

Amit Singer

List of Publications by Year in descending order

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84
papers

3,260
citations

159358

30
h-index

174990

52
g-index

85
all docs

85
docs citations

85
times ranked

1750
citing authors

#	ARTICLE	IF	CITATIONS
1	Angular synchronization by eigenvectors and semidefinite programming. Applied and Computational Harmonic Analysis, 2011, 30, 20-36.	1.1	234
2	A survey of structure from motion.. Acta Numerica, 2017, 26, 305-364.	6.3	234
3	Vector diffusion maps and the connection Laplacian. Communications on Pure and Applied Mathematics, 2012, 65, 1067-1144.	1.2	154
4	Graph Laplacian Tomography From Unknown Random Projections. IEEE Transactions on Image Processing, 2008, 17, 1891-1899.	6.0	142
5	Non-linear independent component analysis with diffusion maps. Applied and Computational Harmonic Analysis, 2008, 25, 226-239.	1.1	140
6	Global Motion Estimation from Point Matches. , 2012, , .		114
7	Detecting intrinsic slow variables in stochastic dynamical systems by anisotropic diffusion maps. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 16090-16095.	3.3	113
8	Single-Particle Cryo-Electron Microscopy: Mathematical Theory, Computational Challenges, and Opportunities. IEEE Signal Processing Magazine, 2020, 37, 58-76.	4.6	84
9	A remark on global positioning from local distances. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 9507-9511.	3.3	80
10	Rotationally invariant image representation for viewing direction classification in cryo-EM. Journal of Structural Biology, 2014, 186, 153-166.	1.3	79
11	Diffusion Interpretation of Nonlocal Neighborhood Filters for Signal Denoising. SIAM Journal on Imaging Sciences, 2009, 2, 118-139.	1.3	76
12	Uniqueness of Low-Rank Matrix Completion by Rigidity Theory. SIAM Journal on Matrix Analysis and Applications, 2010, 31, 1621-1641.	0.7	72
13	A Cheeger Inequality for the Graph Connection Laplacian. SIAM Journal on Matrix Analysis and Applications, 2013, 34, 1611-1630.	0.7	69
14	Robust camera location estimation by convex programming. , 2015, , .		67
15	Tightness of the maximum likelihood semidefinite relaxation for angular synchronization. Mathematical Programming, 2017, 163, 145-167.	1.6	66
16	Decoding Binary Node Labels from Censored Edge Measurements: Phase Transition and Efficient Recovery. IEEE Transactions on Network Science and Engineering, 2014, 1, 10-22.	4.1	61
17	Bispectrum Inversion With Application to Multireference Alignment. IEEE Transactions on Signal Processing, 2018, 66, 1037-1050.	3.2	61
18	Non-Local Euclidean Medians. IEEE Signal Processing Letters, 2012, 19, 745-748.	2.1	60

