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References

[1] Haiyuan Liu ., Hualan Zhong ., Taiyi Zhang ., and Zhengwei Gong . A quasi-newton acceleration EM algorithm for OFDM systems channel estimation. *Information Technology Journal*, 5(4):749–752, apr 2006.

[2] Mahmoud H. Alrefaei and Sigrún Andradóttir. Accelerating the convergence of the stochastic ruler method for discrete stochastic optimization. In *Proceedings of the 29th conference on Winter simulation - WSC 97*. ACM Press, 1997.

[3] Paolo Amore. Convergence acceleration of series through a variational approach. *Journal of Mathematical Analysis and Applications*, 323(1):63–77, nov 2006.

[4] Jorgen Ellegaard Andersen and Rinat Kashaev. Complex quantum chern-simons. 2014.

[5] Carlene Perpetua P. Arceo, Editha C. Jose, Alberto Marin-Sanguino, and Eduardo R. Mendoza. Chemical reaction network approaches to biochemical systems theory. *Mathematical Biosciences*, 269:135–152, nov 2015.

[6] Mart'ın Arjovsky, Amar Shah, and Yoshua Bengio. Unitary evolution recurrent neural networks. In *ICML*, volume 48 of *JMLR Workshop and Conference Proceedings*, pages 1120–1128. JMLR.org, 2016.

[7] M. Arnst and R. Ghanem. Probabilistic equivalence and stochastic model reduction in multiscale analysis. *Computer Methods in Applied Mechanics and Engineering*, 197(43-44):3584–3592, aug 2008.

[8] M. Arnst, R. Ghanem, E. Phipps, and J. Red-Horse. Measure transformation and efficient quadrature in reduced-dimensional stochastic modeling of coupled problems. *International Journal for Numerical Methods in Engineering*, 92(12):1044–1080, jun 2012.

[9] M. Arnst, R. Ghanem, E. Phipps, and J. Red-Horse. Reduced chaos expansions with random coefficientsin reduced-dimensional stochastic modeling of coupled problems. *International Journal for Numerical Methods in Engineering*, 97(5):352–376, nov 2013.

[10] M. Arnst, Roger G. Ghanem, Eric T. Phipps, and John R. Red-Horse. Dimension reduction and measure transformation in stochastic multiphysics modeling. 2011.

[11] M. Arnst, Roger G. Ghanem, and Christian Soize. Identification of bayesian posteriors for coefficients of chaos expansions. *J. Comput. Physics*, 229(9):3134–3154, 2010.

[12] Ntombikayise Banda, Andries P. Engelbrecht, and Peter Robinson. Feature reduction for dimensional emotion recognition in human-robot interaction. In *SSCI*, pages 803–810. IEEE, 2015.

[13] Daniele Barchiesi and Mark D. Plumbley. Learning incoherent dictionaries for sparse approximation using iterative projections and rotations. *IEEE Trans. Signal Processing*, 61(8):2055–2065, 2013.

[14] Amir Beck and Luba Tetruashvili. On the convergence of block coordinate descent type methods. *SIAM Journal on Optimization*, 23(4):2037–2060, 2013.

[15] Daniel Beck. Bayesian kernel methods for natural language processing. In *ACL (Student Research Workshop)*, pages 1–9. The Association for Computer Linguistics, 2014.

[16] Ludwig Von Bertalanffy. The history and status of general systems theory. *Academy of Management Journal*, 15(4):407–426, dec 1972.

[17] Reinaldo AC Bianchi, Carlos HC Ribeiro, and Anna HR Costa. On the relation between ant colony optimization and heuristically accelerated reinforcement learning. In *1st International Workshop on Hybrid Control of Autonomous System*, pages 49–55, 2009.

[18] William Black, Poorya Haghi, and Kartik Ariyur. Adaptive systems: History, techniques, problems, and perspectives. *Systems*, 2(4):606–660, nov 2014.

[19] Andrey Bondarenko, Arkady Borisov, and Ludmila Alekseeva. Neurons vs weights pruning in artificial neural networks. *Environment. Technology. Resources. Proceedings of the International Scientific and Practical Conference*, 3:22, jun 2015.

[20] Mohammad Reza Bonyadi and Zbigniew Michalewicz. Particle swarm optimization for single objective continuous space problems: A review. *Evolutionary Computation*, 25(1):1–54, 2017.

[21] Kenneth E. Boulding. General systems theory—the skeleton of science. 1956.

[22] Lubomír Brančík. Convergence acceleration and optimal parameter estimation at fft-based 2d-nilt method.

[23] Jack Brimberg, Reuven Chen, and Doron Chen. Accelerating convergence in the fermat-weber location problem. *Oper. Res. Lett.*, 22(4-5):151–157, 1998.

[24] Joan Bruna, Wojciech Zaremba, Arthur Szlam, and Yann Lecun. Spectral networks and locally connected networks on graphs. 12 2013.

[25] Kailash Budhathoki and Jilles Vreeken. Causal inference by stochastic complexity. *CoRR*, abs/1702.06776, 2017.

[26] Gabriel Burstein, Constantin Negoita, and Menachem Kranz. Postmodern fuzzy system theory: A deconstruction approach based on kabbalah. *Systems*, 2(4):590–605, nov 2014.

[27] Jian-Feng Cai, Tianming Wang, and Ke Wei. Fast and provable algorithms for spectrally sparse signal reconstruction via low-rank hankel matrix completion. *CoRR*, abs/1606.01567, 2016.

[28] Sijia Cai, Wangmeng Zuo, Lei Zhang, Xiangchu Feng, and Ping Wang. Support vector guided dictionary learning. In *Computer Vision – ECCV 2014*, pages 624–639. Springer International Publishing, 2014.

[29] Irinel Caprini and Jan Fischer. Accelerated convergence of perturbative QCD by optimal conformal mapping of the borel plane. *Physical Review D*, 60(5), jul 1999.

[30] Coralia Cartis and Andrew Thompson. Quantitative recovery conditions for tree-based compressed sensing. *IEEE Trans. Information Theory*, 63(3):1555–1571, 2017.

[31] Renato L. G. Cavalcante, Alex Rogers, and Nicholas R. Jennings. Consensus acceleration in multiagent systems with the chebyshev semi-iterative method. In *AAMAS*, pages 165–172. IFAAMAS, 2011.

[32] Zhiguo Chang and Jian Xu. Dictionary training with genetic algorithm for sparse representation. In *2011 IEEE 3rd International Conference on Communication Software and Networks*. IEEE, may 2011.

[33] Jian-Bing Chen, Roger Ghanem, and Jie Li. Partition of the probability-assigned space in probability density evolution analysis of nonlinear stochastic structures. *Probabilistic Engineering Mechanics*, 24(1):27–42, jan 2009.

[34] JING CHEN, YU CHAO LV, and LI MIN WANG. Accelerating convergence method for relaxation cooperative optimization. *DEStech Transactions on Computer Science and Engineering*, (icmsie), 2016.

[35] Xinjia Chen. An urn model approach for deriving multivariate generalized hypergeometric distributions. 2013.

[36] Tingli Cheng, Min-You Chen, Peter J. Fleming, Zhile Yang, and Shaojun Gan. A novel hybrid teaching learning based multi-objective particle swarm optimization. *Neurocomputing*, 222:11–25, 2017.

[37] Minhyung Cho and Jaehyung Lee. Riemannian approach to batch normalization. In *NIPS*, pages 5231–5241, 2017.

[38] Jaroslaw Cichosz and Krzysztof Slot. Low-dimensional feature space derivation for emotion recognition. In *INTERSPEECH*, pages 477–480. ISCA, 2005.

[39] Adam Coates and Andrew Y. Ng. The importance of encoding versus training with sparse coding and vector quantization. In *ICML*, pages 921–928. Omnipress, 2011.

