 428-445. | 2.1 | 47 |
| 30 | Use of independent rotation field in the large displacement analysis of beams. Nonlinear Dynamics, 2014, 76, 1829-1843. | 2.7 | 46 |
| 31 | 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. | 1.7 | 44 |
| 32 | Sparse matrix implicit numerical integration of the Stiff differential/algebraic equations: Implementation. Nonlinear Dynamics, 2011, 65, 369-382. | 2.7 | 42 |
| 33 | A nonlinear visco-elastic constitutive model for large rotation finite element formulations. Multibody System Dynamics, 2011, 26, 57-79. | 1.7 | 40 |
| 34 | Use of independent volume parameters in the development of new large displacement ANCF triangular plate/shell elements. Nonlinear Dynamics, 2018, 91, 2171-2202. | 2.7 | 40 |
| 35 | 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. | 0.9 | 39 |
| 36 | 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. | 2.7 | 38 |

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|---|---------|-----|-----------|
| 37 | A two-dimensional shear deformable ANCF consistent rotation-based formulation beam element. Nonlinear Dynamics, 2017, 87, 1031-1043. | 2.7 | 38 |
| 38 | Modelling of structural flexiblity in multibody railroad vehicle systems. Vehicle System Dynamics, 2013, 51, 1027-1058. | 2.2 | 37 |
| 39 | A New ANCF/CRBF Fully Parameterized Plate Finite Element. Journal of Computational and Nonlinear Dynamics, 2017, 12, . | 0.7 | 37 |
| 40 | Rational ANCF Thin Plate Finite Element. Journal of Computational and Nonlinear Dynamics, 2016, 11, . | 0.7 | 36 |
| 41 | On the formulation of the planar ANCF triangular finite elements. Nonlinear Dynamics, 2017, 89, 1019-1045. | 2.7 | 36 |
| 42 | Coupled Deformation Modes in the Large Deformation Finite-Element Analysis: Problem Definition. Journal of Computational and Nonlinear Dynamics, 2007, 2, 146-154. | 0.7 | 35 |
| 43 | 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. | 0.5 | 35 |
| 44 | Nonstructural geometric discontinuities in finite element/multibody system analysis. Nonlinear Dynamics, 2011, 66, 809-824. | 2.7 | 34 |
| 45 | Development of ANCF tetrahedral finite elements for the nonlinear dynamics of flexible structures. Nonlinear Dynamics, 2017, 89, 2905-2932. | 2.7 | 31 |
| 46 | Comparison between ANCF and B-spline surfaces. Multibody System Dynamics, 2013, 30, 119-138. | 1.7 | 29 |
| 47 | ANCF Tire Assembly Model for Multibody System Applications. Journal of Computational and Nonlinear Dynamics, 2015, 10, . | 0.7 | 27 |
| 48 | 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. | 0.5 | 27 |
| 49 | Slope discontinuities in the finite element absolute nodal coordinate formulation: gradient deficient elements. Multibody System Dynamics, 2008, 20, 239-249. | 1.7 | 25 |
| 50 | 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. | 1.3 | 25 |
| 51 | A comparative study of joint formulations: application to multibody system tracked vehicles. Nonlinear Dynamics, 2013, 74, 783-800. | 2.7 | 24 |
| 52 | 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. | 1.7 | 23 |
| 53 | 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. | 1.3 | 23 |
| 54 | Nonlinear dynamic analysis of parabolic leaf springs using ANCF geometry and data acquisition. Nonlinear Dynamics, 2018, 93, 2487-2515. | 2.7 | 23 |

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| 55 | Rational Finite Elements and Flexible Body Dynamics. Journal of Vibration and Acoustics, Transactions of the ASME, 2010, 132, . | 1.0 | 22 |
| 56 | 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. | 1.3 | 22 |