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19	Viewing Direction Estimation in Cryo-EM Using Synchronization. SIAM Journal on Imaging Sciences, 2012, 5, 1088-1110.	1.3	59
20	Viewing Angle Classification of Cryo-Electron Microscopy Images Using Eigenvectors. SIAM Journal on Imaging Sciences, 2011, 4, 723-759.	1.3	53
21	Denoising and covariance estimation of single particle cryo-EM images. Journal of Structural Biology, 2016, 195, 72-81.	1.3	51
22	Cramer-Rao bounds for synchronization of rotations. Information and Inference, 2014, 3, 1-39.	0.9	50
23	Computational Methods for Single-Particle Electron Cryomicroscopy. Annual Review of Biomedical Data Science, 2020, 3, 163-190.	2.8	49
24	Detecting consistent common lines in cryo-EM by voting. Journal of Structural Biology, 2010, 169, 312-322.	1.3	47
25	Fast Steerable Principal Component Analysis. IEEE Transactions on Computational Imaging, 2016, 2, 1-12.	2.6	47
26	Ionic diffusion through confined geometries: from Langevin equations to partial differential equations. Journal of Physics Condensed Matter, 2004, 16, S2153-S2165.	0.7	42
27	Multireference alignment using semidefinite programming. , 2014, , .		42
28	Eigenvector synchronization, graph rigidity and the molecule problem. Information and Inference, 2012, 1, 21-67.	0.9	41
29	Cryo-EM reconstruction of continuous heterogeneity by Laplacian spectral volumes. Inverse Problems, 2020, 36, 024003.	1.0	41
30	The Sample Complexity of Multireference Alignment. SIAM Journal on Mathematics of Data Science, 2019, 1, 497-517.	1.0	40
31	Fourierâ€™Bessel rotational invariant eigenimages. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2013, 30, 871.	0.8	38
32	Orientation Determination of Cryo-EM Images Using Least Unsquared Deviations. SIAM Journal on Imaging Sciences, 2013, 6, 2450-2483.	1.3	37
33	APPLE picker: Automatic particle picking, a low-effort cryo-EM framework. Journal of Structural Biology, 2018, 204, 215-227.	1.3	35
34	Structural Variability from Noisy Tomographic Projections. SIAM Journal on Imaging Sciences, 2018, 11, 1441-1492.	1.3	34
35	Stable Camera Motion Estimation Using Convex Programming. SIAM Journal on Imaging Sciences, 2015, 8, 1220-1262.	1.3	32
36	Two-Dimensional Tomography from Noisy Projections Taken at Unknown Random Directions. SIAM Journal on Imaging Sciences, 2013, 6, 136-175.	1.3	30

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37	Method of moments for 3D single particle<i>ab initio</i> modeling with non-uniform distribution of viewing angles. Inverse Problems, 2020, 36, 044003.	1.0	30
38	Orientability and diffusion maps. Applied and Computational Harmonic Analysis, 2011, 31, 44-58.	1.1	29
39	Multireference Alignment Is Easier With an Aperiodic Translation Distribution. IEEE Transactions on Information Theory, 2019, 65, 3565-3584.	1.5	29
40	Representation theoretic patterns in three dimensional Cryo-Electron Microscopy I: The intrinsic reconstitution algorithm. Annals of Mathematics, 2011, 174, 1219-1241.	2.1	26
41	Non-unique games over compact groups and orientation estimation in cryo-EM. Inverse Problems, 2020, 36, 064002.	1.0	23
42	Reference free structure determination through eigenvectors of center of mass operators. Applied and Computational Harmonic Analysis, 2010, 28, 296-312.	1.1	22
43	Robust estimation of rotations from relative measurements by maximum likelihood. , 2013, , .		21
44	Multi-target detection with application to cryo-electron microscopy. Inverse Problems, 2019, 35, 104003.	1.0	21
45	Covariance estimation using conjugate gradient for 3D classification in CRYO-EM. , 2015, 2015, 200-204.		20
46	3D ab initio modeling in cryo-EM by autocorrelation analysis. , 2018, , .		20
47	Heterogeneous multireference alignment: A single pass approach. , 2018, , .		20
48	Representation Theoretic Patterns in Three-Dimensional Cryo-Electron Microscopy IIâ€”The Class Averaging Problem. Foundations of Computational Mathematics, 2011, 11, 589-616.	1.5	19
49	Noisy dynamic simulations in the presence of symmetry: Data alignment and model reduction. Computers and Mathematics With Applications, 2013, 65, 1535-1557.	1.4	18
50	Estimation in the Group Action Channel. , 2018, , .		18
51	Hyper-molecules: on the representation and recovery of dynamical structures for applications in flexible macro-molecules in cryo-EM. Inverse Problems, 2020, 36, 044005.	1.0	17
52	Synchronization over Cartan Motion Groups via Contraction. SIAM Journal on Applied Algebra and Geometry, 2018, 2, 207-241.	0.9	16
53	Temporal ordering and registration of images in studies of developmental dynamics. Development (Cambridge), 2015, 142, 1717-24.	1.2	15
54	Semidefinite programming approach for the quadratic assignment problem with a sparse graph. Computational Optimization and Applications, 2018, 69, 677-712.	0.9	15

