Gregory S Chirikjian

List of Publications by Year
in descending order

132 papers	4,398 citations	185998 28 h-index	123241 61 g-index
136 all docs	136 docs citations	136 times ranked	2866 citing authors

#	Article	IF	Citations
1	Abstract noncommutative Fourier series on $\Gamma \setminus SE(2)$. Pure and Applied Mathematics Quarterly, 2022, 18, 71-100.	0.2	0
2	Rate of Entropy Production in Stochastic Mechanical Systems. Entropy, 2022, 24, 19.	1.1	1
3	Collision Detection for Unions of Convex Bodies With Smooth Boundaries Using Closed-Form Contact Space Parameterization. IEEE Robotics and Automation Letters, 2022, 7, 9485-9492.	3.3	4
4	Put the Bear on the Chair! Intelligent Robot Interaction with Previously Unseen Chairs via Robot Imagination. , 2022, , .		0
5	ECHO: Extended Convolution Histogram of Orientations for Local Surface Description. Computer Graphics Forum, 2021, 40, 180-194.	1.8	2
6	An enhanced moment-based approach to time-dependent positional reliability analysis for robotic manipulators. Mechanism and Machine Theory, 2021, 156, 104167.	2.7	25
7	Continuous body 3-D reconstruction of limbless animals. Journal of Experimental Biology, 2021, 224, .	0.8	5
8	Lie group solutions of advection-diffusion equations. Physics of Fluids, 2021, 33, .	1.6	6
9	Applications of convex geometry to Minkowski sums of m ellipsoids in $\mathbb{R}^N$: Closed-form parametric equations and volume bounds. International Journal of Mathematics, 2021, 32, .	0.2	4
10	Fourier–Zernike series of compactly supported convolutions on $SE(2)$ Journal of Approximation Theory, 2021, 271, 105621.	0.5	2
11	Discrete spectra of convolutions of compactly supported functions on SE(2) using Sturm–Liouville theory. Integral Transforms and Special Functions, 2020, 31, 36-61.	0.8	2
12	Robotic Self-Replication. Annual Review of Control, Robotics, and Autonomous Systems, 2020, 3, 1-24.	7.5	5
13	Bundle folding type III Bricard linkages. Mechanism and Machine Theory, 2020, 144, 103663.	2.7	11
14	Lateral Oscillation and Body Compliance Help Snakes and Snake Robots Stably Traverse Large, Smooth Obstacles. Integrative and Comparative Biology, 2020, 60, 171-179.	0.9	11
15	Black-Scholes Theory and Diffusion Processes on the Cotangent Bundle of the Affine Group. Entropy, 2020, 22, 455.	1.1	4
16	Mathematical aspects of molecular replacement. V. Isolating feasible regions in motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2020, 76, 145-162.	0.0	3
17	Can I lift it? Humanoid robot reasoning about the feasibility of lifting a heavy box with unknown physical properties. , 2020, , .		8
18	Efficient Exact Collision Detection between Ellipsoids and Superquadrics via Closed-form Minkowski Sums. , 2019, , .		4