[40] Alexis Conneau, Douwe Kiela, Holger Schwenk, Lo"ıc Barrault, and Antoine Bordes. Supervised learning of universal sentence representations from natural language inference data. In *EMNLP*, pages 670–680. Association for Computational Linguistics, 2017.

[41] Kevin Corlette. Flat g-bundles with canonical metrics. *Journal of Differential Geometry*, 28(3):361–382, 1988.

[42] D. Coyle, G. Prasad, and T.M. McGinnity. Faster self-organizing fuzzy neural network training and a hyperparameter analysis for a brain–computer interface. *IEEE Transactions on Systems, Man, and Cybernetics, Part B (Cybernetics)*, 39(6):1458–1471, dec 2009.

[43] C. L. Creel and John Ross. Multiple stationary states and hysteresis in a chemical reaction. *The Journal of Chemical Physics*, 65(9):3779–3789, nov 1976.

[44] Thierry Crestaux, Olivier Le Maıˆtre, and Jean-Marc Martinez. Polynomial chaos expansion for sensitivity analysis. *Reliability Engineering & System Safety*, 94(7):1161–1172, jul 2009.

[45] Sonjoy Das, Roger G. Ghanem, and Steven Finette. Polynomial chaos representation of spatio-temporal random fields from experimental measurements. *J. Comput. Physics*, 228(23):8726–8751, 2009.

[46] Sonjoy Das, James C. Spall, and Roger G. Ghanem. An efficient calculation of fisher information matrix: Monte carlo approach using prior information. In *CDC*, pages 963–968. IEEE, 2007.

[47] Christian Dauwe and Börje Sellergren. Influence of template basicity and hydrophobicity on the molecular recognition properties of molecularly imprinted polymers. *Journal of Chromatography A*, 753(2):191–200, nov 1996.

[48] Siemon C. de Lange, Marcel A. de Reus, and Martijn P. van den Heuvel. The laplacian spectrum of neural networks. *Frontiers in Computational Neuroscience*, 7, 2014.

[49] José Henrique de Morais Goulart. Estimation of structured tensor models and recovery of low-rank tensors. 2016.

[50] Bert J. Debusschere, Habib N. Najm, Philippe P. P'ebay, Omar M. Knio, Roger G. Ghanem, and Olivier P. Le Maître. Numerical challenges in the use of polynomial chaos representations for stochastic processes. *SIAM J. Scientific Computing*, 26(2):698–719, 2004.

[51] Arthur P Dempster, Nan M Laird, and Donald B Rubin. Maximum likelihood from incomplete data via the em algorithm. *Journal of the royal statistical society. Series B (methodological)*, pages 1–38, 1977.

[52] Christophe Desceliers, Roger Ghanem, and Christian Soize. Polynomial chaos representation of a stochastic preconditioner. *International Journal for Numerical Methods in Engineering*, 64(5):618–634, 2005.

[53] Christophe Desceliers, Roger Ghanem, and Christian Soize. Maximum likelihood estimation of stochastic chaos representations from experimental data. *International Journal for Numerical Methods in Engineering*, 66(6):978–1001, 2006.

[54] Jelena Diakonikolas and Lorenzo Orecchia. Accelerated extra-gradient descent: A novel accelerated first-order method. In *ITCS*, volume 94 of *LIPIcs*, pages 23:1–23:19. Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik, 2018.

[55] Alireza Doostan, Roger G. Ghanem, and John Red-Horse. Stochastic model reduction for chaos representations. *Computer Methods in Applied Mechanics and Engineering*, 196(37-40):3951–3966, aug 2007.

[56] Julio Martin Duarte-Carvajalino and Guillermo Sapiro. Learning to sense sparse signals: Simultaneous sensing matrix and sparsifying dictionary optimization. *IEEE Trans. Image Processing*, 18(7):1395–1408, 2009.

[57] JOHANNES J. DUISTERMAAT and ALVARO PELAYO. Reduced phase space and toric variety coordinatizations of delzant spaces. *Mathematical Proceedings of the Cambridge Philosophical Society*, 146(03):695, jan 2009.

[58] F. J. Dyson. The radiation theories of tomonaga, schwinger, and feynman. *Physical Review*, 75(3):486–502, feb 1949.

[59] Shimon Edelman. Learning as formation of low-dimensional representation spaces. 1997.

[60] Ahmed Ali Abdalla Esmin, Rodrigo A. Coelho, and Stan Matwin. A review on particle swarm optimization algorithm and its variants to clustering high-dimensional data. *Artif. Intell. Rev.*, 44(1):23–45, 2015.

[61] Beatrice Faverjon and Roger Ghanem. Stochastic inversion in acoustic scattering. *The Journal of the Acoustical Society of America*, 119(6):3577–3588, jun 2006.

[62] Simone G. O. Fiori. A theory for learning by weight flow on stiefel-grassman manifold. *Neural Computation*, 13(7):1625–1647, 2001.

[63] A T Fomenko. The symplectic topology of completely integrable hamiltonian systems. *Russian Mathematical Surveys*, 44(1):181–219, feb 1989.

[64] Colin Fox and Albert Parker. Convergence in variance of first-order and second-order chebyshev accelerated gibbs samplers. *SIAM Journal on Scientific Computing (to be published 2013)*, 2013.

[65] Vincenzo Gattulli and Roger Ghanem. Adaptive control of flow-induced oscillations including vortex effects. *International Journal of Non-Linear Mechanics*, 34(5):853–868, sep 1999.

[66] E. Shane German and Donna H. Rhodes. Model-centric decision-making: Exploring decision-maker trust and perception of models. In *Disciplinary Convergence in Systems Engineering Research*, pages 813–827. Springer International Publishing, nov 2017.

[67] Euhanna Ghadimi. *Accelerating convergence of large-scale optimization algorithms*. PhD thesis, KTH Royal Institute of Technology, 2015.

[68] R. Ghanem. Hybrid stochastic finite elements and generalized monte carlo simulation. *Journal of Applied Mechanics*, 65(4):1004, 1998.

[69] R. Ghanem. The nonlinear gaussian spectrum of log-normal stochastic processes and variables. *Journal of Applied Mechanics*, 66(4):964, 1999.

[70] R Ghanem et al. Modal properties of a space-frame with localized system uncertainties. In *in 8th ASCE Specialty Conference of Probabilistic Mechanics and Structural Reliability, ASCE*. Citeseer, 2000.

[71] R. Ghanem and G. Ferro. Health monitoring for strongly non-linear systems using the ensemble kalman filter. *Structural Control and Health Monitoring*, 13(1):245–259, jan 2006.

[72] R. Ghanem and M. Pellissetti. Adaptive data refinement in the spectral stochastic finite element method. *Communications in Numerical Methods in Engineering*, 18(2):141–151, jan 2002.

[73] Roger Ghanem. Mathematical and computational tools for predictive simulation of complex coupled systems under uncertainty. Technical report, mar 2013.

[74] Roger Ghanem. Quantification of uncertainty in extreme scale computations (QUEST). Technical report, apr 2017.

[75] Roger Ghanem, Sami Masri, Manuel Pellissetti, and Raymond Wolfe. Identification and prediction of stochastic dynamical systems in a polynomial chaos basis. *Computer Methods in Applied Mechanics and Engineering*, 194(12-16):1641–1654, apr 2005.

[76] ROGER GHANEM and FRANCESCO ROMEO. A WAVELET-BASED APPROACH FOR THE IDENTIFICATION OF LINEAR TIME-VARYING DYNAMICAL SYSTEMS. *Journal of Sound and Vibration*, 234(4):555–576, jul 2000.

[77] Roger Ghanem and Francesco Romeo. A wavelet-based approach for model and parameter identification of non-linear systems. *International Journal of Non-Linear Mechanics*, 36(5):835–859, jul 2001.