| 57 | Curvature Expressions for the Large Displacement Analysis of Planar Beam Motions. Journal of Computational and Nonlinear Dynamics, 2018, 13, . | 0.7 | 22 |
| 58 | Use of General Nonlinear Material Models in Beam Problems: Application to Belts and Rubber Chains. Journal of Computational and Nonlinear Dynamics, 2010, 5, . | 0.7 | 21 |
| 59 | A Total Lagrangian ANCF Liquid Sloshing Approach for Multibody System Applications. Journal of Computational and Nonlinear Dynamics, 2015, 10, . | 0.7 | 21 |
| 60 | Continuum-Based Geometry/Analysis Approach for Flexible and Soft Robotic Systems. Soft Robotics, 2018, 5, 613-621. | 4.6 | 20 |
| 61 | Prediction of the Pantograph/Catenary Wear Using Nonlinear Multibody System Dynamic Algorithms. Journal of Tribology, 2019, 141, . | 1.0 | 20 |
| 62 | Integration of Large Deformation Finite Element and Multibody System Algorithms. Journal of Computational and Nonlinear Dynamics, 2007, 2, 351-359. | 0.7 | 18 |
| 63 | Generalization of the strain-split method and evaluation of the nonlinear ANCF finite elements. Acta Mechanica, 2020, 231, 1365-1376. | 1.1 | 18 |
| 64 | Study of the ligament tension and cross-section deformation using nonlinear finite element/multibody system algorithms. Multibody System Dynamics, 2010, 23, 227-248. | 1.7 | 17 |
| 65 | Numerical study of the noninertial systems: application to train coupler systems. Nonlinear Dynamics, 2012, 68, 215-233. | 2.7 | 17 |
| 66 | Spatial ANCF/CRBF beam elements. Acta Mechanica, 2019, 230, 929-952. | 1.1 | 17 |
| 67 | Motion and shape control of soft robots and materials. Nonlinear Dynamics, 2021, 104, 165-189. | 2.7 | 17 |
| 68 | Soil Models and Vehicle System Dynamics. Applied Mechanics Reviews, 2013, 65, . | 4.5 | 16 |
| 69 | Analysis of high-frequency ANCF modes: Navier–Stokes physical damping and implicit numerical integration. Acta Mechanica, 2019, 230, 2581-2605. | 1.1 | 16 |
| 70 | Clamped end conditions and cross section deformation in the finite element absolute nodal coordinate formulation. Multibody System Dynamics, 2009, 21, 375-393. | 1.7 | 15 |
| 71 | Uniqueness of the Geometric Representation in Large Rotation Finite Element Formulations. Journal of Computational and Nonlinear Dynamics, 2010, 5, . | 0.7 | 15 |
| 72 | Evaluation of breaking wave effects in liquid sloshing problems: ANCF/SPH comparative study. Nonlinear Dynamics, 2019, 97, 45-62. | 2.7 | 15 |

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| 73 | Rotation-based finite elements: reference-configuration geometry and motion description. Acta Mechanica Sinica/Lixue Xuebao, 2021, 37, 105-126. | 1.5 | 15 |
| 74 | A nonlinear approach for modeling rail flexibility using the absolute nodal coordinate formulation. Nonlinear Dynamics, 2016, 83, 463-481. | 2.7 | 14 |
| 75 | A new nonlinear multibody/finite element formulation forÂknee joint ligaments. Nonlinear Dynamics, 2010, 60, 357-367. | 2.7 | 13 |
| 76 | Low Order Continuum-Based Liquid Sloshing Formulation for Vehicle System Dynamics. Journal of Computational and Nonlinear Dynamics, 2015, 10, . | 0.7 | 13 |
| 77 | Integration of Geometry and Analysis for Vehicle System Applications: Continuum-Based Leaf Spring and Tire Assembly. Journal of Computational and Nonlinear Dynamics, 2016, 11, . | 0.7 | 13 |
| 78 | 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. | 0.5 | 13 |
| 79 | ANCF curvature continuity: application to soft and fluid materials. Nonlinear Dynamics, 2020, 100, 1497-1517. | 2.7 | 13 |
| 80 | On the Use of the Restitution Condition in Flexible Body Dynamics. Nonlinear Dynamics, 2002, 30, 71-86. | 2.7 | 12 |