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19	The Kinematics of Containment for N-Dimensional Ellipsoids. Journal of Mechanisms and Robotics, 2019, 11, .	1.5	3
20	A simple insertion technique to reduce the bending of thinbevel-point needles. Minimally Invasive Therapy and Allied Technologies, 2019, 28, 199-205.	0.6	5
21	Sensorless Pose Determination using Randomized Action Sequences. Entropy, 2019, 21, 154.	1.1	5
22	Deployable parallel lower-mobility manipulators with scissor-like elements. Mechanism and Machine Theory, 2019, 135, 226-250.	2.7	34
23	Ito, Stratonovich and Geometry. , 2019, , .		0
24	Quotienting Impertinent Camera Kinematics for 3D Video Stabilization. , 2019, , .		3
25	Mosquito Pick-and-Place: Automating a Key Step in PfSPZ-based Malaria Vaccine Production. , 2019, , .		4
26	Mosquito Staging Apparatus for Producing PfSPZ Malaria Vaccines. , 2019, , .		4
27	Multi-Mosquito Object Detection and 2D Pose Estimation for Automation of PfSPZ Malaria Vaccine Production. , 2019, , .		7
28	Pose Changes From a Different Point of View. Journal of Mechanisms and Robotics, 2018, 10, .	1.5	13
29	Probabilistic approaches to the $$ AXB = YCZ $$ calibration problem in multi-robot systems. Autonomous Robots, 2018, 42, 1497-1520.	3.2	30
30	Symmetrical Parameterization of Rigid Body Transformations for Biomolecular Structures. Journal of Computational Biology, 2018, 25, 72-88.	0.8	1
31	The Globally Optimal Reparameterization Algorithm: An Alternative to Fast Dynamic Time Warping for Action Recognition in Video Sequences. , 2018, , .		4
32	Signal Alignment for Humanoid Skeletons via the Globally Optimal Reparameterization Algorithm. , 2018, , .		5
33	Fourierâ€"Zernike Series of Convolutions on Disks. Mathematics, 2018, 6, 290.	1.1	6
34	From Wirtinger to Fisher Information Inequalities on Spheres and Rotation Groups. , 2018, , .		2
35	Analysis of a mechanism with redundant drive for antenna pointing. Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering, 2017, 231, 229-239.	0.7	6
36	A 3D Localization Approach for Subsea Pipelines Using a Spherical Detector. IEEE Sensors Journal, 2017, 17, 1828-1836.	2.4	23

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37	Cross-Validation of Data Compatibility Between Small Angle X-ray Scattering and Cryo-Electron Microscopy. Journal of Computational Biology, 2017, 24, 13-30.	0.8	9
38	Signal Classification in Quotient Spaces via Globally Optimal Variational Calculus. , 2017, , .		4
39	Mathematical aspects of molecular replacement. IV. Measure-theoretic decompositions of motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2017, 73, 387-402.	0.0	3
40	New probabilistic approaches to the AX = XB hand-eye calibration without correspondence. , 2016, , .		6
41	Collision-free configuration-spaces in macromolecular crystals. Robotica, 2016, 34, 1679-1704.	1.3	5
42	Symmetrical rigid body parameterization for biomolecular structures. , 2016, , .		1
43	Inverse kinematic solutions of 6-D.O.F. biopolymer segments. Robotica, 2016, 34, 1734-1753.	1.3	6
44	Symmetrical rigid body parameterizations for humanoid robots. , 2016, , .		0
45	Simultaneous Hand-Eye and Robot-World Calibration by Solving the $AX=YB$ Problem Without Correspondence. IEEE Robotics and Automation Letters, 2016, 1, 145-152.	3.3	53
46	Computational Analysis of SAXS Data Acquisition. Journal of Computational Biology, 2015, 22, 787-805.	0.8	3
47	Cross-validation of data in SAXS and cryo-EM. , 2015, , .		2
48	Partial Bi-Invariance of SE(3) Metrics1. Journal of Computing and Information Science in Engineering, 2015, 15, .	1.7	8
49	A Computational Modeling of Macromolecular Assemblies in SAXS. Biophysical Journal, 2015, 108, 619a.	0.2	0
50	Analysis of angular-error uncertainty in planar multiple-loop structures with joint clearances. Mechanism and Machine Theory, 2015, 91, 69-85.	2.7	62
51	Closed-form characterization of the Minkowski sum and difference of two ellipsoids. Geometriae Dedicata, 2015, 177, 103-128.	0.1	26
52	Position and Orientation Distributions for Non-Reversal Random Walks using Space-Group Fourier Transforms. Journal of Algebraic Statistics, 2015, 1, 27-46.	0.6	2
53	Gaussian approximation of non-linear measurement models on Lie groups. , 2014, , .		20
54	Online ultrasound sensor calibration using gradient descent on the Euclidean Group. , 2014, , .		25