[78] Roger Ghanem, George Saad, and Alireza Doostan. Efficient solution of stochastic systems: Application to the embankment dam problem. *Structural Safety*, 29(3):238–251, jul 2007.

[79] Roger Ghanem, Christian Soize, and Charanraj Thimmisetty. Optimal well-placement using probabilistic learning. *Data-Enabled Discovery and Applications*, 2(1), jan 2018.

[80] Roger Ghanem and P. D. Spanos. Polynomial chaos in stochastic finite elements. *Journal of Applied Mechanics*, 57(1):197, 1990.

[81] Roger G. Ghanem. Uncertainty quantification in computational and prediction science. *International Journal for Numerical Methods in Engineering*, 80(6-7):671–672, 2009.

[82] Roger G. Ghanem and Xiaoping Du. Uncertainty quantification for engineering design. *AI EDAM*, 31(2):119, 2017.

[83] Roger G Ghanem, H Gavin, and Masanobu Shinozuka. Experimental verification of a number of structural system identification algorithms. 1991.

[84] Roger G. Ghanem and Robert M. Kruger. Numerical solution of spectral stochastic finite element systems. *Computer Methods in Applied Mechanics and Engineering*, 129(3):289–303, jan 1996.

[85] Roger G. Ghanem and Pol D. Spanos. *Stochastic Finite Elements: A Spectral Approach*. Springer New York, 1991.

[86] Roger G Ghanem and Pol D Spanos. Spectral techniques for stochastic finite elements. *Archives of Computational Methods in Engineering*, 4(1):63–100, 1997.

[87] Roger Georges Ghanem and John Robert Red-Horse. Elements of a function analytic approach to probability. Technical report, feb 2008.

[88] Debraj Ghosh and Roger Ghanem. Stochastic convergence acceleration through basis enrichment of polynomial chaos expansions. *International Journal for Numerical Methods in Engineering*, 73(2):162–184, 2007.

[89] Debraj Ghosh and Roger Ghanem. An invariant subspace-based approach to the random eigenvalue problem of systems with clustered spectrum. *International Journal for Numerical Methods in Engineering*, 91(4):378–396, jun 2012.

[90] Viktor L Ginzburg and Dmitrii V Pasechnik. Random chain complexes. *Arnold Mathematical Journal*, 3(2):197–204, 2017.

[91] Alessandro Giuliani. Networks as a privileged way to develop mesoscopic level approaches in systems biology. *Systems*, 2(2):237–242, may 2014.

[92] Tom Goldstein, Brendan O'Donoghue, Simon Setzer, and Richard G. Baraniuk. Fast alternating direction optimization methods. *SIAM J. Imaging Sciences*, 7(3):1588–1623, 2014.

[93] J. Guilleminot, A. Noshadravan, C. Soize, and R.G. Ghanem. A probabilistic model for bounded elasticity tensor random fields with application to polycrystalline microstructures. *Computer Methods in Applied Mechanics and Engineering*, 200(17-20):1637–1648, apr 2011.

[94] Sergei Gukov, Marcos Marino, and Pavel Putrov. Resurgence in complex chern-simons theory. *arXiv preprint arXiv:1605.07615*, 2016.

[95] Yiwen Guo, Anbang Yao, and Yurong Chen. Dynamic network surgery for efficient dnns. In *NIPS*, pages 1379–1387, 2016.

[96] Bernd Gutmann, Ingo Thon, Angelika Kimmig, Maurice Bruynooghe, and Luc De Raedt. The magic of logical inference in probabilistic programming. *TPLP*, 11(4-5):663–680, 2011.

[97] A. J. Hughes Hallett. The convergence of accelerated overrelaxation iterations. *Mathematics of Computation*, 47(175):219, jul 1986.

[98] Bingsheng He and Xiaoming Yuan. On the acceleration of augmented lagrangian method for linearly constrained optimization. *Unpublished manuscript*, 2010.

[99] Yang-Hui He. Deep-learning the landscape. *arXiv preprint arXiv:1706.02714*, 2017.

[100] Yang-Hui He. Machine-learning the string landscape. *Physics Letters B*, 774:564–568, nov 2017.

[101] Miguel R. Hernandez-Garcia, Sami F. Masri, and Roger Ghanem. An experimental study of change detection in uncertain chain-like systems. In *Smart Materials, Adaptive Structures and Intelligent Systems, Volume 2*. ASME, 2008.

[102] Miguel R. Hernandez-Garcia, Sami F. Masri, Roger Ghanem, Eloi Figueiredo, and Charles R. Farrar. A structural decomposition approach for detecting, locating, and quantifying nonlinearities in chain-like systems. *Structural Control and Health Monitoring*, 17(7):761–777, oct 2010.

[103] Jeffrey Ho, Yuchen Xie, and Baba C. Vemuri. On A nonlinear generalization of sparse coding and dictionary learning. In *ICML (3)*, volume 28 of *JMLR Workshop and Conference Proceedings*, pages 1480–1488. JMLR.org, 2013.

[104] Thomas S. Hofer. From macromolecules to electrons—grand challenges in theoretical and computational chemistry. *Frontiers in Chemistry*, 1, 2013.

[105] Sonja Hohloch, , and Joseph Palmer and. A family of compact semitoric systems with two focus-focus singularities. *Journal of Geometric Mechanics*, 10(3):331–357, 2018.

[106] I K Hong, Z Burbar, C Michel, and R Leahy. Ultrafast preconditioned conjugate gradient OSEM algorithm for fully 3d PET reconstruction. In *IEEE Nuclear Science Symposuim & Medical Imaging Conference*. IEEE, oct 2010.

[107] Tao Hong and Zhihui Zhu. Online learning sensing matrix and sparsifying dictionary simultaneously for compressive sensing. *Signal Processing*, 153:188–196, 2018.

[108] Antti Honkela, Tapani Raiko, Mikael Kuusela, Matti Tornio, and Juha Karhunen. Approximate riemannian conjugate gradient learning for fixed-form variational bayes. *Journal of Machine Learning Research*, 11:3235–3268, 2010.

[109] Antti Honkela, Matti Tornio, Tapani Raiko, and Juha Karhunen. Natural conjugate gradient in variational inference. In *ICONIP (2)*, volume 4985 of *Lecture Notes in Computer Science*, pages 305–314. Springer, 2007.

[110] Vahan Hovhannisyan, Panos Parpas, and Stefanos Zafeiriou. MAGMA: multilevel accelerated gradient mirror descent algorithm for large-scale convex composite minimization. *SIAM J. Imaging Sciences*, 9(4):1829–1857, 2016.

[111] Shimeng Huang and Henry Wolkowicz. Low-rank matrix completion using nuclear norm minimization and facial reduction. *J. Global Optimization*, 72(1):5–26, 2018.

[112] Zhiwu Huang, Ruiping Wang, Shiguang Shan, and Xilin Chen. Projection metric learning on grassmann manifold with application to video based face recognition. In *CVPR*, pages 140–149. IEEE Computer Society, 2015.

[113] Zhiwu Huang, Jiqing Wu, and Luc Van Gool. Building deep networks on grassmann manifolds. In *AAAI*, pages 3279–3286. AAAI Press, 2018.

[114] Francesca Iacono and Georg May. Convergence acceleration for simulation of steady-state compressible flows using high-order schemes. In *19th AIAA Computational Fluid Dynamics*. American Institute of Aeronautics and Astronautics, jun 2009.

[115] Dušan Jakovetic. Distributed optimization: Algorithms and convergence rates. *PhD, Carnegie Mellon University, Pittsburgh PA, USA*, 2013.

[116] Mortaza Jamshidian and Robert I. Jennrich. Conjugate gradient acceleration of the EM algorithm. *Journal of the American Statistical Association*, 88(421):221, mar 1993.