| 81 | Analytical and numerical investigation of wheel climb at large angle of attack. Nonlinear Dynamics, 2016, 83, 555-577. | 2.7 | 12 |
| 82 | Coupled Deformation Modes in the Large Deformation Finite Element Analysis: Generalization. Journal of Computational and Nonlinear Dynamics, 2009, 4, . | 0.7 | 11 |
| 83 | General Method for Modeling Slope Discontinuities and T-Sections Using ANCF Gradient Deficient Finite Elements. Journal of Computational and Nonlinear Dynamics, 2011, 6, . | 0.7 | 11 |
| 84 | Nadalâ€™s Formula and High Speed Rail Derailments. Journal of Computational and Nonlinear Dynamics, 2012, 7, . | 0.7 | 11 |
| 85 | Ideal Compliant Joints and Integration of Computer Aided Design and Analysis. Journal of Computational and Nonlinear Dynamics, 2015, 10, . | 0.7 | 11 |
| 86 | Frenet oscillations and Frenetâ€"Euler angles: curvature singularity and motion-trajectory analysis. Nonlinear Dynamics, 2021, 106, 1-19. | 2.7 | 11 |
| 87 | ANCF Finite Element/Multibody System Formulation of the Ligament/Bone Insertion Site Constraints. Journal of Computational and Nonlinear Dynamics, 2010, 5, . | 0.7 | 10 |
| 88 | Modeling railroad track structures using the finite segment method. Acta Mechanica, 2012, 223, 1707-1721. | 1.1 | 10 |
| 89 | Effect of the Linearization of the Kinematic Equations in Railroad Vehicle System Dynamics. Journal of Computational and Nonlinear Dynamics, 2006, 1, 25-34. | 0.7 | 9 |
| 90 | A velocity transformation method for the nonlinear dynamic simulation of railroad vehicle systems. Nonlinear Dynamics, 2007, 51, 289-307. | 2.7 | 9 |

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| 91 | Relative orientation constraints in the nonlinear large displacement analysis: application to soft materials. Nonlinear Dynamics, 2020, 101, 2551-2575. | 2.7 | 9 |
| 92 | Geometry and differentiability requirements in multibody railroad vehicle dynamic formulations. Nonlinear Dynamics, 2006, 47, 249-261. | 2.7 | 8 |
| 93 | Numerical investigation of the slope discontinuities in large deformation finite element formulations. Nonlinear Dynamics, 2009, 58, 23-37. | 2.7 | 8 |
| 94 | Use of Finite Element and Finite Segment Methods in Modeling Rail Flexibility: A Comparative Study. Journal of Computational and Nonlinear Dynamics, 2012, 7, . | 0.7 | 8 |
| 95 | A Simple Procedure for the Solution of Three-Dimensional Wheel/Rail Conformal Contact Problem. Journal of Computational and Nonlinear Dynamics, 2014, 9, . | 0.7 | 8 |
| 96 | Mixed-Coordinate ANCF Rectangular Plate Finite Element. Journal of Computational and Nonlinear Dynamics, 2015, 10, . | 0.7 | 8 |
| 97 | Development and implementation of geometrically accurate reduced-order models: Convergence properties of planar beams. Journal of Sound and Vibration, 2019, 439, 457-478. | 2.1 | 8 |
| 98 | Cross-section deformation, geometric stiffening, and locking in the nonlinear vibration analysis of beams. Nonlinear Dynamics, 2022, 108, 1425-1445. | 2.7 | 8 |
| 99 | Use of Plasticity Theory in Flexible Multibody System Dynamics. , 2003, , 219. | | 7 |
| 100 | Pantograph/Catenary Contact Force Control. , 2015, , . | | 7 |
| 101 | Verification of a Total Lagrangian ANCF Solution Procedure for Fluid€"Structure Interaction Problems. Journal of Verification, Validation and Uncertainty Quantification, 2017, 2, . | 0.3 | 7 |
| 102 | Euler angles and numerical representation of the railroad track geometry. Acta Mechanica, 2021, 232, 3121-3139. | 1.1 | 7 |
| 103 | Characterization and quantification of railroad spiral-joint discontinuities. Mechanics Based Design of Structures and Machines, 2022, 50, 1-25. | 3.4 | 7 |