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55	An information-theoretic approach to the correspondence-free AX&#x003D;XB sensor calibration problem. , 2014, , .		14
56	An architecture for universal construction via modular robotic components. Robotics and Autonomous Systems, 2014, 62, 945-965.	3.0	24
57	An Assembly Automation Approach to Alignment of Noncircular Projections in Electron Microscopy. IEEE Transactions on Automation Science and Engineering, 2014, 11, 668-679.	3.4	14
58	Signal Detection on Euclidean Groups: Applications to DNA Bends, Robot Localization, and Optical Communication. IEEE Journal on Selected Topics in Signal Processing, 2013, 7, 708-719.	7.3	3
59	Workspace density and inverse kinematics for planar serial revolute manipulators. Mechanism and Machine Theory, 2013, 70, 508-522.	2.7	21
60	Framed curves and knotted DNA. Biochemical Society Transactions, 2013, 41, 635-638.	1.6	9
61	Ultrasound Probe and Needle-Guide Calibration for Robotic Ultrasound Scanning and Needle Targeting. IEEE Transactions on Biomedical Engineering, 2013, 60, 1728-1734.	2.5	40
62	Sensor calibration with unknown correspondence: Solving AX=XB using Euclidean-group invariants. , 2013, , .		19
63	Constrained workspace generation for snake-like manipulators with applications to minimally invasive surgery. , 2013, , .		22
64	Voronoi cells in lie groups and coset decompositions: Implications for optimization, integration, and fourier analysis. , 2013, , .		3
65	Quantitative Comparison of Conformational Ensembles. Entropy, 2012, 14, 213-232.	1.1	11
66	M<sup>3</sup>Express: A low-cost independently-mobile reconfigurable modular robot. , 2012, , .		25
67	Almost-uniform sampling of rotations for conformational searches in Robotics and Structural Biology. , 2012, , .		6
68	Hex-DMR: A modular robotic test-bed for demonstrating team repair. , 2012, , .		5
69	Mathematical aspects of molecular replacement. II. Geometry of motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2012, 68, 208-221.	0.3	10
70	Multiscale Modeling of Double-Helical DNA and RNA: A Unification through Lie Groups. Journal of Physical Chemistry B, 2012, 116, 8556-8572.	1.2	15
71	A stochastic kinematic model of class averaging in single-particle electron microscopy. International Journal of Robotics Research, 2011, 30, 730-754.	5.8	28
72	Mathematical aspects of molecular replacement. I. Algebraic properties of motion spaces. Acta Crystallographica Section A: Foundations and Advances, 2011, 67, 435-446.	0.3	11