[117] Mortaza Jamshidian and Robert I. Jennrich. Conjugate gradient methods in confirmatory factor analysis. *Computational Statistics & Data Analysis*, 17(3):247–263, mar 1994.

[118] Dominik Janzing, Steffen L. Lauritzen, and Bernhard Sch"olkopf, editors. *Machine learning approaches to statistical dependences and causality, 27.09. - 02.10.2009*, volume 09401 of *Dagstuhl Seminar Proceedings*. Schloss Dagstuhl - Leibniz-Zentrum f"ur Informatik, Germany, 2009.

[119] Dominik Janzing and Bernhard Sch"olkopf. Causal inference using the algorithmic markov condition. *IEEE Trans. Information Theory*, 56(10):5168–5194, 2010.

[120] M. Jardak and R.G. Ghanem. Spectral stochastic homogenization of divergence-type PDEs. *Computer Methods in Applied Mechanics and Engineering*, 193(6-8):429–447, feb 2004.

[121] Shuiwang Ji and Jieping Ye. An accelerated gradient method for trace norm minimization. In *ICML*, volume 382 of *ACM International Conference Proceeding Series*, pages 457–464. ACM, 2009.

[122] Yuling Jiao, Bangti Jin, and Xiliang Lu. Iterative soft/hard thresholding with homotopy continuation for sparse recovery. *IEEE Signal Process. Lett.*, 24(6):784–788, 2017.

[123] Li Jing, Yichen Shen, Tena Dubcek, John Peurifoy, Scott A. Skirlo, Yann LeCun, Max Tegmark, and Marin Soljacic. Tunable efficient unitary neural networks (EUNN) and their application to rnns. In *ICML*, volume 70 of *Proceedings of Machine Learning Research*, pages 1733–1741. PMLR, 2017.

[124] Rie Johnson and Tong Zhang. Accelerating stochastic gradient descent using predictive variance reduction. In *NIPS*, pages 315–323, 2013.

[125] Michael I. Jordan. On gradient-based optimization: Accelerated, distributed, asynchronous and stochastic. In *SIGMETRICS (Abstracts)*, page 58. ACM, 2017.

[126] Mojtaba Kadkhodaie, Konstantina Christakopoulou, Maziar Sanjabi, and Arindam Banerjee. Accelerated alternating direction method of multipliers. In *Proceedings of the 21th ACM SIGKDD international conference on knowledge discovery and data mining*, pages 497–506. ACM, 2015.

[127] David E. Kaufman and Robert L. Smith. Direction choice for accelerated convergence in hit-and-run sampling. *Operations Research*, 46(1):84–95, 1998.

[128] Sam Kaufman. Delzant-type classification of near-symplectic toric 4-manifolds. 2005.

[129] Mark Keating and ANSYS Principal Engineer. Accelerating cfd solutions. *advantage*, 1:48, 2011.

[130] Kristian Kersting and Niels Landwehr. Scaled conjugate gradients for maximum likelihood: An empirical comparison with the EM algorithm. In *Probabilistic Graphical Models*, 2002.

[131] V. Keshavarzzadeh, R.G. Ghanem, S.F. Masri, and O.J. Aldraihem. Convergence acceleration of polynomial chaos solutions via sequence transformation. *Computer Methods in Applied Mechanics and Engineering*, 271:167–184, apr 2014.

[132] Rahul Kidambi, Praneeth Netrapalli, Prateek Jain, and Sham M Kakade. On the insufficiency of existing momentum schemes for stochastic optimization. *arXiv preprint arXiv:1803.05591*, 2018.

[133] Seungyeon Kim, Fuxin Li, Guy Lebanon, and Irfan A. Essa. Beyond sentiment: The manifold of human emotions. In *AISTATS*, 2013.

[134] Rudolf Kiralj and Márcia M. C. Ferreira. A priori descriptors in qsar: a case of gram-negative bacterial multidrug resistance to ß-lactams. 2008.

[135] Oleg Kiselyov and Chung chieh Shan. Embedded probabilistic programming. In *Domain-Specific Languages*, pages 360–384. Springer Berlin Heidelberg, 2009.

[136] Omar M Knio. Analysis and reduction of complex networks under uncertainty. Technical report, apr 2014.

[137] Tamiki Komatsuzaki and R. Stephen Berry. Chemical reaction dynamics: Many-body chaos and regularity. In *Advances in Chemical Physics*, pages 79–152. John Wiley & Sons, Inc., mar 2003.

[138] Christian K"ummerle and Juliane Sigl. Harmonic mean iteratively reweighted least squares for low-rank matrix recovery. *Journal of Machine Learning Research*, 19:47:1–47:49, 2018.

[139] N. V. Krasnikov. Fields with continuously distributed mass. *Physics of Particles and Nuclei*, 41(6):962–964, nov 2010.

[140] Yaroslav Kurylev, Lauri Oksanen, and Gabriel P. Paternain. Inverse problems for the connection laplacian. *Journal of Differential Geometry*, 110(3):457–494, nov 2018.

[141] Mikael Kuusela, Tapani Raiko, Antti Honkela, and Juha Karhunen. A gradient-based algorithm competitive with variational bayesian EM for mixture of gaussians. In *IJCNN*, pages 1688–1695. IEEE Computer Society, 2009.

[142] Akhil Langer and Udatta S. Palekar. Split-and-merge method for accelerating convergence of stochastic linear programs. In *ICORES*, pages 218–223. SciTePress, 2015.

[143] Alan Lapedes and Robert Farber. A self-optimizing, nonsymmetrical neural net for content addressable memory and pattern recognition. *Physica D: Nonlinear Phenomena*, 22(1-3):247–259, oct 1986.

[144] Gregory S. Larsen, Ping Lin, Kyle E. Hart, and Coray M. Colina. Molecular simulations of PIM-1-like polymers of intrinsic microporosity. *Macromolecules*, 44(17):6944–6951, sep 2011.

[145] Tom Leinster. A short characterization of relative entropy. *CoRR*, abs/1712.04903, 2017.

[146] Liora Levi, Vladimir Raim, and Simcha Srebnik. A brief review of coarse-grained and other computational studies of molecularly imprinted polymers. *Journal of Molecular Recognition*, 24(6):883–891, oct 2011.

[147] Nan Li, Norbert Pfeifer, and Chun Liu. Tensor-based sparse representation classification for urban airborne LiDAR points. *Remote Sensing*, 9(12):1216, nov 2017.

[148] Shaohui Lin, Rongrong Ji, Chao Chen, and Feiyue Huang. Espace: Accelerating convolutional neural networks via eliminating spatial and channel redundancy. In *AAAI*, 2017.

[149] Jia Liu, Atilla Eryilmaz, Ness B. Shroff, and Elizabeth S. Bentley. Heavy-ball: A new approach to tame delay and convergence in wireless network optimization. In *INFOCOM*, pages 1–9. IEEE, 2016.

[150] Suhas Lohit and Pavan K. Turaga. Learning invariant riemannian geometric representations using deep nets. In *ICCV Workshops*, pages 1329–1338. IEEE Computer Society, 2017.

[151] Yu A Luchka, OE Noshchenko, and NI Tukalevskaya. The variational gradient method. *USSR Computational Mathematics and Mathematical Physics*, 24(4):1–6, 1984.

[152] Yongqin Lv, Zhixing Lin, Tianwei Tan, Wei Feng, Peiyong Qin, and Cong Li. Application of molecular dynamics modeling for the prediction of selective adsorption properties of dimethoate imprinting polymer. *Sensors and Actuators B: Chemical*, 133(1):15–23, jul 2008.