| 104 | Automated visco-elastic analysis of large scale inertia-variant spatial vehicles. Computers and Structures, 1986, 22, 165-178. | 2.4 | 6 |
| 105 | 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. | 0.5 | 6 |
| 106 | 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. | 0.5 | 5 |
| 107 | ANCF Multiplicative-Decomposition Thermoelastic Approach for Arbitrary Geometry. Journal of Structural Engineering, 2021, 147, . | 1.7 | 5 |
| 108 | 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. | 0.5 | 4 |

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| 109 | 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. | 0.2 | 4 |
| 110 | Deformation basis and kinematic singularities of constrained systems. Mechanics Based Design of Structures and Machines, 2019, 47, 659-679. | 3.4 | 4 |
| 111 | Geometric self-centering and force self-balancing of railroad-vehicle hunting oscillations. Acta Mechanica, 2021, 232, 3323-3329. | 1.1 | 4 |
| 112 | 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. | 1.7 | 3 |
| 113 | Trajectory Coordinate Constraints in Multibody Railroad Vehicle Systems. Journal of System Design and Dynamics, 2007, 1, 481-490. | 0.3 | 3 |
| 114 | ANCF Continuum-Based Soil Plasticity for Wheeled Vehicle Off-Road Mobility. Journal of Computational and Nonlinear Dynamics, 2016, 11, . | 0.7 | 3 |
| 115 | Frenet force analysis in performance evaluation of railroad vehicle systems. Acta Mechanica, 2021, 232, 4235-4259. | 1.1 | 3 |
| 116 | Non-Linear Dynamics of Multibody Systems with Generalized and Non-Generalized Coordinates. , 2003, , 1-16. | | 3 |
| 117 | Development of Geometrically Accurate Continuum-Based Tire Models for Virtual Testing. Journal of Computational and Nonlinear Dynamics, 2019, 14, . | 0.7 | 3 |
| 118 | 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. | 3.4 | 2 |
| 119 | Dynamics of Flexible Body Negotiating a Curve. Journal of Computational and Nonlinear Dynamics, 2016, 11, . | 0.7 | 1 |
| 120 | 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. | 0.5 | 1 |
| 121 | Convergence Characteristics of Geometrically Accurate Spatial Finite Elements. Journal of Computational and Nonlinear Dynamics, 2021, 16, . | 0.7 | 1 |
| 122 | Torsion and vertical curvature of motion-trajectory curves. Mechanics Based Design of Structures and Machines, 0, , 1-23. | 3.4 | 1 |
| 123 | Curvature Singularity of Space Curves and Its Relationship to Computational Mechanics. , 2022, 1, . | | 1 |
| 124 | Space-curve Cartan matrix and exact differentiability of the curvature and torsion. Mechanics Based Design of Structures and Machines, 2023, 51, 63-83. | 3.4 | 1 |
| 125 | Spatial Finite Element Formulation for the Pantograph/Catenary Systems. , 2005, , 2133. | | 0 |
| 126 | A Study of the Wheel Geometry Effect on the Dynamic Behavior of Railroad Vehicles. , 2005, , 2197. | | 0 |

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| 127 | Multibody System/Finite Element Simulation of Belt Drives and Rubber Tracked Vehicles. , 2008, , . | | 0 |
| 128 | A Nonlinear Rail Vehicle Dynamics Computer Program SAMS/Rail: Part 1â€"Theory and Formulations. , 2009, , . | | 0 |
| 129 | Use of General Nonlinear Material Models in Beam Problems: Application to Belt and Rubber Chains. , 2009, , . | | 0 |
| 130 | Accurate Representation of the Rail Geometry for Multibody System Applications. Journal of Computational and Nonlinear Dynamics, 2010, 5, . | 0.7 | 0 |
| 131 | Ideal Compliant Joints and Integration of Computer Aided Design and Analysis. , 2014, , . | | 0 |
| 132 | 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. | 0.5 | 0 |