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73	Modeling Loop Entropy. Methods in Enzymology, 2011, 487, 99-132.	0.4	19
74	A stochastic self-replicating robot capable of hierarchical assembly. Robotica, 2011, 29, 137-152.	1.3	6
75	The Path-of-probability Algorithm for Steering and Feedback Control of Flexible Needles. International Journal of Robotics Research, 2010, 29, 813-830.	5.8	72
76	Equilibrium Conformations of Concentric-tube Continuum Robots. International Journal of Robotics Research, 2010, 29, 1263-1280.	5.8	181
77	An autonomous robot that duplicates itself from low-complexity components. , 2010, , .		2
78	Group theory and biomolecular conformation: I. Mathematical and computational models. Journal of Physics Condensed Matter, 2010, 22, 323103.	0.7	18
79	Information theory on Lie groups and mobile robotics applications. , 2010, , .		17
80	Information-theoretic inequalities on unimodular Lie groups. Journal of Geometric Mechanics, 2010, 2, 119-158.	0.5	18
81	Iterative clusterâ€NMA: A tool for generating conformational transitions in proteins. Proteins: Structure, Function and Bioinformatics, 2009, 74, 760-776.	1.5	36
82	Accurate Image Rotation Using Hermite Expansions. IEEE Transactions on Image Processing, 2009, 18, 1988-2003.	6.0	18
83	Simple components for a reconfigurable modular robotic system. , 2009, , .		3
84	A Jacobian-Based Algorithm for Planning Attitude Maneuvers Using Forward and Reverse Rotations. Journal of Computational and Nonlinear Dynamics, 2009, 4, .	0.7	0
85	Position and orientation distributions for locally self-avoiding walks in the presence of obstacles. Polymer, 2008, 49, 1701-1715.	1.8	6
86	The stochastic elastica and excluded-volume perturbations of DNA conformational ensembles. International Journal of Non-Linear Mechanics, 2008, 43, 1108-1120.	1.4	7
87	Tomographic reconstruction of band-limited hermite expansions. Proceedings of SPIE, 2008, 6913, .	0.8	2
88	Nonparametric Second-order Theory of Error Propagation on Motion Groups. International Journal of Robotics Research, 2008, 27, 1258-1273.	5.8	90
89	Parts entropy and the principal kinematic formula. , 2008, , .		9
90	Toward Cooperative Team-diagnosis in Multi-robot Systems. International Journal of Robotics Research, 2008, 27, 1069-1090.	5.8	18

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91	Robotic Self-replication in Structured Environments: Physical Demonstrations and Complexity Measures. International Journal of Robotics Research, 2008, 27, 387-401.	5.8	31
92	Kinematic state estimation and motion planning for stochastic nonholonomic systems using the exponential map. Robotica, 2008, 26, 419-434.	1.3	78
93	O(n) mass matrix inversion for serial manipulators and polypeptide chains using Lie derivatives. Robotica, 2007, 25, 739-750.	1.3	11
94	Robotic Self-Replication in a Structured Environment without Computer Control. , 2007, , .		7
95	Interconversion Between Truncated Cartesian and Polar Expansions of Images. IEEE Transactions on Image Processing, 2007, 16, 1946-1955.	6.0	15
96	Torsional random-walk statistics on lattices using convolution on crystallographic motion groups. Polymer, 2007, 48, 2155-2173.	1.8	4
97	Robotic self-replication. IEEE Robotics and Automation Magazine, 2007, 14, .	2.2	5
98	Modular Self-Reconfigurable Robot Systems [Grand Challenges of Robotics]. IEEE Robotics and Automation Magazine, 2007, 14, 43-52.	2.2	851
99	Uniformly Interpolated Elements of SE(3) and their Application to Manipulator Design. , 2006, , .		2
100	Conformational Statistics of Semiflexible Macromolecular Chains with Internal Joints. Macromolecules, 2006, 39, 1950-1960.	2.2	24
101	Conformational analysis of stiff chiral polymers with end-constraints. Molecular Simulation, 2006, 32, 1139-1154.	0.9	33
102	A method for finding candidate conformations for molecular replacement using relative rotation between domains of a known structure. Acta Crystallographica Section D: Biological Crystallography, 2006, 62, 398-409.	2.5	12
103	Analysis and Design of Protein Based Nanodevices: Challenges and Opportunities in Mechanical Design. Journal of Mechanical Design, Transactions of the ASME, 2005, 127, 695-698.	1.7	28
104	Efficient determination of low-frequency normal modes of large protein structures by cluster-NMA. Journal of Molecular Graphics and Modelling, 2005, 24, 46-58.	1.3	34
105	FTRAC-A robust fluoroscope tracking fiducial. Medical Physics, 2005, 32, 3185-3198.	1.6	70
106	Matching and reconstruction of brachytherapy seeds using the Hungarian algorithm (MARSHAL). Medical Physics, 2005, 32, 3475-3492.	1.6	56
107	Rigid-Cluster Models of Conformational Transitions in Macromolecular Machines and Assemblies. Biophysical Journal, 2005, 89, 43-55.	0.2	79
108	Analysis of the conformational dependence of mass-metric tensor determinants in serial polymers with constraints. Journal of Chemical Physics, 2004, 121, 12708.	1.2	22