[153] Olivier P. Le Maître, M. T. Reagan, Habib N. Najm, Roger G. Ghanem, and Omar M. Knio. A stochastic projection method for fluid flow ii.: random process. 2002.

[154] Olivier P. Le Maı

tre, Matthew T. Reagan, Habib N. Najm, Roger G. Ghanem, and Omar M. Knio. A stochastic projection method for fluid flow. *Journal of Computational Physics*, 181(1):9–44, sep 2002.

[155] O.P. Le Maı

tre, O.M. Knio, H.N. Najm, and R.G. Ghanem. Uncertainty propagation using wiener–haar expansions. *Journal of Computational Physics*, 197(1):28–57, jun 2004.

[156] Manuela M Marin and Annemarie Peltzer-Karpf. Towards a dynamic systems approach to the development of language and music-theoretical foundations and methodological issues. In *ESCOM 2009: 7th Triennial Conference of European Society for the Cognitive Sciences of Music*, 2009.

[157] Sergey Martynenko. Convergence acceleration of iterative algorithms for solving navier–stokes equations on structured grids. In *Hydrodynamics - Optimizing Methods and Tools*. InTech, oct 2011.

[158] S. F. Masri, R. Ghanem, F. Arrate, and J. P. Caffrey. A data-based procedure for analyzing the response of uncertain nonlinear systems. *Structural Control and Health Monitoring*, pages n/a–n/a, 2009.

[159] S F Masri, R Ghanem, R Govindan, and R Nayeri. A decentralized procedure for structural health monitoring of uncertain nonlinear systems provided with dense active sensor arrays. *Smart Materials and Structures*, 17(4):045024, jul 2008.

[160] Sami F. Masri, Roger Ghanem, Felipe Arrate, and John Caffrey. Stochastic nonparametric models of uncertain hysteretic oscillators. *AIAA Journal*, 44(10):2319–2330, oct 2006.

[161] A. Matta, O.M. Knio, R.G. Ghanem, C.-H. Chen, J.G. Santiago, B. Debusschere, and H.N. Najm. Computational study of band-crossing reactions. *Journal of Microelectromechanical Systems*, 13(2):310–322, apr 2004.

[162] Devin A. Matthews and John F. Stanton. Accelerating the convergence of higher-order coupled cluster methods. *The Journal of Chemical Physics*, 143(20):204103, nov 2015.

[163] D. Mavriplis. On convergence acceleration techniques for unstructured meshes. In *29th AIAA, Fluid Dynamics Conference*. American Institute of Aeronautics and Astronautics, jun 1998.

[164] Aur'elien Mayoue, Quentin Barthelemy, S. Onis, and Anthony Larue. Preprocessing for classification of sparse data: Application to trajectory recognition. In *SSP*, pages 37–40. IEEE, 2012.

[165] Donald A. McQuarrie. Stochastic approach to chemical kinetics. *Journal of Applied Probability*, 4(03):413–478, dec 1967.

[166] Loujaine Mehrez, Jacob Fish, Venkat Aitharaju, Will R. Rodgers, and Roger Ghanem. A PCE-based multiscale framework for the characterization of uncertainties in complex systems. *Computational Mechanics*, 61(1-2):219–236, nov 2017.

[167] Loujaine Mehrez, Roger Ghanem, Colin Mcauliffe, William R. Rodgers, and Venkat Aitharaju. A MULTISCALE FRAMEWORK FOR THE STOCHASTIC ASSIMILATION AND MODELING OF UNCERTAINTY ASSOCIATED NCF COMPOSITE MATERIALS. In *Proceedings of the VII European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS Congress 2016)*. Institute of Structural Analysis and Antiseismic Research School of Civil Engineering National Technical University of Athens (NTUA) Greece, 2016.

[168] Hadi Meidani and Roger Ghanem. Uncertainty quantification for markov chain models. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 22(4):043102, dec 2012.

[169] Hadi Meidani and Roger Ghanem. Multiscale markov models with random transitions for energy demand management. *Energy and Buildings*, 61:267–274, jun 2013.

[170] Hadi Meidani and Roger Ghanem. Random markov decision processes for sustainable infrastructure systems. *Structure and Infrastructure Engineering*, 11(5):655–667, apr 2014.

[171] Adrian H. Mühlbach, Alain C. Vaucher, and Markus Reiher. Accelerating wave function convergence in interactive quantum chemical reactivity studies. *Journal of Chemical Theory and Computation*, 12(3):1228–1235, feb 2016.

[172] C.H. Min and W.Q. Tao. An under-relaxation factor control method for accelerating the iteration convergence of flow field simulation. *Engineering Computations*, 24(8):793–813, nov 2007.

[173] Gianfranco Minati and Eliano Pessa. Special issue on second generation general system theory. *Systems*, 3(1):1–3, dec 2014.

[174] Christian Münch. Optimal control of reaction-diffusion systems with hysteresis. *ESAIM: Control, Optimisation and Calculus of Variations*, 24(4):1453–1488, oct 2018.

[175] Sung Joon Moon, R. Ghanem, and I. G. Kevrekidis. Coarse graining the dynamics of coupled oscillators. *Physical Review Letters*, 96(14), apr 2006.

[176] Frederick P. Morgeson, Terence R. Mitchell, and Dong Liu. Event system theory: An event-oriented approach to the organizational sciences. *Academy of Management Review*, 40(4):515–537, oct 2015.

[177] Jana Nemcová and Jan H van Schuppen. Biochemical reaction systems–system theory and decomposition. *Control and Cybernetics*, 42, 2013.

[178] Andreas Neubauer. On nesterov acceleration for landweber iteration of linear ill-posed problems. *Journal of Inverse and Ill-posed Problems*, 25(3), jan 2017.

[179] San Vũ Ngc. Moment polytopes for symplectic manifolds with monodromy. *Advances in Mathematics*, 208(2):909–934, jan 2007.

[180] Timothy Nguyen. Quantization of the nonlinear sigma model revisited. *Journal of Mathematical Physics*, 57(8):082301, aug 2016.

[181] Timothy Nguyen. Stochastic feynman rules for yang-mills theory on the plane. *arXiv preprint arXiv:1607.07463*, 2016.

[182] Ian A. Nicholls, Håkan S. Andersson, Christy Charlton, Henning Henschel, Björn C.G. Karlsson, Jesper G. Karlsson, John O'Mahony, Annika M. Rosengren, K. Johan Rosengren, and Susanne Wikman. Theoretical and computational strategies for rational molecularly imprinted polymer design. *Biosensors and Bioelectronics*, 25(3):543–552, nov 2009.

[183] Frank Nielsen. Legendre transformation and information geometry, 2010.

[184] Stephen R Niezgoda, Anand K Kanjarla, and Surya R Kalidindi. Novel microstructure quantification framework for databasing, visualization, and analysis of microstructure data. *Integrating Materials and Manufacturing Innovation*, 2(1), jul 2013.

[185] T Niu and L Zhu. TH-c-103-11: Accelerated barrier optimization compressed sensing (ABOCS) for CT reconstruction with improved convergence. *Medical Physics*, 40(6Part33):544–544, jun 2013.

[186] Iram Noreen, Amna Khan, and Zulfiqar Habib. Optimal path planning using RRT∗*basedapproaches* : *Asurveyandfuturedirections*. *InternationalJournalofAdvancedComputerScienceandApplications*, 7(11), 2016.

[187] Brendan O'Donoghue and Emmanuel J. Candès. Adaptive restart for accelerated gradient schemes. *Foundations of Computational Mathematics*, 15(3):715–732, 2015.

[188] Luis E. Ortiz and Leslie Pack Kaelbling. Accelerating EM: an empirical study. *CoRR*, abs/1301.6730, 2013.

[189] Konrad Osterwalder and Robert Schrader. Axioms for euclidean greens functions. *Communications in Mathematical Physics*, 31(2):83–112, jun 1973.