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55	Heterogeneous Multireference Alignment for Images With Application to 2D Classification in Single Particle Reconstruction. IEEE Transactions on Image Processing, 2020, 29, 1699-1710.	6.0	15
56	Approximating the little Grothendieck problem over the orthogonal and unitary groups. Mathematical Programming, 2016, 160, 433-475.	1.6	14
57	Computing Steerable Principal Components of a Large Set of Images and Their Rotations. IEEE Transactions on Image Processing, 2011, 20, 3051-3062.	6.0	13
58	Spectral convergence of the connection Laplacian from random samples. Information and Inference, 2016, , iaw016.	0.9	11
59	MarÄenkoâ€™Pastur law for Tylerâ€™s M-estimator. Journal of Multivariate Analysis, 2016, 149, 114-123.	0.5	11
60	Multi-Target Detection With an Arbitrary Spacing Distribution. IEEE Transactions on Signal Processing, 2020, 68, 1589-1601.	3.2	11
61	Manifold Learning with Arbitrary Norms. Journal of Fourier Analysis and Applications, 2021, 27, 1.	0.5	10
62	Orthogonal matrix retrieval in cryo-electron microscopy. , 2015, 2015, 1048-1052.		9
63	The generalized orthogonal Procrustes problem in the high noise regime. Information and Inference, 2021, 10, 921-954.	0.9	9
64	MATHEMATICS FOR CRYO-ELECTRON MICROSCOPY. , 2019, , .		9
65	Synthesizing developmental trajectories. PLoS Computational Biology, 2017, 13, e1005742.	1.5	8
66	Super-resolution multi-reference alignment. Information and Inference, 2022, 11, 533-555.	0.9	8
67	Wilson statistics: derivation, generalization and applications to electron cryomicroscopy. Acta Crystallographica Section A: Foundations and Advances, 2021, 77, 472-479.	0.0	8
68	Large-scale sensor network localization via rigid subnetwork registration. , 2015, , .		7
69	Reducing bias and variance for CTF estimation in single particle cryo-EM. Ultramicroscopy, 2020, 212, 112950.	0.8	7
70	A molecular prior distribution for Bayesian inference based on Wilson statistics. Computer Methods and Programs in Biomedicine, 2022, 221, 106830.	2.6	7
71	A representation theory perspective on simultaneous alignment and classification. Applied and Computational Harmonic Analysis, 2020, 49, 1001-1024.	1.1	6
72	Image Recovery from Rotational And Translational Invariants. , 2020, , .		6

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73	Mahalanobis distance for class averaging of cryo-EM images. , 2017, 2017, 654-658.		5
74	Earthmover-Based Manifold Learning for Analyzing Molecular Conformation Spaces. , 2020, , .		5
75	Random conical tilt reconstruction without particle picking in cryo-electron microscopy. Acta Crystallographica Section A: Foundations and Advances, 2022, 78, 294-301.	0.0	5
76	Ab-initio contrast estimation and denoising of cryo-EM images. Computer Methods and Programs in Biomedicine, 2022, 224, 107018.	2.6	4
77	Centering Noisy Images with Application to Cryo-EM. SIAM Journal on Imaging Sciences, 2021, 14, 689-716.	1.3	3
78	An Approximate Expectation-Maximization for Two-Dimensional Multi-Target Detection. IEEE Signal Processing Letters, 2022, 29, 1087-1091.	2.1	3
79	Sparse Multi-Reference Alignment: Sample Complexity and Computational Hardness. , 2022, , .		3
80	Center of Mass Operators for Cryo-EM Theory and Implementation. Nanostructure Science and Technology, 2012, , 147-177.	0.1	2
81	Disentangling orthogonal matrices. Linear Algebra and Its Applications, 2017, 524, 159-181.	0.4	2
82	Factor analysis for spectral estimation. , 2017, 2017, 169-173.		2
83	Steerable ePCA: Rotationally Invariant Exponential Family PCA. IEEE Transactions on Image Processing, 2020, 29, 6069-6081.	6.0	2
84	NMR assignment through linear programming. Journal of Global Optimization, 2022, 83, 3-28.	1.1	2