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109	ROTATIONAL MATCHING PROBLEMS. International Journal of Computational Intelligence and Applications, 2004, 04, 401-416.	0.6	7
110	Normal mode analysis of proteins: a comparison of rigid cluster modes with Cα coarse graining. Journal of Molecular Graphics and Modelling, 2004, 22, 183-193.	1.3	47
111	Interhelical Angle and Distance Preferences in Globular Proteins. Biophysical Journal, 2004, 86, 1105-1117.	0.2	24
112	A methodology for determining mechanical properties of macromolecules from ensemble motion data. TrAC - Trends in Analytical Chemistry, 2003, 22, 549-553.	5.8	12
113	A Comparison Between Elastic Network Interpolation and MD Simulation of 16S Ribosomal RNA. Journal of Biomolecular Structure and Dynamics, 2003, 21, 395-405.	2.0	30
114	Conformational statistics of bent semiflexible polymers. Journal of Chemical Physics, 2003, 119, 4962-4970.	1.2	26
115	Numerical algorithms for spatial registration of line fiducials from cross-sectional images. Medical Physics, 2002, 29, 1881-1891.	1.6	34
116	Efficient Generation of Feasible Pathways for Protein Conformational Transitions. Biophysical Journal, 2002, 83, 1620-1630.	0.2	163
117	Elastic models of conformational transitions in macromolecules. Journal of Molecular Graphics and Modelling, 2002, 21, 151-160.	1.3	117
118	Design and analysis of some nonanthropomorphic, biologically inspired robots: An overview. Journal of Field Robotics, 2001, 18, 701-713.	0.7	19
119	Modular Robot Motion Planning Using Similarity Metrics. Autonomous Robots, 2001, 10, 91-106.	3.2	83
120	A new inverse kinematics algorithm for binary manipulators with many actuators. Advanced Robotics, 2001, 15, 225-244.	1.1	36
121	Algorithms for Fast Convolutions on Motion Groups. Applied and Computational Harmonic Analysis, 2000, 9, 220-241.	1.1	21
122	An operational calculus for the euclidean motion group with applications in robotics and polymer science. Journal of Fourier Analysis and Applications, 2000, 6, 583-606.	0.5	26
123	Conformational statistics of stiff macromolecules as solutions to partial differential equations on the rotation and motion groups. Physical Review E, 2000, 62, 880-892.	0.8	37
124	Pattern Matching as a Correlation on the Discrete Motion Group. Computer Vision and Image Understanding, 1999, 74, 22-35.	3.0	19
125	Regularized Solutions of a Nonlinear Convolution Equation on the Euclidean Group. Acta Applicandae Mathematicae, 1998, 53, 89-123.	0.5	10
126	Discretely Actuated Manipulator Workspace Generation by Closed Form Convolution. Journal of Mechanical Design, Transactions of the ASME, 1998, 120, 245-251.	1.7	11

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127	Inverse Kinematics of Binary Manipulators Using a Continuum Model. Journal of Intelligent and Robotic Systems: Theory and Applications, 1997, 19, 5-22.	2.0	39
128	Evaluating efficiency of self-reconfiguration in a class of modular robots. Journal of Field Robotics, 1996, 13, 317-338.	0.7	127
129	Efficient workspace generation for binary manipulators with many actuators. Journal of Field Robotics, 1995, 12, 383-400.	0.7	54
130	Hyper-redundant manipulator dynamics: a continuum approximation. Advanced Robotics, 1994, 9, 217-243.	1.1	146
131	Fourier–Bessel series of compactly supported convolutions on disks. Analysis and Applications, 0, , 1-22.	1.2	3
132	Entropy, symmetry, and the difficulty of self-replication. Artificial Life and Robotics, 0, , 1.	0.7	1