[190] Hua Ouyang and Alexander G. Gray. Stochastic smoothing for nonsmooth minimizations: Accelerating SGD by exploiting structure. In *ICML*. icml.cc / Omnipress, 2012.

[191] P.P. Palmes, T. Hayasaka, and S. Usui. Mutation-based genetic neural network. *IEEE Transactions on Neural Networks*, 16(3):587–600, may 2005.

[192] Lili Pan, Shenglong Zhou, and H Qi. Improved iterative hard thresholding for sparsity and nonnegativity constrained optimization, 2016.

[193] Lili Pan, Shenglong Zhou, Naihua Xiu, and Houduo Qi. A convergent iterative hard thresholding for nonnegative sparsity optimization. 2017.

[194] T E Panov. Geometric structures on moment-angle manifolds. *Russian Mathematical Surveys*, 68(3):503–568, jun 2013.

[195] Stefan Papadima and Alexander I. Suciu. The spectral sequence of an equivariant chain complex and homology with local coefficients. *Transactions of the American Mathematical Society*, 362(5):2685–2721, dec 2009.

[196] Álvaro Pelayo and San Vũ Ngc. First steps in symplectic and spectral theory of integrable systems. *Discrete and Continuous Dynamical Systems*, 32(10):3325–3377, may 2012.

[197] Álvaro Pelayo and Xiudi Tang. Vu Ngoc's Conjecture on focus-focus singular fibers with multiple pinched points. *arXiv e-prints*, page arXiv:1803.00998, Mar 2018.

[198] Manuel Pellissetti and Roger Ghanem. A method for the validation of predictive computations using a stochastic approach. *Journal of Offshore Mechanics and Arctic Engineering*, 126(3):227, 2004.

[199] Yong-Bo Peng, Roger Ghanem, and Jie Li. Polynomial chaos expansions for optimal control of nonlinear random oscillators. *Journal of Sound and Vibration*, 329(18):3660–3678, aug 2010.

[200] Yong-Bo Peng, Roger Ghanem, and Jie Li. Generalized optimal control policy for stochastic optimal control of structures. *Structural Control and Health Monitoring*, 20(2):187–209, aug 2011.

[201] Yong-Bo Peng, Roger Ghanem, and Jie Li. Investigations of microstructured behaviors of magnetorheological suspensions. *Journal of Intelligent Material Systems and Structures*, 23(12):1351–1370, may 2012.

[202] Jonas Peters, Dominik Janzing, Arthur Gretton, and Bernhard Schölkopf. Detecting the direction of causal time series. In *Proceedings of the 26th Annual International Conference on Machine Learning - ICML 09*. ACM Press, 2009.

[203] Eric Todd Phipps, John R Red-Horse, Timothy Michael Wildey, Paul G Constantine, Roger Ghanem, and Maarten Arnst. Stochastic dimension reduction of multiphysics systems through measure transformation. Technical report, Sandia National Lab.(SNL-NM), Albuquerque, NM (United States), 2013.

[204] Ramani S. Pilla, Sagar V. Kamarthi, and Bruce G. Lindsay. Aitken-based acceleration methods for assessing convergence of multilayer neural networks. *IEEE Trans. Neural Networks*, 12(5):998–1012, 2001.

[205] Piotr Podlés. Symmetries of quantum spaces. subgroups and quotient spaces of quantumSU(2) andSO(3) groups. *Communications in Mathematical Physics*, 170(1):1–20, may 1995.

[206] Zijie Poh, Stuart Raby, and Zi zhi Wang. Pati-salam SUSY GUT with yukawa unification. *Physical Review D*, 95(11), jun 2017.

[207] Jan Willem Polderman and Jan C Willems. Introduction to the mathematical theory of systems and control. *New York*, 434, 1998.

[208] Clarice Poon, Jingwei Liang, and Carola-Bibiane Schönlieb. Local convergence properties of saga/prox-svrg and acceleration. *arXiv preprint arXiv:1802.02554*, 2018.

[209] Guannan Qu and Na Li. Accelerated distributed nesterov gradient descent for smooth and strongly convex functions. In *Allerton*, pages 209–216. IEEE, 2016.

[210] Jos'e A. Rabi and Marcelo J. S. de Lemos. Optimization of convergence acceleration in multigrid numerical solutions of conductive-convective problems. *Applied Mathematics and Computation*, 124(2):215–226, 2001.

[211] Dadmehr Rahbari. High performance data mining by genetic neural network. 2013.

[212] Riccardo Rao and Massimiliano Esposito. Nonequilibrium thermodynamics of chemical reaction networks: Wisdom from stochastic thermodynamics. *Physical Review X*, 6(4), dec 2016.

[213] Tudor S. Ratiu, Christophe Wacheux, and Nguyen Tien Zung. Convexity of singular affine structures and toric-focus integrable hamiltonian systems. 2017.

[214] M. T. Reagan, H. N. Najm, P. P. Pébay, O. M. Knio, and R. G. Ghanem. Quantifying uncertainty in chemical systems modeling. *International Journal of Chemical Kinetics*, 37(6):368–382, 2005.

[215] Matthew T. Reagan, Habib N. Najm, Roger G. Ghanem, and Omar M. Knio. Uncertainty quantification in reacting-flow simulations through non-intrusive spectral projection. *Combustion and Flame*, 132(3):545–555, feb 2003.

[216] MT Reagan, HN Najm, BJ Debusschere, OP Le Maître, OM Knio, and RG Ghanem. Spectral stochastic uncertainty quantification in chemical systems. *Combustion Theory and Modelling*, 8(3):607–632, 2004.

[217] Rémi Remi and Karin Schnass. Dictionary identification—sparse matrix-factorization via ℓ_1-minimization. *IEEE Transactions on Information Theory*, 56(7):3523–3539, jul 2010.

[218] Raffaele Resta. Manifestations of berrys phase in molecules and condensed matter. *Journal of Physics: Condensed Matter*, 12(9):R107–R143, feb 2000.

[219] Adam M. Ross and Donna H. Rhodes. Interactive model trading for resilient systems decisions. In *Disciplinary Convergence in Systems Engineering Research*, pages 97–112. Springer International Publishing, nov 2017.

[220] Ron Rubinstein, Michael Zibulevsky, and Michael Elad. Learning sparse dictionaries for sparse signal approximation. Technical report, Computer Science Department, Technion, 2009.

[221] Ron Rubinstein, Michael Zibulevsky, and Michael Elad. Double sparsity: learning sparse dictionaries for sparse signal approximation. *IEEE Trans. Signal Processing*, 58(3):1553–1564, 2010.

[222] Sebastian Ruder. An overview of gradient descent optimization algorithms. *CoRR*, abs/1609.04747, 2016.

[223] Fabian Ruehle. Evolving neural networks with genetic algorithms to study the string landscape. *Journal of High Energy Physics*, 2017(8), aug 2017.

[224] George Saad and Roger Ghanem. Characterization of reservoir simulation models using a polynomial chaos-based ensemble kalman filter. *Water Resources Research*, 45(4), apr 2009.

[225] Sayed Saber. Solvability of the tangential cauchy-riemann equations on boundaries of strictly q-convex domains. *Lobachevskii Journal of Mathematics*, 32(3):189–193, jul 2011.

[226] Ruslan Salakhutdinov, Sam T. Roweis, and Zoubin Ghahramani. Optimization with EM and expectation-conjugate-gradient. In *ICML*, pages 672–679. AAAI Press, 2003.

[227] K. Sargsyan, H. N. Najm, and R. Ghanem. On the statistical calibration of physical models. *International Journal of Chemical Kinetics*, 47(4):246–276, feb 2015.

[228] A. Sarkar, N. Benabbou, and R. Ghanem. Domain decompostion of stochastic PDEs and its parallel. In *20th International Symposium on High-Performance Computing in an Advanced Collaborative Environment (HPCS06)*. IEEE, 2006.

[229] Abhijit Sarkar, Nabil Benabbou, and Roger Ghanem. Domain decomposition of stochastic PDEs: Theoretical formulations. *International Journal for Numerical Methods in Engineering*, 77(5):689–701, jan 2009.

[230] Pedro H. P. Savarese. Learning identity mappings with residual gates. *CoRR*, abs/1611.01260, 2016.

[231] Charles S Schulz. Hysteresis in adiabatic dynamical systems: an introduction. 1998.

[232] Damien Scieur, Alexandre d'Aspremont, and Francis R. Bach. Regularized nonlinear acceleration. In *NIPS*, pages 712–720, 2016.

[233] A. M. Selvam. A general systems theory for chaos, quantum mechanics and gravity for dynamical systems of all space-time scales. 2005.

[234] Young Bong Seo and Jae Weon Choi. Stochastic eigenvalues for LTI systems with stochastic modes. In *SICE 2001. Proceedings of the 40th SICE Annual Conference. International Session Papers (IEEE Cat. No.01TH8603)*. Soc. Instrum. & Control Eng.

[235] C David Sherrill. Some comments on accelerating convergence of iterative sequences using direct inversion of the iterative subspace (diis). 1998.

[236] Avram Sidi. Acceleration of convergence of fourier and generalized fourier series by the d-transformation: The complex series approach with APS. In *Practical Extrapolation Methods*, pages 253–262. Cambridge University Press.

[237] C. Soize and R. Ghanem. PROBABILISTIC LEARNING ON MANIFOLD FOR OPTIMIZATION UNDER UNCERTAINTIES. In *Proceedings of the 2nd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP 2017)*. Institute of Structural Analysis and Antiseismic Research School of Civil Engineering National Technical University of Athens (NTUA) Greece, 2017.

[238] Christian Soize and Roger G. Ghanem. Physical systems with random uncertainties: Chaos representations with arbitrary probability measure. *SIAM J. Scientific Computing*, 26(2):395–410, 2004.

[239] Christian Soize and Roger G. Ghanem. Reduced chaos decomposition with random coefficients of vector-valued random variables and random fields. *Computer Methods in Applied Mechanics and Engineering*, 198(21-26):1926–1934, may 2009.

[240] Christian Soize and Roger G. Ghanem. Data-driven probability concentration and sampling on manifold. *J. Comput. Physics*, 321:242–258, 2016.

[241] Christian Soize and Roger G. Ghanem. Polynomial chaos representation of databases on manifolds. *J. Comput. Physics*, 335:201–221, 2017.

[242] Bedrich Soused'ık, Roger G. Ghanem, and Eric T. Phipps. Hierarchical schur complement preconditioner for the stochastic galerkin finite element methods : Dedicated to professor ivo marek on the occasion of his 80th birthday. *Numerical Lin. Alg. with Applic.*, 21(1):136–151, 2014.

[243] Bedrich Sousedik and Roger Ghanem. TRUNCATED HIERARCHICAL PRECONDITIONING FOR THE STOCHASTIC GALERKIN FEM. *International Journal for Uncertainty Quantification*, 4(4):333–348, 2014.

[244] P. Spanos. Stochastic finite element expansion for random media. In *Lecture Notes in Engineering*, pages 752–772. Springer Berlin Heidelberg, 1988.

[245] Weijie Su, Stephen Boyd, and Emmanuel Candes. A differential equation for modeling nesterovs accelerated gradient method: Theory and insights. In *Advances in Neural Information Processing Systems*, pages 2510–2518, 2014.

[246] Arthur Szlam, Karol Gregor, and Yann LeCun. Fast approximations to structured sparse coding and applications to object classification. In *ECCV (5)*, volume 7576 of *Lecture Notes in Computer Science*, pages 200–213. Springer, 2012.

[247] Hiroshi Teramoto, Mikito Toda, and Tamiki Komatsuzaki. Understandings of chemical reaction dynamics in terms of dynamical systems theory. AIP Publishing LLC, 2015.

[248] Esther Thelen and Linda B. Smith. Dynamic systems theories. 2007.

[249] Doros N. Theodorou and Ulrich W. Suter. Detailed molecular structure of a vinyl polymer glass. *Macromolecules*, 18(7):1467–1478, jul 1985.

[250] Evangelos Theodorou and Emanuel Todorov. Relative entropy and free energy dualities: Connections to path integral and KL control. In *CDC*, pages 1466–1473. IEEE, 2012.

[251] Jayaraman J. Thiagarajan, Karthikeyan Natesan Ramamurthy, and Andreas Spanias. Learning stable multilevel dictionaries for sparse representations. *IEEE Trans. Neural Netw. Learning Syst.*, 26(9):1913–1926, 2015.

[252] Charanraj Thimmisetty, Fred Aminzadeh, Kelly Rose, and Roger Ghanem. Multiscale stochastic representations using polynomial chaos expansions with gaussian process coefficients. *Data-Enabled Discovery and Applications*, 2(1), jan 2018.

[253] Charanraj Thimmisetty, Arman Khodabakhshnejad, Nima Jabbari, Fred Aminzadeh, Roger G. Ghanem, Kelly Rose, Jennifer R. Bauer, and Corinne Disenhof. Multiscale stochastic representation in high-dimensional data using gaussian processes with implicit diffusion metrics. In *DyDESS*, volume 8964 of *Lecture Notes in Computer Science*, pages 157–166. Springer, 2014.

[254] Charanraj A. Thimmisetty, Roger G. Ghanem, Joshua A. White, and Xiao Chen. High-dimensional intrinsic interpolation using gaussian process regression and diffusion maps. *Mathematical Geosciences*, 50(1):77–96, oct 2017.

[255] David R Thompson, Walid A Majid, Colorado J Reed, and Kiri L Wagstaff. Semi-supervised novelty detection with adaptive eigenbases, and application to radio transients. 2011.

[256] David R. Thompson, Walid A. Majid, Colorado J. Reed, and Kiri L. Wagstaff. Semi-supervised eigenbasis novelty detection. *Statistical Analysis and Data Mining*, 6(3):195–204, may 2012.

[257] Ingo Thon, Bernd Gutmann, and Guy Van den Broeck. Probabilistic programming for planning problems, 2010.

[258] R. Thukral. A family of the functional epsilon algorithms for accelerating convergence. *Rocky Mountain Journal of Mathematics*, 38(1):291–307, feb 2008.

[259] Ramakrishna Tipireddy, Roger Ghanem, Somnath Ghosh, and Daniel Paquet. High resolution micrograph synthesis using a parametric texture model and a particle filter. *Integrating Materials and Manufacturing Innovation*, 2(1), jun 2013.

[260] Ramakrishna Tipireddy and Roger G. Ghanem. Basis adaptation in homogeneous chaos spaces. *J. Comput. Physics*, 259:304–317, 2014.

[261] Albert C. To, Wing Kam Liu, Gregory B. Olson, Ted Belytschko, Wei Chen, Mark S. Shephard, Yip-Wah Chung, Roger Ghanem, Peter W. Voorhees, David N. Seidman, Chris Wolverton, J. S. Chen, Brian Moran, Arthur J. Freeman, Rong Tian, Xiaojuan Luo, Eric Lautenschlager, and A. Dorian Challoner. Materials integrity in microsystems: a framework for a petascale predictive-science-based multiscale modeling and simulation system. *Computational Mechanics*, 42(4):485–510, apr 2008.

[262] Paul M. Torrens, Ioannis G. Kevrekidis, Roger G. Ghanem, and Yu Zou. Simple urban simulation atop complicated models: Multi-scale equation-free computing of sprawl using geographic automata. *Entropy*, 15(7):2606–2634, 2013.

[263] Alex Toth and CT Kelley. Convergence analysis for anderson acceleration. *SIAM Journal on Numerical Analysis*, 53(2):805–819, 2015.

[264] Bryan E Toth and David P Griesheimer. A novel source convergence acceleration scheme for monte carlo criticality calculations, part ii: implementation & results. *Ann Arbor*, 1001:48109, 2007.

[265] Abbie Trewin, David J. Willock, and Andrew I. Cooper. Atomistic simulation of micropore structure, surface area, and gas sorption properties for amorphous microporous polymer networks. *The Journal of Physical Chemistry C*, 112(51):20549–20559, dec 2008.

[266] Praveen Kumar Tripathi, Sanghamitra Bandyopadhyay, and Sankar K. Pal. Multi-objective particle swarm optimization with time variant inertia and acceleration coefficients. *Inf. Sci.*, 177(22):5033–5049, 2007.

[267] Panagiotis Tsilifis, William J. Browning, Thomas E. Wood, Paul K. Newton, and Roger G. Ghanem. The stochastic quasi-chemical model for bacterial growth: Variational bayesian parameter update. *Journal of Nonlinear Science*, 28(1):371–393, aug 2017.

[268] Panagiotis Tsilifis and Roger G. Ghanem. Reduced wiener chaos representation of random fields via basis adaptation and projection. *J. Comput. Physics*, 341:102–120, 2017.

[269] Panagiotis Tsilifis, Xun Huan, Cosmin Safta, Khachik Sargsyan, Guilhem Lacaze, Joseph C. Oefelein, Habib N. Najm, and Roger G. Ghanem. Compressive sensing adaptation for polynomial chaos expansions. *J. Comput. Physics*, 380:29–47, 2019.

[270] R UMPLEBY, S BAXTER, A RAMPEY, G RUSHTON, Y CHEN, and K SHIMIZU. Characterization of the heterogeneous binding site affinity distributions in molecularly imprinted polymers. *Journal of Chromatography B*, 804(1):141–149, may 2004.

[271] D Vanderbilt. Berry-phase theory of proper piezoelectric response. *Journal of Physics and Chemistry of Solids*, 61(2):147–151, feb 2000.

[272] Tomas Veloz and Pablo Razeto. Reaction networks as a language for systemic modeling: Fundamentals and examples. *Systems*, 5(1):11, 2017.

[273] Giuseppe Vitiello. On the isomorphism between dissipative systems, fractal self-similarity and electrodynamics. toward an integrated vision of nature. *Systems*, 2(2):203–216, may 2014.

[274] T. P. Vogl, J. K. Mangis, A. K. Rigler, W. T. Zink, and D. L. Alkon. Accelerating the convergence of the back-propagation method. *Biological Cybernetics*, 59(4-5):257–263, sep 1988.

[275] Eberhard O. Voit. Biochemical systems theory: A review. *ISRN Biomathematics*, 2013:1–53, 2013.

[276] Mark S. Voss. Principal component particle swarm optimization: a step towards topological swarm intelligence. In *Congress on Evolutionary Computation*, pages 298–305. IEEE, 2005.

[277] Mengdi Wang, Ji Liu, and Ethan X. Fang. Accelerating stochastic composition optimization. *Journal of Machine Learning Research*, 18:105:1–105:23, 2017.

[278] Andre Wibisono, Ashia C. Wilson, and Michael I. Jordan. A variational perspective on accelerated methods in optimization. *CoRR*, abs/1603.04245, 2016.

[279] Scott Wisdom, Thomas Powers, John R. Hershey, Jonathan Le Roux, and Les E. Atlas. Full-capacity unitary recurrent neural networks. In *NIPS*, pages 4880–4888, 2016.

[280] Edward Witten. Quantization of chern-simons gauge theory with complex gauge group. *Communications in Mathematical Physics*, 137(1):29–66, mar 1991.

[281] Lin Xiao. Dual averaging methods for regularized stochastic learning and online optimization. *Journal of Machine Learning Research*, 11:2543–2596, 2010.

[282] Dongbin Xiu, Ioannis G. Kevrekidis, and Roger G. Ghanem. An equation-free, multiscale approach to uncertainty quantification. *Computing in Science and Engineering*, 7(3):16–23, 2005.

[283] Jin Xu, Haibo He, and Hong Man. Active dictionary learning in sparse representation based classification. *CoRR*, abs/1409.5763, 2014.

[284] Baoqing Yang, Chaochen Gu, Kaijie Wu, Tao Zhang, and Xin-Ping Guan. Simultaneous dimensionality reduction and dictionary learning for sparse representation based classification. *Multimedia Tools Appl.*, 76(6):8969–8990, 2017.

[285] Xiyang I. A. Yang and Rajat Mittal. Acceleration of the jacobi iterative method by factors exceeding 100 using scheduled relaxation. *J. Comput. Physics*, 274:695–708, 2014.

[286] Wei-Chang Yeh and Chyh-Ming Lai. Accelerated simplified swarm optimization with exploitation search scheme for data clustering. *PLOS ONE*, 10(9):e0137246, sep 2015.

[287] Amnon Yekutieli. The continuous hochschild cochain complex of a scheme. *Canadian Journal of Mathematics*, 54(06):1319–1337, dec 2002.

[288] N. Yokoyama, S. Suzuki, and T. Tsuchiya. Convergence acceleration of direct trajectory optimization using novel hessian calculation methods. *Journal of Optimization Theory and Applications*, 136(3):297–319, feb 2008.

[289] A.F. Zabolotskaya. Acceleration of the convergence of the optimum gradient method in hilbert space. *USSR Computational Mathematics and Mathematical Physics*, 14(1):215–218, jan 1974.

[290] Lihi Zelnik-Manor, Kevin Rosenblum, and Yonina C. Eldar. Dictionary optimization for block-sparse representations. *IEEE Trans. Signal Processing*, 60(5):2386–2395, 2012.

[291] Joaquin Zepeda, Christine Guillemot, and Ewa Kijak. The iteration-tuned dictionary for sparse representations. In *MMSP*, pages 93–98. IEEE, 2010.

[292] Aston Zhang and Quanquan Gu. Accelerated stochastic block coordinate descent with optimal sampling. In *KDD*, pages 2035–2044. ACM, 2016.

[293] Xunzhi Zhu. Approximately normalized iterative hard thresholding for nonlinear compressive sensing. *Mathematical Problems in Engineering*, 2016:1–8, 2016.

[294] Marcelo V W Zibetti, Chuan Lin, and Gabor T Herman. Total variation superiorized conjugate gradient method for image reconstruction. *Inverse Problems*, 34(3):034001, jan 2018.

[295] Yu Zou and Roger G. Ghanem. Error estimation in the spatial discretization of multiscale bridging models. *Multiscale Modeling & Simulation*, 3(4):940–956, 2005.

[296] Yu Zou, Ioannis Kevrekidis, and Roger Ghanem. Equation-free dynamic renormalization: Self-similarity in multidimensional particle system dynamics. *Physical Review E*, 72(4), oct 2005.

[297] Yu Zou, Ioannis G. Kevrekidis, and Roger G. Ghanem. Equation-free particle-based computations: coarse projective integration and coarse dynamic renormalization in 2d. *Industrial & Engineering Chemistry Research*, 45(21):7002–7014, oct 2006.

[298] Yu Zou, Paul M. Torrens, Roger G. Ghanem, and Ioannis G. Kevrekidis. Accelerating agent-based computation of complex urban systems. *International Journal of Geographical Information Science*, 26(10):1917–1937, 2012.

[299] Yehuda Zur and Amir Adler. Deep learning of compressed sensing operators with structural similarity loss. 2018.